



GREEN
CLIMATE
FUND

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

Djibouti, Ethiopia, Kenya, Somalia, and South Sudan

Annex 2.3. Feasibility Study for Somalia





SOMALIA

PROGRAM TO BUILD RESILIENCE FOR NUTRITION AND FOOD SECURITY IN SOMALIA



FEASIBILITY STUDY REPORT 2021

Table of Contents

Table of Contents	i
Foreword	v
Acknowledgements	vi
List of Tables	vi
List of Acronyms and Abbreviations	viii
1. INTRODUCTION	1
1.1. General Context & Generalization.....	1
1.1.1. Administrative Framework	6
1.2. Description of the Project.....	13
1.3. Study Objectives	15
1.4.0 Rational for the Program /Study	15
1.4.1. Rational for the programme	15
1.5. Study Phases.....	17
1.5.1 Study Phase I Documentary Review with help of Stakeholders	17
And subsequently the analysis was focused on:	19
1.5.2 Study Phase II Field Visit to Selected Sites and Meeting with local people.....	20
1.5.3 Study Phase III Drafting Field Reports and the Component report of the Project.....	24
1.5.4 Finalization the Report through Validation Presentation Workshop at Regional level	25
1.6.0 Objectives of the IDDRSI Programme.....	25
1.6.1 Land Sustainable Management Objectives.....	25
1.6.2 Value Chain & Entrepreneurship Development Objectives.....	26
1.6.3 Agricultural, Livestock and fishery products	26
2.0 Anchoring with existing policies & strategies	27
2.1 Country Programming Paper (2019-2014).....	27
2.2 National adaptation program of action on climate change (NAPA)	28
2.1.1 Key Opportunities for Adaptation	29
2.3.0 Livestock Sector Development Strategy	29
2.3.1 Veterinary Code (Somalia) 2016.....	31
2.3.2 Livestock relevant Policy Documents in Somalia.....	31

2.4 Agriculture Strategy Plan (2016-2020)	32
2.4.1 National Biodiversity Strategy and Action Plan (NBSAP) 2016-2025	34
2.5. Draft Fishery Policy	36
2.5.1 Marine Fishery Policy Paper	36
2.6. Draft National Gender Policy of Somalia	38
2.6.1 UN Somalia Gender Equality Strategy 2018-2020	38
3.0 Main Lessons from previous Projects & Phase 1	39
3.1 Key findings	39
3.2 Political Context.....	39
3.3 Monitoring Challenges	39
Climate change	40
3.4 Effects of Climate Change on Agriculture and Livelihoods	40
3.5 Impacts of Climate Change	40
4.0 Context & Generalities	41
4.1 Drought Resilience and Sustainable Livelihood Program (DRSLP) PHASE II Somalia... 41	
4.1.1 Merits of the DRSLPII	41
4.1.2 Demerits of the DRSLPII	41
4.1.3 Location of the project intervention area.....	42
4.2 Physical Setting	43
4.3 Socio-demographic characteristics of the study area	44
4.3.1 Population Growth of Somalia	45
4.4 Macro-economic Framework	45
4.5 Beneficiaries of the Project	45
5.0 Political & Institutional Framework for Natural Resource Management	47
5.1 Environmental protection and sustainable development.....	48
5.2 Agricultural Development and Valuation of Natural Resources	49
5.2.1 Priorities for Agriculture and Rural Development	51
5.3 Land management	51
6.0 Exploitation of natural resources	52
6.1 The potential of water resources	52

6.1.1 Impacts of Climate Change	52
6.2 Soil Suitability for Cultivation	53
6.2.1 Summarized Current Challenges/Gaps for building Food and Nutrition Agriculture programming	54
6.3 Diagnosis of Crop Production	54
6.3.1 Climate Smart Agriculture.....	54
6.4 Livestock & animal production sectors.....	55
6.4.1 Value addition of livestock.....	57
6.4.2 Feed/fodder production.....	58
6.4.3 Animal health services.....	58
6.4.4 Livestock Marketing.....	59
6.4.5 . Dairy value chain.....	61
6.5 Exploitation of fishery Resources	61
6.5.1 Challenges of Fishing	65
6.5.2 Implications for Food Security	65
6.6 Forest resources	65
6.7 Biodiversity	66
6.8 Potential and Constraints of Natural Resource Management (NRM) in the Country	69
6.8.1 Identification of key challenges and needs.....	69
6.8.2 Possible mitigations.....	70
7.0 Detailed Description of the Project Components.....	73
7.1 Activities to be carried out	74
7.2 Implementation strategy	80
7.2.1 Support for Implementation Strategy	81
7.2.2 Strategies for Multi-sectoral Coordination	81
7.2.2.3 Evidence-based Research.....	82
7.3 Expected results by component, sub-component	83
7.4 ICT Sector in Somalia.....	85
8.0 Intervention approach	85
8.1 Documents reviewed.....	85

Consultations with the federal government of Somalia.....	iii
Consultations with Puntland authorities – 15- 20 th July 2021	viii
Consultations with Somaliland authorities– 11-17 th July 2021	xii
Focus group discussion	xiii
Major challenges observed	xiii
General outcome of the field mission	xvi
Animal health services	xix
Geographic coverage	xxii
List of Somali Experts (Local Consultants).....	xxiii

Foreword

Recurrent drought in Somalia made significant negative impact on food security and nutrition. IGAD with the help of African development bank implemented DRSLP II, in the Horn of Africa countries including Somalia and now is under the preparation of Drought Resilience for nutrition and food security program within the framework of the interest collectively expressed by IGAD member states to invest in the second phase of the DRSLPII.

The poor rainy seasons, floods provoked the situation and put at risk for millions of pastorals and agro-pastoral people in the region of Horn of Africa. IGAD in cooperation with the federal government of Somalia is conducting feasibility study for the building resilience for nutrition and food security in Somalia.

To gain insight the possibility of the implementation of the program. the thematic areas of the program are (1) Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production (2) Supporting Agribusiness Development (3) Strengthening Adaptive capacity to Climate Change.

The objective of the study is to identify the appropriate activities and interventions in the livelihoods sector to tackle the impact of the reoccurring droughts, enhance economic development, promote food security and build the adaptive capacity to climate change.

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We want to thank the Ministry of livestock, agriculture, marine resources, and environment, in Somaliland, Puntland and Federal Government Somalia particularly the Minister of livestock. General Directors of Livestock, Energy and water, IGAD represent Mr. Osman with experts' panel from line ministries for their facilitation and contribution of the study.

List of Tables

Table 1: flash floods and riverine flooding.....	11
Table 2 Summary table of the study	17
Table 3 Thematic Areas	18
Table 4: Summary Policies, Strategies and Regulations.....	20
Table 5: Summary of project infrastructure	42
Table 6: Somali Fact-sheet.....	68
Table 7: summary of the main vulnerable sectors	69
Table 8: Summary of Sector Mitigation	70
Table 9: Program Components	74
Table 10: Anticipated Results	83
Table 11: Project Cost.....	89

Table 12	124
Table 13: Financial return.....	125
Table 14: Outcome and Risks	129
Table 15 Logical Framework (For project activities)	132
Table 16: Rural Infrastructure.....	149
Table 17: Proposed arrangements.....	155
Table 18: Livestock Market routes	xix
Table 19 Local Consultants	xxiii

List of Figures

Figure 1: Map of Somalia ASAL areas.....	4
Figure 2, Meeting with the Focal point of IGAD, Minister of Livestock, rangeland and forestry	22
Figure 3, Meeting with local community in study areas.....	23
Figure 4 Map indicating different states of Somalia and Clusters in Somalia, (Source: IGAD)	24
Figure 5: Chart of reporting stages	24
Figure 6: Agro-climatic Map of Somalia,	33
Figure 7: Agro-ecological Map,.....	35
Figure 8: Fishery development zones of Somalia,	37
Figure 9: Population growth of Somalia,	45

List of Acronyms and Abbreviations

ADF	African Development Fund
AfDB	African Development Bank
ARD	Agriculture and Rural Development
CFS	Committee on World Food Security
CPP	Country program paper
CSA	Climate smart agriculture
FAO	Food and Agriculture Organization
FGS	Federal Government of Somalia
FSNAU	Food Security and Nutrition Analysis Unit
GDP	Gross Domestic product
GSF	Global Strategic Framework
HIPC	Heavily indebted Poor Countries
ICPALD	IGAD Centre for Pastoral Areas and Livestock Development
IDDRSI	IGAD Drought and Disaster Resilience and sustainable Initiative
IFAD	International Fund for Agriculture Development
IGAD	Inter-governmental Authority on Development
IUCN	International Union for Conservation of Nature and Natural Resources
MDGs	Millennium Development Goals
MoFMR	Ministry of Fishery and Marine Resources
MoLFR	Ministry of Livestock forestry and Range
MoNR	Ministry of national Resources
MoPIED	Ministry of planning Investment and Economic Development
NDCs	National determined Contributions
NDP9	9 th National Development Plan
NIC	National IDDRSI Coordinator
OCHA	Office for Coordination of Humanitarian Affairs
PSC	Platform steering committee
SWALIM	Somalia Water and Land Information Management
UNDP	United nation Development Program
WB	World Bank

1. INTRODUCTION

1.1.General Context & Generalization

The Economy of Somalia basically divided into three basic sectors including: Service, Agriculture and Industry. Among the Economic Sectors in Somalia, Agriculture sector influences the development of national economy. The contribution of the agriculture sector to the economy of Somalia has declined over the last 30 years. Somalia economy draws its main strength from agriculture sector. The sector contributes 40% to GDP (at current prices) and employs 50% of the labor force.

The Intergovernmental Agency for Development (IGAD) plays a key role in developing strategies to respond to the droughts disaster effects that affect millions of people living in the Horn of Africa each year. Somalia has been home to various disasters including natural and anthropogenic activities over the last 30 years. As a result, Somalia has become in a state of disrepair, be it administrative, economic, human, physical, moral, etc. Somalia's long been in the drought disaster risks and never obtained adequate support that can draw Somalia out of risks (MoPIED, 2018). Furthermore, over 60% of Somalia's population is rural-based engaged in farming, agro-pastoralism, and pastoralism and therefore, highly dependent on unfavorable climatic conditions for their food and nutrition security. Somalia is the most vulnerable to the impacts of instability, conflict, and climate change (drought), with severe weather conditions when compared to the other IGAD member states because Somalia has been without a functional government for over 30 years.

Somali people are also dependent on climate-sensitive pastoralism and agriculture sectors which are very vulnerable to climate change and environmental shocks, and it are excluded in the countries covered by DRSLP I under the ADF programs. Somalia has come up with changes in politics that has earned trust from the international community and facilitated debt relief. Accordingly, it was realized that without the inclusion of Somalia, the DRSLP II in the Horn of Africa will achieve its intended objectives, and conducted a needs assessment to respond to

frequent droughts and continuous needs in Somalia for support in Drought Resilient Sustainable Livelihoods Project (DRSLP II).

The Somalia component of the Drought Resilience & Sustainable Livelihoods program Project II (DRSLP II) in the Horn of Africa has been part of a multinational program that covers Somalia, Ethiopia, Eritrea & Sudan. The DRSLP project was designed to implement in Somaliland and the Federal member states of Somalia. For insecurity reasons, the Federal Government of Somalia and the Bank agreed to limit the DRSLP II activities for South Central Somalia to capacity building of line ministries (Steering & Meeting, 2020). The DRSLP project has made some significant success strides such as developing infrastructure and building capacity for staff.

However, many obstacles and gaps were identified during the project timeline. To reinforce the shortcomings and barriers that emerged in the DRSLP project II, and also in response to the drought crisis in 2010 and 2011 in the Horn of Africa (HoA) recorded over 13 million affected people and promoted the need for a new strategic programming approach to address the vulnerabilities of people's lives and livelihoods to the conditions and effects recurrent drought and climate variability disasters. The massive humanitarian and displacement crises that followed the drought in Somalia and the region necessitated the need for a renewed focus on doing things together differently by the different member states within the Intergovernmental Agency for Development (IGAD) bloc, development partners, and beyond (IGAD, 2020).

The Nairobi IGAD Heads of State Summit in September 2011, IGAD Secretariat with the support of the Governments of the Member States and Development Partners were tasked to develop a regional strategy to guide an integrated and comprehensive droughts disaster resilience and ending drought emergencies in the HoA, which resulted in the development of IGAD Drought Disaster and Sustainability Initiative (IDDRSI).

This initiative addresses to respond to the continuous problems causing by the frequent droughts, on which drought disaster risk sustainability initiative program (IDDRSI) has been

formulated to enhance resilience for building food and nutrition security of the agro-silvo-pastoral communities in Somalia. The IDDRSI program is designed to implement in Somaliland, Puntland & South-central states /regions of Somalia.

The IDDRSI project has been developed without a conducted feasibility study, and for this, IGAD contracted experts and consultants to carry out a feasibility study of resilience for building food and nutrition security programme in the Horn of Africa (HoA) to address the drivers of food and nutrition security, assess the situation ahead of the program implementation and generation of evidence to improve the collaborative design of food security and resilience programming.

The Feasibility Study aimed building resilience for food nutrition and security in the Horn of Africa (HoA) particularly Somalia in the context of climate change in IGAD - IDDRSI project areas has been conducted for 8 weeks. The feasibility study was mainly focused on the regions where the previous project of IDDRSL – (phases II) was implemented. The feasibility study of IDDRSI involved: a combination of qualitative data collection including review of secondary data, Focus Group Discussions with local communities, target beneficiaries, and interviews with government officials; NGOs representatives and staff, Universities' professionals, and representatives of international agencies in targeted different contexts of the IDDRSI intervention project areas. The sample framework for the FGD questionnaire surveys has been based upon the assumption that vulnerability to climatic events and limited livelihood opportunities from agro-silvo-pastoral has likely been the causes of food and nutrition insecurity.

Somalia is located in the horn of Africa and is bordered by Kenya to the southwest, Ethiopia to the west, and Djibouti to the far northwest in the Gulf of Aden, and the Indian Ocean to the east. It lies between latitudes 2°S and 12°N, and longitudes 41° and 52°E. Strategically located at the mouth of the Bab el Mandeb gateway to the Red Sea and the Suez Canal, the country occupies the tip of a region. Somalia's total land area is 637,660 km² and with the longest coastline in Africa (3,025KM). The total land of Somalia covers areas known as Somaliland, Puntland and Central & Southern Somalia of which 30% are categorized as desert land that is

unsuitable for agricultural production, 45% is covered by rangelands suitable for livestock grazing, 14% is covered by forest or woodland, and the remaining 13% (8.1 million ha) is classified as arable land (Food and Agriculture Organization, 1995).

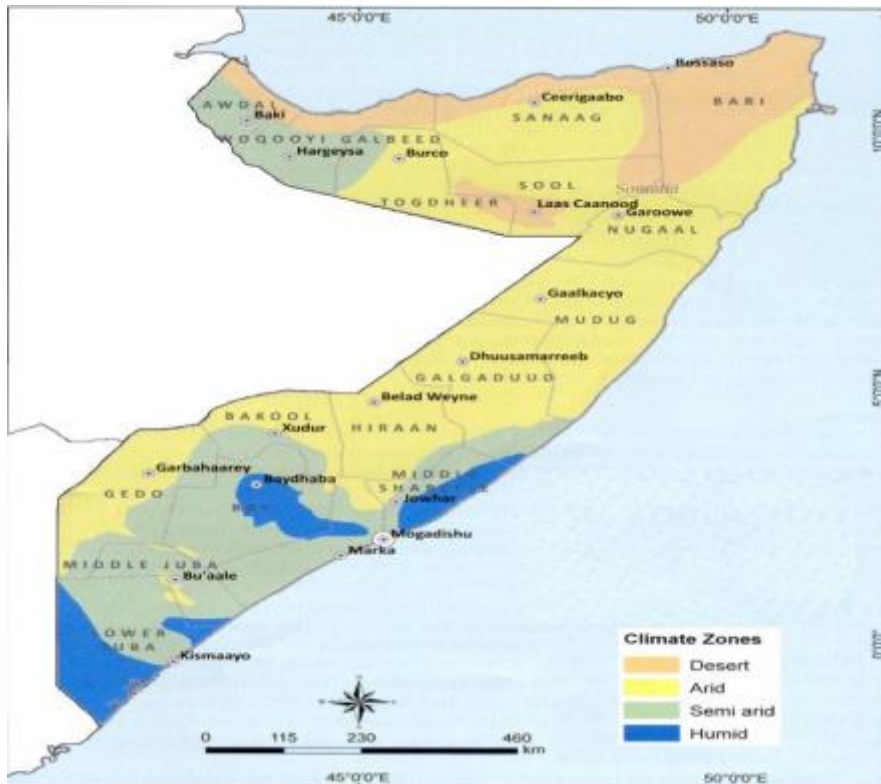


Figure 1: Map of Somalia ASAL areas

(source: <https://unfccc.int/resource/docs/napa/som01.pdf>)

There are two main rivers in Somalia namely the Juba and Shabelle. Both of these two rivers come from the Ethiopian highlands south-easterly across Somalia to the Indian Ocean (WorldBank, 2020). The topography of the country is composed mainly of a plateau that slopes to the Indian Ocean in the east and the Gulf of Aden in the north.

The population of Somalia is currently estimated at 15.9 million (UNPFA-world population, 2020) is growing at a rate of approximately 2.92% per annum. The mainstay of the Somali economy has traditionally been dominated by pastorals and crop production, followed by fisheries and forestry and these four sectors are supporting over 80% of the population. The majority of the people in Somalia have experienced a decline or stagnation in living standards

since 1990 after the collapse of the government. In addition, Somalia is highly vulnerable to climate change-related impacts such as drought, extreme flooding, pests (locusts), and sudden disease outbreaks, changes in rainfall patterns, and sea-level rise. These are serious concerns as Somalia's economy largely dependent on its rural natural resources. Besides, over 65% of the population is rural-based engaged in farming, agro-pastoralism, and pastoralism and therefore, highly dependent on unfavorable climatic conditions for their food and nutrition security.

About 40% of Somalia's population lives in extreme poverty in rural areas due to insufficient food resources and poor socio-economic conditions (IFAD, 2012). Women in rural areas are identified as one of the most vulnerable groups in Somalia who are the pillars of production sectors. Due to the adverse impact of climatic change and environmental degradation. Land degradation is a major ecological issue in Somalia due to severe deforestation, loss of vegetation with soil erosion, land grabbing or enclosures, overgrazing, poor farming practices and climate change. The land and biological diversity are unique in the arid and semi-arid lands, which cover over 60 percent of the country (FAO, 2011).

The national development plan (NDP9) addresses the root cause of poverty and aims to improve the impacts of poverty experienced by households and individuals (WORLD-BANK, 2020). The development and poverty reduction in Somalia are relied on making progress on four causes of poverty. Such as political fragility, conflict, a weak economy, and community vulnerability and all of these required a framework of strengthening governance. The strategy stressed that the gaps between resources and requirements could not be closed in five years, but the level of poverty can be reduced in five years, despite this, it has not been benchmarked.

The country is suffering from economic hardship and political crisis; which need enormous economic structural adjustment programs, with adequate investments and commitment to improving food and nutrition security for the development of the sectors in agriculture, livestock, and fishery.

1.1.1. Administrative Framework

Somalia is a federal republic divided into states, officially the federal member states consisting of six federal member states namely: Somaliland, Galmudug, Hirshabelle, Jubaland, Southwest, Puntland, and the Banaadir regional administration. The country is further subdivided into 18 regions and 95 districts. During the feasibility study, the sites are categorized into three geographic zones based on the DRSLPII interventions.

1.1.1.1.Somaliland

Currently Somaliland administrative is officially divided in six new regions of Awdal, Sahel, Maroodi-jeex, Togdheer, Sanaag and Sool with 18 new districts. A total population estimated 4.5 to 4 million with a total area of 176,120 km². In May of 1991, Somaliland or Northern region which was known as protectorate of British Somaliland declared an independent republic of Somaliland but not received any recognition from international community (New York Times, 2010).

1.1.1.2.Population

Somalia's 2020 population is estimated at 15,893,222 people at mid-year according to UN data (UNPFA-world population, 2020). According to the census of the population that had been carried out in 1975 was recorded estimation of 5 million. However, there is no official census carried out since 1975 due to certain reasons of which the first one is that the country has been without a central government for more than 20 years and the second is that the majority of the Somali population is nomads moving across borders and it is very complicated to count.

The population of Puntland has been reported as 2.4 million (BBC, 11 March 2019),). Somalia's population growth rate is 2.92% and the fertility rate is extremely high at 6.12 births per woman.

1.1.1.3. Climate, Temperature, and Rainfall and Seasons

Somalia is generally arid and semi-arid with two seasonal rainfalls. The climate of Somalia varies markedly within the different parts of the country and can accordingly be subdivided into the three major climatic zones namely:

- a) Mountainous north-western part with mild semi-Mediterranean climate and annual precipitation of up to 400 mm;
- b) A central and north-eastern zone with a hot and arid climate and low annual rainfall of between 100-200 mm each year; and
- c) A southern part with an annual rainfall of up to 600 mm in which most of the settled farming is practiced (SWALIM, 2007).

There are four seasons in Somalia; two rainy seasons – Gu’ & Deyr which occurs April to June with an average annual rainfall of 100mm and 600mm and October to November with low rains respectively and two dry and hot seasons (*jiilaal* and *hagaa*) which occurs in July to September with low temperatures of up to 15C⁰ in the highlands of Somaliland and 20-30C⁰ in south-central regions; and between December to March respectively. Rainfall is highly variable and hence unreliable (SWALIM, 2007). The southern regions of Somalia receive the highest annual rainfall followed by western regions of Somaliland that receive between 500mm- 600mm. Nevertheless, this varies from place to place across the country with the northern parts usually receiving the rains much earlier than the southern part (FSNAU, 2021).

Traditionally, the Somali community dependent on the long GU rains and the shorter Deyr seasons rain for agricultural production, pasture regeneration, and replenishment of rivers, berkedes, dams, and groundwater supply. But due to climate changes in the Horn of Africa, the importance of the two seasons for agricultural production in Somalia has drastically changed. For instance, in 2011, the pattern was reversed, and the Deyr harvest accounted for approximately 80 percent of the yearly agricultural production. Similarly, for nearly two decades; the country received the heaviest rainfall in the 2019 Deyr season (October-December).

In 2020, some areas of Somaliland including Togdheer, Sanaag, Sool, and parts of Waqooyi Galbeed received below normal rains in the Deyr season that caused diminish of pasture and water sources in most parts of the country particularly the March to April in 2021 (OCHA, 2021).

Somalia is one of the IGAD member countries most vulnerable to climate change, in part due to its dependence on the fragile environment – natural resources and agriculture. This situation

is worsened by the prospect of increasing risks of climate-induced disasters, mainly those linked with frequent droughts and extreme variation in rainfall with the outbreak of desert locusts. In response, Somalia joined to sign –global climate agreement in 2016 in New York (IUCN, 2007).

Somalia, with the support of the UNDP, is determined to formulate a National Adaptation Programs of Action that seeks to address risks associated with climate change and increase the country's resilience. The African Development Bank (AfDB) through IGAD also seeks to improve the resilience of pastoral and agro-pastoral communities through the Rural Livelihood Adaptation to Climate Change in the Horn of Africa – IDDRSI project that is currently being prepared and will be funded by the IGAD (AfDB, 2021).

1.1.1.4. Regions Specific Vulnerabilities to Climate induced shocks

Somalia is at risk of several natural hazards, including drought, floods, cyclones, and climate-related diseases and epidemics, COVID 19 pandemic, and cholera. Somalia is vulnerable to climate change and it is considered as a drought-prone/risk area, characterized by reduced unpredictable rainy season, low amount of rainfall.

The crop failures and reduced rural employment opportunities, widespread shortage of water and pasture, with consequent increases in livestock deaths and rapidly diminishing food access among poor households as staple food prices continue to rise sharply and livestock prices decrease significantly.

In the southern part of Somalia, the 2016 Gu (April- June) cereal production was estimated at 65,000 tonnes. This is 49% below the long-term average (1995-2015) and 20% below the five-year average for 2011-2015. Increasing food prices are also affecting food access among displaced and poor urban households. As a result, as many as 6.7 million people have been faced with acute food insecurity across Somalia since January 2017 (MoPIED, 2018).

1.1.1.5. Drought

Droughts are relatively common in Somalia and on average, two to three in every two years drought occurs. The most recent event in 2002-2012 caused no rainfall in the biggest part of the country and affected all sectors in the economy, particularly the agriculture sector including livestock (World Bank, 2013). The main causes of drought and its impact can be climate variability with severe weather conditions in the horn of Africa. El Nino was also one of the factors that caused drought.

There was also a drought from 2017 and at begging of 2018 in several parts of Somalia. Drought usually happens and expanded intensively in three general areas in the Puntland, central regions of Somalia, and eastern parts of Somaliland, including Togdheer, Sool, and Sanaag regions. The Drought affected more than half the country`s population who faced food shortage water scarcity (Jazeera, 2017). According to the human terrain report, over 2.9 million of Somalia faced crisis or emergency level acute food insecurity as a result of below-average to failed rains that reduced crop production and harmed livestock productivity.

Somalia is currently facing poor harvest and food stability as a result of below-average to failed Deyr rainy season in 2020 particularly Somaliland, Puntland, and other parts of Somalia. More than 3.5 million people are affected by the Drought in rural areas. Livelihood zones and IDPS settlements need food assistance and emergency water trucking (FSNAU-FEWS NET, 2020). According to the report, 1.3 million people across Somalia are expected to face food consumption gaps with the depletion of assets. The outbreak of desert locusts is also a new threat in the horn that damaged crops and pasture in most areas of Somaliland and FDM states. According to the assessment by the food security and nutrition analysis unit for Somalia (FSNAU), many poor households in northern and central Somalia were still recovering from the loss of food and income sources during the severe 2016/2017 and the 2018/2019 recurrent droughts. In addition to that, at least 2.6 million people in Somalia have been displaced from rural to urban towns due to conflict, recurrent droughts, floods, an outbreak of desert locust, or other similar factors which disrupted livelihood activities and caused large scale population displacement in livelihood zones.

In addition, swarms of desert locusts were also another threat that destroyed crops and pasture to the Deyr harvest and limited to late-planted crops (milk stage). The risks of locusts are both damaged pasture and crops remains high and critical throughout 2020. Since 2019, there are several desert locusts swarms from the red sea that invaded Somaliland, Puntland, central and south Somalia. The desert also invaded northern eastern Kenya, Ethiopia particularly in the Somali region of eastern Ethiopia. The outbreak of desert locusts resulted in crop failure from 2019 to 2021.

1.1.1.6. Floods in Somalia

In Hirshabelle, South-West, and Jubaland received heavy rains that caused river overflows and flash floods. More than 105,000 people affected by the flood, inundating thousands of acres of farmland and displacing entire communities (AAH, Somalia, 2020). Communities living in the river areas are battling more than one pandemic. The annual flash floods destroy their homes and damage their crops particularly in Afgooye - about 30 miles outside of the capital city, Mogadishu. The heavy rains damaged riverbanks, roads, farmland, and damaged houses, as well as water sources. The affected 6,500 people and displacing 3,000 from their homes (AAH, 2019). The 2019 Deyr spots of rain began earlier than normal between mid-October and early December and expanded to cover most parts of the country.

The overall rainfall amount and distribution was ranged from average to 400mm percent in southern Somalia and most of central and Somaliland. However, excessive rainfall in October and November in 2019 caused extreme river floods as well as flash floods, which affected 570,000 people and also destroyed crops in riverine livelihoods zones along the Shabelle and Juba rivers. The floods also affected Beletwayne and surrounding areas, where floodwaters entered the town. The worst affected area was Beledweyne where overflow from the Shabelle River has displaced 231,000 people from their homes.

River levels also rise at Bullo Buurti and Jahwar localities due to more rains in Ethiopian highlands and inside Somalia (SWALIM, 2019). According to satellite images, the floods damaged more

than 128,066 hectares of land along the Shabelle River. Which is more than 50% agricultural land? However, the riverine floods of Jubba and Shabelle damaged farmlands and crops leading to livelihood losses, loss of life, and significant damage to infrastructures, crops, property, and livestock. In general, the floods affected more than a half-million of people in 17 districts in the state of Jubbaland, Hirshabele, and South-West Somali state, where a total of 370,000 people displaced from their homes (FINA & OCHA 2019).

Similarly, the floods destroyed infrastructures such as roads, bridges, water sources especially all shallow wells, dams, water tanks, and supply systems with other support facilities in Puntland parts particularly Bari, Nugaal, Karkaar, and coastal area of Puntland (HADMA, 2019). Coastal areas of Galgaduud and Mudug regions were also experienced flash floods in low-lying areas (FEWS NET, FSNAU, 2020). In Somaliland, flash floods were affected in Erigabo and Zeylac districts that caused the displacement of several households and destruction of property (SWALIM, 2019). The floods with heavy rains were also reported in the neighboring country of Djibouti where at least nine (9) people died in flash floods in Djibouti city.

In 2020 the UNHCR reported that the floods have been forced 150,000 Somali people to flee their homes due to flash and riverine flooding in the southern regions of Somalia particularly Hirshabelle, South West state, and Jubbaland. The floods in these areas resulted in food shortage supply, increasing the price of basic food items, poor sanitary conditions, and poor access to medical care.

The following table indicates the total number of displaced people by floods for the last three years:

Table 1: flash floods and riverine flooding caused by seasonal rains from 2018 to 2020 in Somalia.

Table 1: flash floods and riverine flooding

S/n	Year	Number of displaced people by floods	Total
-----	------	--------------------------------------	-------

1	2018	281,000	281,000
2	2019	416,000	416,000
3	2020	45,000	450,000
	Total		1,147,000 persons

Sources: UNHCR

The flood-based displacement figures demonstrate a rising year-to-year trend that resulted in devastating impact on communities who heavily rely on farming and livestock for their livelihood.

1.1.1.7. Economy, Poverty and Unemployment

In spite the civil conflict and the devastating impact of the 2016-2017 drought, Somalia's GDP has been growing at average rate of 2.5 per cent in 2017 and 2.8% in 2018. According to the African Development Bank, the GDP growth rate of Somalia was projected to be 3.2% in 2020 and 3.5% in 2021 due to the improving security situation, normalization of relations with international financial institutions, and prospects of debt relief under the Heavily Indebted Poor Countries Initiative (HIPC) in 2020 which present opportunities to address economic and social challenges (AfDB, 2021).

The World Bank also estimates that Somalia's per capita income is USD 435, which makes it the fifth poorest country in the world (AfDB, 2020). However, due to unexpected triple shocks of locust damage, Covid-19, and flooding; GDP growth rate and per capita income will become much lower than the projected figures. Multiple effects of the triple shocks will likely continue throughout the remaining periods of 2020 and beyond.

The World Bank estimates that poverty levels in Somalia are extremely high with about half of the population (51.6%) living below the poverty line. The incidence of poverty is more pronounced in IDP camps and rural areas. Poverty is aggravated by the lack of an effectively functioning government institutions, widespread insecurity, and natural disasters like floods

and droughts coupled with the high increase of population rate due to the high fertility rate that posed significant challenges to reducing the levels of poverty in Somalia(AfDB, 2020).

In addition to this, the unemployment rate of youth is estimated to be 67% that is the highest number in the world. The high levels of unemployment increased the vulnerability of youth to militant groups and other criminal activities and their tendency to migrate to other parts of the world including African countries, Europe, Asia and the Middle East(AfDB, 2020).

The NDP-9 M&E framework has an aspirational target of a 20% decrease in poverty rates. During frame the poverty reduction will be dependent on increased employment and income levels of 10% per capita. This target is based on early and effective investment in economic growth and employment as supported by an improved enabling economic environment, more effective regulation, increased external confidence by investors, and investment in key economic sectors(WORLD-BANK, 2020). The target is based on research conducted by DFID in 2008 which it found using comparative studies across dozens of developing countries that a 10 percent rise in income would lead to a 20-30 percent drop in poverty (another comparative analysis showed for every one percent rise in average income there was a drop of 1.7 percent in national poverty rates).

1.2. Description of the Project

The Drought Resilience and Sustainable Livelihoods Program (DRSLP) is a multi-national investment program developed by the African Development Bank in collaboration with IGAD Member States and the IGAD Secretariat. DRSLP is aimed at addressing the negative impact of recurrent drought and climate change in the Horn of Africa (HoA) Region; and its primary goal is to contribute to poverty reduction, increase food and nutrition security, build drought resilience and accelerate sustainable economic growth among the pastoral and agropastoral communities in the HoA region including Ethiopia. The DRSLP is initiated and being implemented within the framework of the IGAD Drought Disaster and Sustainability Initiative (IDDRSI), under the general leadership and coordination of the IGAD Secretariat.

With financing from the AfDB, the implementation of the initial phase of DRSLP started in 2013; and has so far involved the commitment of USD300 million to support the execution of resilience-enhancing projects in 6 IGAD countries - Djibouti, Eritrea, Ethiopia, Kenya, Somalia and Sudan.

The first phase of the program made investment across 30 drought hit districts across Afar, Oromia, Somali and SNNP administrative regions. Despite the investment in its first phase, the scale of vulnerability problem remains so high which calls for more investment and efforts to build pastoral communities' resilience. In this regard, the GoE acknowledges the existing resilience capacity gap and the need for putting more efforts in partnership with its development partners. Following several consecutive years of below-normal rainfall, the HoA region including Somalia is again facing a severe widespread drought that has already triggered both national and regional humanitarian crisis with food insecurity and devastated livelihoods. A significant and lasting improvement in the resilience of people in Somalia and the HoA region requires not only significant investment but also the widespread adoption of approaches, practices and climate-smart and innovative technologies expected to change behaviours.

It is widely agreed that a sustainable solution to food and nutrition insecurity in pastoral regions in Somalia and the HoA region requires improved resilience to climate change, long-term financing of the agricultural sector, and trade development and regional integration. By making sustained, longer-term investments in household resilience, the costs of emergency assistance will be significantly reduced, more resources left for development programs and the cycle of recurrent famines will be broken. This is the most economical intervention option and meets the vital needs of the people of Somalia and the HoA region. The IGAD Secretariat has made consultations with IGAD Member States and confirmed that all IGAD Member States have expressed willingness to commit further investment in support of resilience-enhancing projects in the next phase of DRSLP. The second phase of DRSLP aims to build on the progress so far been achieved and leverage the lessons learnt, cover more areas, sectors and investments; and contribute to the consolidation of the objectives of IDDRSI as in the national CPP. 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 intervention areas communities. The national component is part of the regional program which has a geographic focus in 7 IGAD member countries.

The AfDB initiative program will enhance living conditions of the drought affected people through building resilience food, nutrition security in the Horn of Africa(PSC, 2020). The project will pursue with its following objectives:

1. To adapt better in climate change risks people of horn of Africa require building the capacity
2. Through resilience basis the productivity and agro-sylvo-pastoral production of Horn of Africa are to be enhanced in sustainable manner
3. Incomes generating from agro-sylvo-pastoral value chain are to be increased.

4. As the basis of above objectives program is designed to compose four Components

1.3. Study Objectives

The main objective of this study was:

- To assess the national livelihood institutions on the technical and economic performances, by focusing on agro-sylvo pastoral production increase in looking following areas- intervention areas, quantification of the expected results and quantification of program costs;
- To assess and identify the environmental, institutional and social consequences of the agro-sylvo pastoral value chain production in general; and financing the program within the structures of the various stakeholders, federal Government and its member states; for the purpose of income generation increase.
- To examine the imperatives and opportunities for execution of the program components and propose advancements within the roles of regional, National and Sub National government agencies;
- To formulate program scope, design, implementation and results; to enable the AfDB to enhance quality of the adaptation of the population to risks of the climate change;

1.4.0 Rational for the Program /Study

1.4.1. Rational for the programme

Africa's climate is changing. Across the continent rainfall patterns are set to alter. In the Horn of Africa, many areas will become vulnerable because drought will turn into more frequent, more intense, and last longer. In others, new patterns of rainfall will cause flooding and soil erosion. And it has been doing so. Climate change is emerging as one of the major threats to development across the continent. Africa's agriculture must undergo a significant transformation to meet the simultaneous challenges of climate change, food insecurity, poverty, and environmental degradation (Nyasimi, Dorothy, & Hove, 2014).

Somalia is highly vulnerable to climate change-related impacts such as drought, extreme flooding, pests (locust), and sudden disease outbreaks, changes of rainfall patterns, and sea level rise. These are serious concerns as Somalia's economy largely dependent on its rural natural resources. Furthermore, over 60% of the population is rural-based engaged in farming, agro-pastoralism and pastoralism and therefore, highly dependent on unfavorable climatic conditions for their food and nutrition security.

According to the Somalia National development plan, (SOMALI-NDP, 2020) flood and drought are planned to be significant for the resilience of Somali livelihoods in the Livestock. Improving nutrition and food security can be achieved through responses against drought and climate negative impacts. Import ban and drought of 2016/2017 made livestock export to fall in the volume and also made significant humanitarian crisis. Drought in 2016/2017 impacted the lives of 6 million people and displaced about 1 million internally. Recurrent drought and floods are to deteriorate the situation because there is a lack of organize among the civil society, Government officials, and parliament; for minimizing the drought effects through designing and building programs. Recurrent drought emergency could enlarge the volume of risk to the vulnerable people(SOMALI-NDP, 2020). Complicated conflict and limited delivery of services made the situation reach areas in emergency situations(MoPIED, 2020).

According to IGAD strategies(IGAD-Secretariat, 2019) relief food and humanitarian interventions are not enough to respond against drought emergency by the international community and individual countries, due to two main reasons, duration and frequency of the drought and a large number of people affected by the drought. There are various state members in the Federal Govern met of Somalia, who has different capacities in terms of improving resilience against recurrent droughts; some of the states do not even engage to implement national and strategies of drought and other natural disasters.

Limited capacity and financial resources of the Government of Somalia have burdened the international community to support priority areas of interventions and contributed USD 862 million in the first three quarters of 2017. And still are seeking development solutions for change governmental capacities and strengthening the community to respond themselves; because there are groups who demonstrated a low level of nutrition due to animal asset lost in droughts.

Other programs are seeking to build resilience at the state, community, and household level through recovery interventions (Recovery and resilience frame work) to various sectors (MoPIED, 2020). The IDDRSI program follows the previous DRSL project II for supporting local member state governments for their plans, strategies, and regulations. Despite this, there were only three regions namely Somaliland and other federal member states of Somalia. And now it will target all members' states and Federal government, which can enhance the community at the household and community level by focusing the priority areas interventions (PIAs). Other intervention and IDDRSI programs will complement each other because all interventions are guided by the local administrations. Such a program will build up and improve the preparedness of drought and at the same time increase recovery of the previous devastating recurrent droughts.

In the Horn of Africa, it was documented that the extent and harshness of the frequent droughts reached unprecedented levels in 2017. It is the driest year on record over the past 60 years. Households in this region, particularly those dependent on agriculture and livestock for their food and income, have been the hardest hit. The drought, brought on by consecutive years of little to no rains, land degradation and climate change, including the El Niño-induced drought in 2015/16, has resulted in almost no opportunity for communities to recover before being hit by a new wave of climate-related crisis. As a result, communities across the HoA region are faced with the domino-effect and negative impact of food insecurity, disease, displacements, migration and conflicts related to pressure on scarce natural resources.

1.5.Study Phases

The study went through four phases reviewing the documents, policies, strategies, regulations and intervention information from DRSLP project and other relevant reports. The second phase is gathering primary data from field site. And the third is the drafting and reporting feasibility study and fourth presentation of the report in validation workshop.

Summary table of the study

Table 2 Summary table of the study

Phase I	Documentary review with help of stake holders
Phase II	Field visit to selected sites and meeting with local authorities
Phase III	Drafting field reports
Phase IV	Finalizing the report through validation presentation workshop at regional level

1.5.1 Study Phase I Documentary Review with help of Stakeholders

The condition of insecurity, communication and political issues created to be dealt each aspect according to demands of the Somali member states and Federal government of Somalia. Phase I, will focus on gathering data related with four areas Livestock, Value chain, water and land sustainable management. And each area will have its relevant sub areas include, fodder, crop, fishery, Livestock and water.

1.5.1.1 Methodology of Primary Data Collection

This study phase focused on collection of the primary data from the field in 4 different clusters mainly the value chain, Livestock, water and sustainable land management. The team in Somalia comprising ten national experts divided themselves into three sub groups to perform the works in

the given timelines due to the delays in the initially proposed timelines. These groups were based on the geographic zones of Somalia namely South-central Somalia under which Galmudug state, Hirshabele state, Southwest state, Jubbaland state and Banadir Regional Administration are categorized. Puntland and Somaliland as second and third zones respectively. The sub-team conducted the feasibility study in parallel but under the leadership of the team leader and in cooperation. The teams have gone through the following steps in the feasibility study:

1. Reviewed the current existing documents of the project included the project document, narrative reports of the DRSLPII and the guidelines given by the other teams and interventions information from DRSLP project and other relevant reports.
2. Developed the skeleton of the feasibility study report in cooperation and consultation with the project stakeholders.
3. Reviewed the existing government policies, strategies, regulations.
4. Consultations with stakeholders-DRSLP-government implementing institutions. These institutions include the different ministries in both federal and state levels.
5. Direct field visit and data collection discussing the communities.

It has been indicated that subcomponents of these three thematic areas are considered in the study (table):

Table 3 Thematic Areas

Value chain	Livestock	Land sustainable management
<ul style="list-style-type: none"> • Facilitating access to advisory services, financing and markets • Supporting Development of Entrepreneurship • Promoting Domestic Bio-digesters and Solar Energy 	<ul style="list-style-type: none"> • Support Sustainable Management of Agro-pastoral land • Develop Climate Resilient Infrastructure • Promote Climate-Smart Innovations and Technologies 	<ul style="list-style-type: none"> • Development of Climate Services • Building capacity of main stakeholders in the agro-pastoral sectors in the drought prone areas for mainstreaming and monitoring Climate Change

		<ul style="list-style-type: none"> • Strengthening the Operational Capacity for resilience
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Information gathering primarily focused on consultation with ministry of ministry of livestock forestry and Range. The ministry of public works, reconstruction and housing, Ministry of Agriculture and Irrigation, ministry of Energy and Water, Directorate of Environment and Climate Change in the office of the prime minister of the federal republic of Somalia and their correspondent institutions in the federal member states.

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Other discussed issues include:

- (a) Putting priorities to Horn of Africa programs particularly common multipurpose project activities in which all natural resource management ministries are involved in somehow
- (b) Exercise for selecting sites purposed by the Somali Authorities in various level and to be given attention to the areas of previous projects related with this one.

Other Data gathering covered following points:

Meeting with beneficiaries to understand needs, priorities of and appropriate infrastructures for each site. Gathering data from technical service specialized to the thematic areas.

Doing consultation meeting with stakeholders for gathering technical and socio-economic data, the experts made field site survey to DRSLPII project sites.

1.5.1.2 Secondary Data Collection

The team of experts carried out review for all available documents include, policies, strategies, national laws, IGAD and AfDB key documents include reports of similar projects, strategies and other relevant resilience program documents for analyzing in following approaches:

- Subsector analysis approach
- Analysis approach (Theory of Constraints)
- SWOT analysis Approach

And subsequently the analysis was focused on:

- Analysis by content
- Trend analysis
- Constrains rankings

- SWOT tables
- Venn diagramming
- Livelihood rankings/scorings
- Economic trend analysis
- Value chain mapping
- Subsector trends

While it has been given special attention to the climate change adaptation plan based on the national priority and key recommendations from previous reports to implement tested solutions in similar issues for resilience of the local people.

Reviewed documents are summarized in the following table

Table 3: Summary Policies, Strategies and Regulations

Table 4: Summary Policies, Strategies and Regulations

Government/state	Policies	Strategies	Regulations	Intervention
FGS	<ul style="list-style-type: none"> • Livestock/agriculture policy • Fodder policy • Transhumance policy • Pastoral hydraulic policy • Fishery policy • Land management policy 	Relevant strategies	Veterinary code	DRSLP phase II

1.5.2 Study Phase II Field Visit to Selected Sites and Meeting with local people

This phase clarified the discussions with stakeholders for gathering data from local potential project sites further to receive from beneficiaries and key stakeholders for their preferences of the infrastructures are needed to be rehabilitated or implemented in near future. And to collect data related with the income generation. Furthermore, the team discussed through interviews to stakeholders to these below points:

- I. What were stakes and why specific activities are important than others,
- II. How one particular infrastructure has an impact to the lifeline of the beneficiaries,
- III. And what are the issues raised from other related projects specifically DRSLP II if existed in that locality, which made an impact and those did not make any impact to the community,

- IV. How other risks from climate change, livestock diseases and insect plague can be managed according lessons learnt from previous projects and can be created cope mechanism for preventing such challenges/gaps during implementation of new infrastructure in selected sites,
- V. How can be maintained the infrastructure after project period ends, due to that number reason were raised and clearly discussed with the stakeholders and those include:
 - Availability of financial institutions, cooperatives, communication facilities and other supportive items for the sustainability of the infrastructure.
- VI. Multipurpose collaborations from networks, partnership to understand foundation of new infrastructures for removing challenges of line products mainly from the produce of the beneficiaries which enabling them to trade and market.

Not only made infrastructure study in the field site but the team engaged to evaluate numerous factors for the project feasibilities include:

- Finance
- Environment
- Technology
- Technicality
- And social feasibilities

The team given more emphasis on consultations with various levels of key stakeholders includes:

- Federal Government
- State Governments
- Regional administrations
- Local project beneficiaries mainly youth and women plus other associated third beneficiaries.

During field visits the team is grouped into four parts to gather field data and the visited sites were:

- Somaliland (**Dikhil and Tuurdipe clusters**), one team visited border areas with Ethiopia in Togdheer region while other team visited Waqooyi Galbeed and Awdal border with Ethiopia and Djibouti and mainland areas.
- Puntland (Tuurdibi cluster), this team visited state ministries and two Nugaal valley areas, in which sub-project activities have been done mainly water dams, gullies and rangeland restoration.

- Mogadishu team, made stakeholder consultation with Federal Government, and national IDDRSI coordinator (NIC). And has assigned three enumerators to Gedo, Hirshabelle & Galmudug enumerators made visits borderline with Ethiopia,

1.5.2.1 Selection criteria for sites

- **Regional based intervention:** cross border areas are primary priority.
- **Support to previous DRSL project:** it should be linked to the areas where the previous IGAD DRSL project has been implemented.
- **Aridity:** drought prone areas and vulnerable to disasters
- **Climate change adaptation action plan** – it should be in line with the climate change adaptation action plan.
- **Minimized location /sites** – Number of project sites need to reduce
- **Project sites** should be workable, reachable and accessible for security wise



Figure 2, Meeting with the Focal point of IGAD, Minister of Livestock, rangeland and forestry



Figure 3, Meeting with local community in study areas

In these areas different teams of Somali consultant group consulted concerned line ministries, while shared with the components and sub-components of the project in a brief presentation and the Government technical teams with approval of their line authorities listed their concerned activities relevant to the project components and estimations plus project sites. Mogadishu team with help of national IDDRSI coordinator (NIC) organized national consultation meetings with Federal government line ministries of natural resource management. To the extent of various levels of the Somali Government for state and regional level, consultation with stakeholders to the infrastructures and related activities were assessed.

Triangulation of information has been employed specifically gathering from primary, secondary and field visit, in order to identify infrastructure feasibilities and subsequent activities of the project.

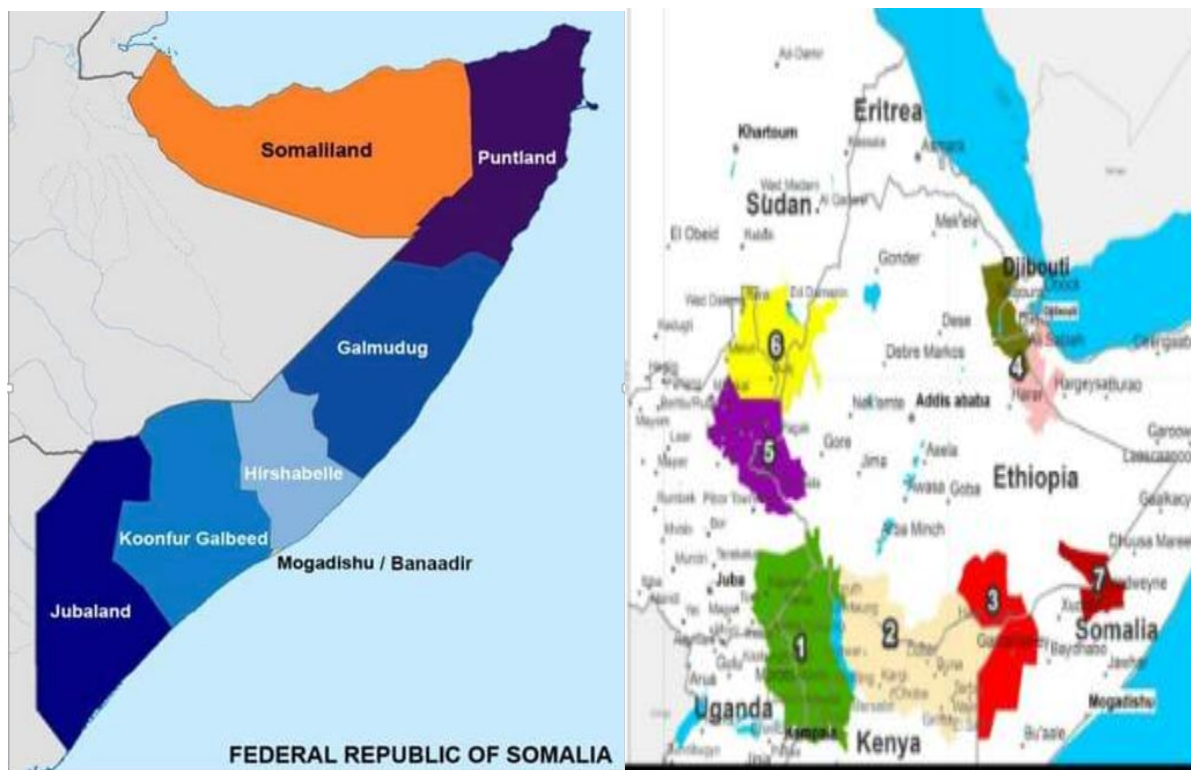


Figure 4 Map indicating different states of Somalia and Clusters in Somalia, (Source: IGAD)

1.5.3 Study Phase III Drafting Field Reports and the Component report of the Project

The reporting and finalization of the report took various stages from inception, interim report, and techno-economic report, presentation of the report for validation and submission of the final report.

Summary of the stages of report



Figure 5: Chart of reporting stages

1.5.4 Finalization the Report through Validation Presentation Workshop at Regional level

Though, it has been extended many times the reporting time for the validation of the final presentation, is planned to take place at the end of July 2021. The validation workshop will be attended by IGAD and include Government Authorities, AfDB and the national consultant team. And the all comments and suggestions will be sensed and incorporated into repo.

1.6.0 Objectives of the IDDRSI Programme

The national component Resilience Building in Food and Nutrition Security Program has well defined overall and specific objectives shared across the program countries including Somalia.

Overall objective

The overall objective of the national program stated on the ToR and 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 selected program intervention areas 30 districts across the four administrative regions

Specific objectives

The three specific objectives of this Resilience Building in Food and Nutrition Security Program are to -

- Increase, on a sustainable and resilient basis, the productivity and production in agro-sylvo-pastoral systems in the selected program intervention areas across the four regions,
- Increase income from agro-sylvo-pastoral value chains, and
- Strengthen the capacity of pastoral and agropastoral populations to better adapt to the risks of climate change.

There are three main sectors in which the report is to focus on and they are: (1) Land sustainable management (2) in increase of agricultural, Livestock and fishery products (3) Value chain and entrepreneurship development. These three sectors affected by global climatic conditions and local limited management of the resources. Therefore, phase two objectives are categorized into above sectors:

1.6.1 Land Sustainable Management Objectives

To contribute in the improvement of living conditions and food and nutrition security of people in the Horn of Africa and more specifically to obtain land management information at all levels of the agro-silvo-pastoral and livestock value chain in the Horn of Africa, to guide development of the HoA Program(CPP, 2019). In this regards, land related information will be sought at three levels, namely:

1. Regional (IGAD Divisions, IDDRSI Program Coordination Unit, IGAD Centers, and main regional partners), as well as already identified trans-boundary clusters between IGAD Member States.
2. National level (central government administrations, decongested counties and districts, key partners and NICs)
3. Local / Site level (potential Program beneficiaries and actors, site level municipalities and service providers).

The land sustainability mean the use of land resources properly including soil , water , animals, and plants for the production of goods to meet changing human needs with maintenance of their environmental functions to avoid degradation and vulnerability of land resources. The project is concerned proper management of land resources through improvement sustainable land use pillars such as water resources, soil, human activities, agriculture, forest, rangeland, livestock, institutional support and mitigation of climate change.

1.6.2 Value Chain & Entrepreneurship Development Objectives

There is a strong interest in understanding of the contribution of value chains in the socio-economic performance of communities, countries and regions in comparison with conventional types of trade and investment. Therefore, the objectives of these components are:

1. Map and evaluate the existing value chains and livelihood diversification options
2. Outline the opportunity, upgrade the plan for existing projects or developing a pilot
3. Assess resources, risks and capabilities of a value chain project and potential development requirements

1.6.3 Agricultural, Livestock and fishery products

Enhancing the living condition of coastal, pastoral and agro-pastoral communities depend on development livestock, crop production, Fish and pasture management(CPP, 2019). Following objectives are engaged:

1. Analyze by confirm the trend all the program scope
2. To smoothly implement project components is to analysis the constrains of the design and feasibility of the program by constraint analysis
3. And to determine the cost estimate and plan according to the analysis of break-even-point and trends in several tears for ensuring sustainability of the livestock, crop and fish enterprises;

2.0 Anchoring with existing policies & strategies

2.1 Country Programming Paper (2019-2014)

To prevent recurrent drought disasters in Somalia; the country employed (programming paper) for uplifting vulnerabilities. And this came with efforts of collaboration from all line ministries include Livestock, fishery, agriculture, and environment. The strategy is to move forward to longer-term solutions on building resilience. It is uplifting the lives of the vulnerable people in ASAL areas of Somalia. The CPP focuses on put forward priorities of the nation by collaborating with the horn Africa countries.

The CPP is an approach in which IGAD and Somalia are collaborating to improve the conditions of the livelihoods for preventing in near future drought disaster crises by shaping strategy focusing on specific targets and solutions. It is an integrated approach to minimizing emergency interventions. The CPP is aligned with the IDDRSI framework (2013-2017) and other IGAD regional strategies for building resilience and drought risk reduction.

The paper is focusing on all member states and administrations at districts levels. The CPP is a five-year strategy and made to simplify for categorizing and structuring numerous interventions and investments. Specifically, infrastructures and procedures. The CPP composed eight components national priority areas of interventions:

- Natural resources and environment management,
- Market access, trade, and financial services,
- Enhanced production and livelihood diversification,
- Disaster risk management,
- Research, knowledge management, and technology transfer,
- Peace building, conflict prevention, and resolution,
- Coordination, institutional strengthening, and partnerships and,
- Human capital, gender, and social development.

CPP could be a participatory approach and emphasis on comprehensive, and coordinated need setting among various partners and sets up solid investigate and effective Monitoring, Evaluation, and Learning framework to back evidence-based programming and investment prioritization. It is valuable to reach new grass-root partners to advance ownership and contribute to viable capacity advancement.

2.2 National adaptation program of action on climate change (NAPA)

Adaptation to climate change in the agricultural sector and allied sectors is a main current and future crisis for Somalia. The majority of the country's population is dependent on extremely climate-sensitive agriculture. In last 30 years, frequent droughts, rainfall variability, increased temperatures, and floods have caused serious distress to agriculture dependent communities in many different areas. Somalia's development goals (DG) of improving food and nutrition security and enhancing sustainable agriculture needs to be implemented in strategically sustainable system to adapt climate change.

Climate change is a global issue affecting all nations. Its impact is felt severely across sub-Saharan Africa due to the high degree of climate variability and weak coping capacities. Climate change knows no boundaries and the solutions demand regional and global coordination and collaboration.

Somalia's goal is to reduce climate change-induced vulnerabilities for the poorest communities, namely the 65% of the population who depend on natural resources through pastoralism and agriculture. These sectors are most affected by decreased production due to unpredictable rainfall patterns, increased temperatures and the loss of lives and livelihoods resulting from natural disasters(MoNR, 2013).

Climate change directly threatens the achievement of the Millennium Development Goals (MDGs) especially those related to eliminating poverty and hunger. Food security - one of the most critical challenges facing Somalia - is compounded by the effects of climate change on agricultural production and the sustainable management of rangelands and other ecosystems. Climate change also has an impact on health, water availability, terrestrial biodiversity, coastal and marine resources, and the livestock sector.

The National Adaptation Programme of Action (NAPA) identifies three urgent areas of action and proposes adaptation measures. The participatory formulation process was led by the Ministry of National Resources for Federal Somalia with support from the Puntland and Somaliland authorities, the Least Developed Countries Fund, the United Nations Development Programme and stakeholders from Government and civil society(MoNR, 2013).

The national adaptation plan focuses on the following sectors:

- Water Resources;
- Agriculture and Food Security;
- Animal Husbandry, Grazing and Rangelands;
- Health;

- Marine and Coastal Resources;
- Biodiversity; and,
- Natural Disasters

2.1.1 Key Opportunities for Adaptation

- Enhancing governance, including government institutions, civil society organizations, CBOs and open, transparent, and accountable policy and processes, which can have a critical bearing on the way in which policies and institutions respond to the impact of climatic factors on the poor;
- Help building steps towards the mainstreaming of climate change issues into all national, regional, and sectoral planning processes, such as national strategy and nutrition security towards sustainable development;
- Government and institutional level with bottom-up approaches rooted in regional, national, and local knowledge;
- Empowering rural / pastoral communities so that they can be involved in surveys and feed in their knowledge to provide useful climate-effects information; they also need access to climate information;
- Carrying out vulnerability assessments so as to fully address the different dimensions and causes of food and nutrition or poverty;
- Providing access to good quality information about the impacts of climate change such as early warning systems and information distribution systems which can help to anticipate and prevent disasters.

2.3.0 Livestock Sector Development Strategy 2019

Livestock remains critical since the contribution to the economy and it is the largest sector that reaches 43 percent of the total GDP, particularly employment and livelihoods. And it has been devastated by the cyclic droughts and climate changes which recently weaken the sustainability of Livestock production, and it has been prepared and issued numerous strategies and policies for tackling recurrent droughts, shortage of water, and social unrest. The public service is very weak and that is advancing the poverty among Livestock holders. The sector has major vulnerability compared to other sectors. Challenges involved with the management of natural resources and lack of skills for creating value-added programs to the production of livestock increased the vulnerability of the lives of the people in this sector.

Though there were around 2 billion losses and damage to the livestock sector 2016/17, then there is reviving and recovery in terms of livestock number plus fodder production in the country.

Important stakeholders of the Livestock sector in Somalia both the Federal Government and Federal Member states made share vision by 2030 and their contributions are:

- Better livelihoods of the majority of the rural population by strengthening the sector's climate resilience and increasing incomes from livestock products,
- Improve the nutrition and food security of its people via an expanded supply of high-quality and hygienic animal proteins; and,
- Fuel more powerful economic growth via more efficient, inclusive, and environmentally sustainable livestock production and expanded value-adding processing.

Success in overcoming and leveraging the Livestock sector's restrictions, in which the Federal Government of Somalia needs a clear vision of the priority policy reforms and interventions necessitated to alleviate the most pressing issues, particularly, poverty reduction. Furthermore, on how it can support public and private investments, with strong, coordinated support from its development stakeholders. Milk and meat productivity has gradually increased to meet rising domestic demand in the country's metropolitan areas, aided by huge remittance inflows. Somalia also has a competitive edge in the export of live animals and animal products due to its closeness to Gulf markets and favorable customer preferences.

Among its primary operational objectives are:

- Protecting diversity and making the best use of existing animal resources is critical for both resilience and growth.
- Improving livestock industry management – Improving productivity, particularly in the rapidly expanding dairy, meat, and poultry farming subsectors is also critical.
- Ensure the safety and quality of live animals and livestock products on domestic and international markets – Food safety must be improved to protect consumers, reclaim lost export markets for live animals, and expand into new ones, including livestock products;
- Increasing livestock product processing – Long-term growth in the sector is dependent on increased value addition, as the current trajectory of increasing animal populations, supplying domestic and export markets with live animals, and minimal processing has reached its limit.
- Building public and private service and research institutions, as well as human capacity – Public and private investment in finding solutions to current and emerging problems is currently lacking, but it is required for the sector's resilience and long-term growth;

2.3.1 Veterinary Code (Somalia) 2016

Appropriate legislative and regulatory gear must be developed, adopted, implemented, and enforced. For public veterinary authorities to undertake their legal functions, enabling legislation is also required. And this is important and crucial to adopt measures toward the setting up of a livestock health and disease control framework for the implementation of Somali livestock, in full compliance with regional and global standards' recommendations and regulations.

National legislation should also include ancillary and civil laws that aid in its execution. Legislation should also permit the establishment of veterinary professional associations, the establishment of registration bodies, and the existence of private veterinary practice. Proposed legislation of the veterinary code is required to allow veterinary authorities to control animal movement and forcibly remove or demolish animals or products derived from them in the course of disease control or eradication practices.

The other important thing for the veterinary code regulates the registration and quality assurance of veterinary drugs should understand current regulatory requirements such as OIE standards and recommendations.

The Veterinary code developed by the ministry of livestock and forestry and rangeland is extremely valuable to all stakeholders in the livestock sector because it will provide them with the required legal and technical environment to ensure the efficient prevention and control of animal diseases, particularly those that are transboundary, and it will greatly contribute to international trade and export/import relations with trading partners.

2.3.2 Livestock relevant Policy Documents in Somalia

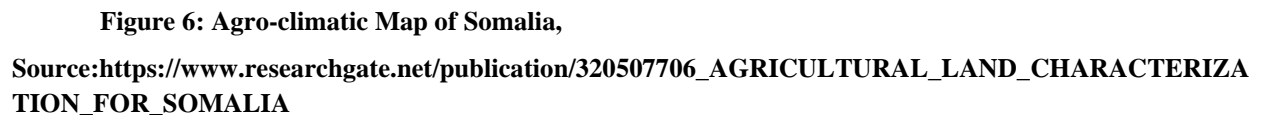
The country system was decentralized and composed six states and Banaadir Administration and each State Government requires developing policies for livestock and following are most important:

1. Livestock Policy in state level
2. Fodder strategy
3. Livestock Marketing strategy
4. Meat policy
5. Dairy Policy
6. Rangeland and pasture management strategy
7. Insect (locust) and parasite control strategy

8. National Agribusiness strategy
9. Transhumance Policy in state and Federal level
10. Hydraulic Policy in Federal and State level
11. Puntland animal welfare review
12. Quarantine act for Puntland
13. Livestock extension Policy (Puntland)

2.4 Agriculture Strategy Plan (2016-2020)

The document has many parts in which section has specific purpose and the main one is to be the guide for prioritization of the ministry of agriculture of Somalia in federal level, it classifying the responsibilities and how the ministry is engaged all the activities related to its mandate. The strategy has also attached numerous actions plans and indicators intended to be fulfilled during 5-year period from 2016 -2020.



The agriculture sector—including farming, livestock and fisheries which are the backbone of the Somali economy. The sector has a crucial role in ensuring food security, job creation, income generation and foreign exchange earnings. Moreover, the challenges of agriculture sector are:

- 33

- Poor agriculture infrastructure, drought, flooding, lack of agriculture inputs and markets, and lack of an enabling environment.
- Capacity limitations of the Ministry of Agriculture (MoA) with all other agricultural institutions
- Absence of critical policies, rules, regulations and legislative frameworks of the country

2.4.1 National Biodiversity Strategy and Action Plan (NBSAP) 2016-2025

Significance of the biodiversity is key to the various species, agriculture and forestry in Somalia. Therefore, the national strategy of Biodiversity is creating mutual understanding among the stakeholders of different administration levels of the country. The ecosystem is sustained collaboration among partners while each of them providing services and other life supporting activities. The inter-related biodiversity and economy has huge impact on the contributing watershed and nutrient cycle support to livestock and agriculture. The ecosystem goods and services (EGS) contribute essential energy such as charcoal and also improves resilience of drought and man-made disasters.

2.5. Draft Fishery Policy

This is a draft of fishery policy and it is incomplete but it is required to be completed soon for improvement and harmonization of fishery in Somalia and what this policy reads are as follow:

- This policy is intended to address the sector's challenges and emerging issues. As well as to link with cross-cutting policies, plans, and tasks of national and regional bodies where they affect or interact with fisheries.
- This policy lays out the priority actions that the MoFMR and its stakeholders; to make the best use of the resources that it has available, which are limited by human resource issues, finance, and logistics.
- This policy also aims to be realistic, pinpointing objectives that can be achieved relatively quickly and those that will take a lot of time to develop and implement.

The key challenges of the fishery Somalia include:

- Human capital challenge
- Institutional challenge specifically policies, strategies and regulations
- Finance challenge
- And lacking infrastructure and public private partnership

2.5.1 Marine Fishery Policy Paper

This policy paper discusses the current state of Somalia's fisheries and the consequences of illegal, unreported, and unregulated (IUU) fishing. For more than thirty years, the fisheries sector has been overlooked, with civil war destroying fishing communities and illegal fishing and also badly devastated.

Again this paper contributes to the debate on policy options for rehabilitating the sector and aims to draw policymakers' attention to recommendations on developing a strategy for sustainable fisheries management and eradicating illegal fishing.

Factors that appear to have a negative impact on the long-term development of Somalia's fisheries sector are prevalent in many African countries.

Open-access fisheries, insufficient governance capacity at the national and local levels, poor management of offshore resources, and insufficient financial investment in infrastructure are examples. These factors have resulted in an uncontrolled increase in

fishing pressure, an increased risk of overfishing, and widespread illegal, unreported, and unregulated (IUU) fishing in Somalia and Somaliland.

Fisheries resources have yet to realize their full potential. Many years of political insecurity have stymied progress made in the years following independence, as well as diverted attention away from fisheries development. With the gradual restoration of peace and stability, the fisheries sector could contribute to food security, the provision of nutritious food, employment, and foreign exchange earnings.



Figure 8: Fishery development zones of Somalia,

Source: Somalia National Biodiversity plan

2.6. Draft National Gender Policy of Somalia

This policy aims to generate a framework to guide the methodology of developing legislation, policymaking, execution, and initiatives that will encourage equal rights and opportunities for men and women in all aspects of life.

The National Gender Policy was created at a time when Somalia was emerging from a destructive civil war that had destroyed the country's social, political, and economic structures. Men and women have been affected differently by the conflict. For example, both women and men have lost state protection, loved ones, livelihoods, and access to social services.

The negative effects of the conflict, Somali women became the primary income providers for their families, taking on new roles and responsibilities to ensure their family members' basic survival. Women, on the other hand, are excluded from decision-making.

Tackling gender discrimination is a basic requirement for post-conflict Somalia's recovery, peace, and sustainable development.

2.6.1 UN Somalia Gender Equality Strategy 2018-2020

The Government of Somalia is committed to advancing gender equality and women's rights empowerment. The Federal Constitution emphasizes women's equality with men and emphasizes women's effective participation in all aspects of life.

The FGS decided to adopt a National Gender Policy to advance gender mainstreaming in its peace and state-building processes. Gender mainstreaming was adopted as a cross-cutting theme in the 2017-2020 National Development Plan. The FGS promotes targeted interventions to help improve the situation. As a result, a separate section on gender mainstreaming was added to address women's rights, protection, and participation.

Gender mainstreaming, as well as women's protection and inclusion, are essential components of the 2017 New Partnership Agreement.

This plan takes into consideration the obstacles that Somalia faces, such as the vulnerability of the peace and political environment, as well as the country's susceptibility to drought and other natural disasters. As well as changing realities, such as the growing participation of Somali women in politics and decision-making. The strategy reacts to existing policies and encapsulates the importance of gender mainstreaming in aid execution. UN frameworks for cooperation It also includes a framework and guidelines for boosting and instituting gender mainstreaming.

It means enhancing accountability for achieving gender equality. It provides practical tools and guidance on how to accomplish this. The implementation plan of this Strategy provides in detail the actions, actors, and timetable for achieving results and meeting the Strategy's objectives and goals.

3.0 Main Lessons from previous Projects & Phase 1

The Somalia context is very volatile, complex and high risk, but, nevertheless, it is noted that IDDRSI was highly appropriate for, and suited to, the Somalia context, to address the frequent droughts to save lives.

3.1 Key findings

1. Volatile market functionality
2. Poor quality /limited quantity of service providers
3. Security issues related to the conflict
4. general operational issues, , technology, security and access
5. Minimizing project execution delays for the implementation of the programs in Somalia
6. Design, implementation and management of development projects should be flexible according to the plan, geographical and inadequate skills of the local contractors.
7. Share benefits and roles for all member states, and Federal Government should be clear to eliminate conflicts.
8. Support for impacts of community ownership, capacity building, Public-private partnership (PPP) framework should be sustainable in project outcomes.
9. Full participation of the Government, affected community and other stakeholders are required in the activities of projects to obtain ownership, and sustainability of the project benefits.
10. Negative effects of project sustainability and ownership should be eliminated as far as possible by performing consultation with beneficiaries and carrying out proper monitoring & evaluation activities in the project period as well as collecting enough baseline data.

3.2 Political Context

Several broader risk factors were addressed by respondents in relation the political context and the impact this has on DRSL Project. The first of these has been the fact that, due to the weak collaboration between IGAD and its implanting partners, and that the role of government in managing the project has been not functioning optimally and underfunded.

3.3 Monitoring Challenges

Limited field presence may affect progress oversight in cases of fraud or protection issues as well in ensuring programme integrity.

Climate change creates risks such as:

- Unpredictable weather patterns, including rainfall
- Water scarcity –
- Flooding
- Droughts - Short rainy seasons and prolonged dry spells during rainy season
- Drying up of rivers and water sources- dams
- Low fish supplies
- Heat waves
- Landslides
- Increased prevalence of water-borne diseases
- Declining flora and fauna

3.4 Effects of Climate Change on Agriculture and Livelihoods

Somalia is settling in fragile ecosystems, agricultural productivity is falling, there is low fish production, people's livelihoods are undermined, and environmental resources are reducing rapidly.

3.5 Impacts of Climate Change

The impacts of climate change on agriculture and livelihoods are visible across the country:

- Short growing season forces farmers to switch to more expensive hybrid crops
- Frequent droughts and floods result in eroding assets and leave people more vulnerable to disaster
- Diminished crop growth or yield production
- Desertification and erosion due to dust storms.
- The effects on the agriculture sector are dependent on a wide range of factors: -
- Type of crop grown
- Local biological endowments such as soil content and biodiversity
- Extent of knowledge and awareness of expected changes in climate
- Extent of support from government and other private agencies
- Farming practices

4.0 Context & Generalities

4.1 Drought Resilience and Sustainable Livelihood Program (DRSLP) PHASE II Somalia

The Federal Government of Somalia (FGS) received funding from the African Development Bank Group (AfDB) toward the cost of implementing the Drought Resilience and Sustainable Livelihoods Program (DRSLP II) Somalia. The project was prepared in 2014 by the African Development Bank and the Government of Somalia. The DRSLP Project II for Somalia is the first investment project that the AfDB to undertake since the collapse of the central government in Somalia in 1991. Within the framework of its role as Third Party, the Intergovernmental Authority on Development (IGAD), in consultation with the Ministry of Livestock, Forestry and Range (MoLFR) of the Federal Government of Somalia embarked on selection process of the Implementing Agency that will implement the project. In this connection, IGAD and representatives of the MoLFR undertook the selection of implementing Agency during the third week of April 2019. Although there were two previously selected implementing Agency (E & Y and IOM) however, the Save the Children International (SCI) was selected in March 2020 as the final implementing agency for the DRSLP project, but, Covid-19 disrupted the implementation plans due to the associated restrictions.

4.1.1 Merits of the DRSLPII

- Addressing the root cause, the project addresses the most fundamental constraints that agriculture and pastoralist communities face.
- Multi sectoral- the most economic development means of the country are covered under this project including Livestock, Fishery, Agriculture, Water, Transportation and Institutional building.

4.1.2 Demerits of the DRSLPII

- **Unclear implementation framework-** the implementation modality and the roles of the different levels of stakeholders are not clear, for instance the roles of the line governmental institutions are not clear particularly in the state level. Therefore, the roles and responsibilities of the all actors of the project should be defined.
- **Poor coordination-** the coordination of the project is not strong enough both between the components of the project and between the implementing agencies and the funders.
- **Less government role-** even though the main objective of IGAD is to support governmental institutions, in this project the governmental institutions were not given much role in this important project implementation. The role of the government was limited to monitoring and observer role.

- Therefore, in the upcoming projects the government institutions must be given a role in the implementation of the project at all stages.
- **Less Community Engagement**-Community engagement is important for the smooth flow of the project and the steward of ownership. Such developmental projects should be led by community through community participatory approach. In this project communities particularly village level was not engaged much.
- **Lack of National and state institutional capacity** building -in Puntland and Somaliland, the contributions to the strength of the government institutional capacity is negligible. Therefore, the project implementing teams have to mastermind the building of a strong institutional foundation for a gradual transition of the implementation capacity.
- **Weak M & E Mechanisms**- the monitoring and evaluation mechanisms were not much enough to quickly react to the foreseen challenges. There was no standby monitoring and evaluation teams visiting the ongoing works during the implementation.
- **Weak Community Grievance Mechanisms**- it's important to employ mechanisms for the community complaints. For instance, if the community are complaining about the contractors, there should be agreed line of reporting to address. The project lacked this mechanism
- **Lack of Safeguards Arrangements**- the Social and Environmental Management frameworks were not given priority as important requirement to comply.

4.1.3 Location of the project intervention area

Summary of project infrastructure and intervention areas in Somalia

Table 5: Summary of project infrastructure

State	Region	Target Location
Puntland	Bari, North Mudug, Nugaal	Rako, Dangoroyo, Xubeera (badhan), Burtinle, dhumay Jalam, waciye, Carmo-qardho, Ufeyn, Gubato, Caano-Yaskax, Xalin, Libaxar- Qardho, Nugaal-gibin, Dharoor Ceeldheere, Dhumay, Isku-shuban, Cawsane, Rabcad-xiingalool, Garoowe, Goldob, Dhahar, Salaama, Libaaxo, Barookhle, Jidad, Gumar,

		Haylaan, Hadaaftimo, Rad, Jariiban, Godob-jiran, Caluula Lafogoray, Saxo,
Somaliland	Togdheer, Awdal, Waqooyi Galbeed, Sool	Raydab-khaadumo, Balidhiig-Qoryaale, Coodanle, Widhwidh, Burco, Shimibiralay, Xariirad, Beerato, Dhoqoshay, Durukhsi Xaaxi, Saylac, Saax dheer, Oodweyne, Sadexgeed, Xaliimaale Fardaha, Xarrirad, Qolujeed, Dilla, Lawyocado, Lughaya, Tokhoshi, Buuhoodle, Faraweyne, Saylabari, Bali-gubadle, Dharkeyn, Yagoori, Bali-cabane, OOG, Ceel gaal, Horufadhi, Laascaanood, Boorame, Wajaale, Habar-heshay
Southwest	Bay, Bakool	Maryangubay, Diinsoor, Bakool, Buur-xakaba, Baydhabo
Galmudug	Galgaduud, South Mudug	Laanwaale, Gelinsoor, Balanbale, Caabudwaaq, Dhuusamareeb,
Hirshabelle	Hiiraan, Shabelle Dhexe	Matabaan, Deefow, Bacad, Xoday, Waggle,
Jubaland	Gedo, Lower juba, region	Bohol, Qooqaani, Dhoobaley, Garas, Dollow-Soomaaliya,
Banaadir region Administration	Mogadishu	Mogadishu (Capcity building of Federal Ministerial Level)

4.2 Physical Setting

Rangelands (mainly grass and herbs, but also including wood and bush-lands) are the most important ecosystem type in Somalia, as they are the natural resources is the basis for pastoralism. In lower 9 rainfall areas (below 400 mm) these rangelands are dominated by annual grasses and herbs. Such rangelands “bloom” after rain and constitute very important wet season grazing for pastoralist livestock herds. As rainfall is unevenly distributed spatially and temporally, pastoralists here move to make optimal use of such rangelands, which can be very productive until the set seed and die. Then the pastoralists’ herds move to their dry season grazing areas. Perennial grasses are found in rainfall areas above 400 mm, though many such types of grassland are degraded and replaced by annuals. Critical to the sustainability of such ecosystems is allowing the grasses and herbs to set seed for the next season and not to over graze them beyond their ability to regenerate. Perennial grassland areas are often associated with open wood and bush lands, and constitute important dry season and reserved grazing area – so critical to the success of pastoralism(MoFMR, 2014).

The rangelands are dominated by annual (in the drier areas) and perennial (in the wetter hill areas and along some of the rivers) grasses and herbs. All these grass and herb species are natural and are the foundation for the livestock industry of Somalia which is the basis for the Somali’ livelihoods, as well as being the dominant export. Very little grass planting takes place, though this does happen in some of the enclosures. What grass planting does take place is from locally available wild collected sources(IUCN, 2007).

4.3 Socio-demographic characteristics of the study area

4.3.1 Population Growth of Somalia

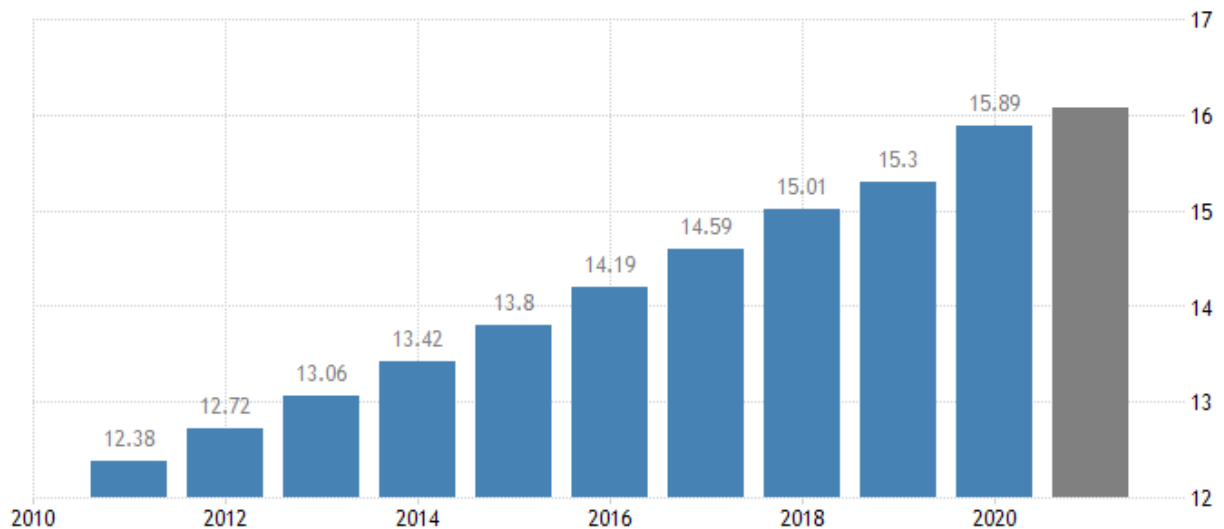


Figure 9: Population growth of Somalia,

Source: <https://tradingeconomics.com/somalia/population>

4.4 Macro-economic Framework

The macroeconomic policy objectives of NDP9 are to promote economic growth in an environment of low inflation, sustainable fiscal and current account balances, and healthy foreign exchange reserves. The staffs of the IMF and World Bank consider these objectives to be broadly appropriate. Macroeconomic stability and higher and more inclusive growth are preconditions for reducing poverty. Fiscal sustainability requires remaining current on debt service falling due after the HIPC Decision Point and implies avoiding any new debt before reaching the Completion Point. Somalia's de facto dollarization largely ensures price stability (WORLD-BANK, 2020).

However, building and maintaining a healthy level of foreign reserves by may prove a more challenging policy objective, given the current constrained macroeconomic environment and the authorities' lack of monetary and exchange rate policies and instruments. Additionally, the role of the financial sector development could be expanded upon to explain its potential to catalyze growth.

4.5 Beneficiaries of the Project

The proposed national program will have a target beneficiary of pastoral and agropastoral communities living in Somaliland, Putland and South Central Somalia. The main IGA clusters are:

1. Tuurdibi, Cluster
2. Dikhil Cluster in Awdal, Waqooyi galbeed,
3. Cluster 3 in Gedo region and Southwest state of Somalia
4. Cluster 7 around Hirshabelle borders with Ethiopia

The specific target locations are shown in the below table. The program aims to benefit 350,000 vulnerable households which make up a population of 2.1 million. The beneficiaries include men, women and youth vulnerable to recurrent droughts whose lives and livelihoods are being affected. Gender equity is considered as the main pillar of the project intervention and project activities aim to benefit rural households regardless of disaggregating by gender. Hence, 70% of the rural communities who are expected to benefit from these interventions are female and youth. In particular, members of the pastoralist and agropastoral communities vulnerable to climate change and climate variability will be given utmost priority.

State	Region	Target Location
Puntland	Bari, North Mudug, Nugaal	Rako, Dangoroyo, Xubeera (badhan), Burtinle, dhumay Jalam, waciye, Carmo-qardho, Ufeyn, Gubato, Caano-Yaskax, Xalin, Libaxar-Qardho, Nugaal-gibin, Dharoor Ceeldheere, Dhumay, Isku-shuban, Cawsane, Rabcad-xiingalool, Garoowe, Goldob, Dhahar, Salaama, Libaaxo, Barookhle, Jidad, Gumar, Haylaan, Hadaaftimo, Rad, Jariiban, Godob-jiran, Caluula Lafogoray, Saxo,
Somaliland	Togdheer, Awdal, Waqooyi Galbeed, Sool	Raydab-khaadumo, Balidhiig-Qoryaale, Coodanle, Widhwidh, Burco, Shimibiralay, Xariirad, Beerato, Dhoqoshay, Durukhsi Xaaxi, Saylac, Saax dheer, Oodweyne, Sadexgeed, Xaliimaale Fardaha, Xarrirad, Qolujeed, Dilla, Lawyocado, Lughaya, Tokhoshi, Buuhoodle, Faraweyne, Saylabari, Bali-gubadle, Dharkeyn, Yagoori, Bali-cabane, OOG, Ceel gaal, Horufadhi, Laascaanood, Boorame, Wajaale, Habar-heshay
Southwest	Bay, Bakool	Maryangubay, Diinsoor, Bakool,

		Buur-xakaba, Baydhabo
Galmudug	Galgaduud, South Mudug	Laanwaale, Gelinsoor, Balanbale, Caabudwaaq, Dhuusamareeb,
Hirshabelle	Hiiraan, Shabelle Dhexe	Matabaan, Deefow, Bacad, Xoday, Waggie,
Jubaland	Gedo, Lower juba, region	Bohol, Qooqaani, Dhoobaley, Garas, Dollow-Soomaaliya,
Banaadir region Administration	Mogadishu	Mogadishu (Capcity building of Federal Ministerial Level)

5.0 Political & Institutional Framework for Natural Resource Management

The Federal Ministry of Livestock, Range and forest has been responsible for coordinating and spearheading the formulation and implementation of the National strategies and Policies relevant to the context. The Ministry of Agriculture and irrigation ensures to establish National Food Security and Nutrition Policies as demonstrated during the 2018 Food Security and Agriculture Sector Development Conference. The Goal and Objectives of the National food security Policy shall be achieved through the active participation of various stakeholders including other government institution, the private sector, and development partners.

This policy recognizes different sectoral and sub-sectoral policies, strategies, and National Plans and the institutions managing them such as the National Development Plan 9 (2020-2024); Recovery and Resilience Framework, National Disaster Risk Reduction Strategy, Livestock Sector Development Strategy, the Agriculture Sector Development Strategy, National fertilizer Policy, National Irrigation Policy and other policies, strategies and plans/programs as they are important in achieving policy objectives(SOMALI-NDP, 2020).

The Ministries of Agriculture and irrigation, ministry of Livestock, Range and Forest, Ministry of Fisheries and Marine Resources, Ministry of Health, Ministry of Humanitarian Affairs and Disaster Management, are the lead ministries in food security policy. Their mandate is to support, promote and guide the production of crops, livestock and fish so as to ensure the improved quality and quantity of agricultural produce and products for domestic consumption, nutrition, food security and exports. The specific mandate of the MOH is to improve the quality of health services and nutrition with the overall goal of reducing morbidity and mortality. The production ministries and MoH are also promoting diet diversification as well as other food-based strategies for a healthy and productive population.

The other Federal Government stakeholders engaged in food security includes Ministry of Health and Human Services, Ministry of Humanitarian Affairs and Disaster Management, Ministry of Planning, Investment and Economic Development (MoPIED), Ministry of Education, Culture and Higher Education, Ministry of Trade and Industries, Chamber of Commerce. Other key Government Institutions include Federal Member State Ministries of Agriculture, Ministry of livestock, and Ministry of Fisheries. NDP-9 (2020-2024) has recommended the establishment of a national (inter-ministerial) Commission responsible for the coordination of the food security agenda across government(SOMALI-NDP, 2020).

This is in line with the recommendations made by the Global Strategic Framework for Food Security which states that:

- a. States should set up or strengthen inter-ministerial mechanisms responsible for national food security and nutrition strategies, policies and programmes;
- b. Those mechanisms should ideally be formed and coordinated at a high level of government, consolidated in national law, and involve representatives from ministries or national agencies from all areas related to food security and nutrition, including agriculture, social protection, development, health, infrastructure, education, finance, industry, and technology (CFS, 2021).

The MOAI should take the lead in developing key milestones for the implementation of this national policy until the Federal Government through its “Food and Nutrition Committee” of the Somali Federal Parliament establishes the “Commission”.

The MOAI shall be developed Memorandum of understanding (MoU) to establish temporary organizational structure and functions, involving the above key ministries and Member State Ministries; elaborate the Terms of Reference including a work plan from submission of the draft national food security policy for endorsement to the implementation phase.

The consortium of national ministries and ministries from Member States will need to agree in developing institutional responsibly for each of the Policy Measures described under the Policy Document. A national Food Security Strategic Plan or Action Plan will have to be developed for turning those Policy Measures into Strategic Objectives and actions(SOMALI-NDP, 2020).

5.1 Environmental protection and sustainable development

The growing population in recent decades has caused increasing demands of food & traditional shelters, wood for fuel for family daily use leading to serious crisis of the exploitation, forest devastation and environmental degradation and pollution. The traditional shelters and fuels

such as wood, sticks for building traditional shelters as well as coal for cooking are becoming increasingly scarce, and expensive, and can greatly contribute to degradation and deforestation. The increasing settlements pose a threat to the environment due to destruction of trees, digging berkedes (water catchments). The increasing settlements also destroy the environment due to plastic bottles; and plastic bags being dumped into the potential grazing land, agriculture land and water sources. In recent years there has been increasing in the number of factories and companies such as water purifiers and bottles. The industries have dumped rubbish (plastic bags & bottles) into environment, causing pollution. Landfills also pollute the local environment, including the water and the soil in agriculture areas.

Food insecurity was also linked to regional poverty and pastoralists are the poorest affected by recurrent droughts, as a result of inadequate of forage fodder for livestock because of environmental degradation.

5.2 Agricultural Development and Valuation of Natural Resources

Agriculture is a major contributor to Somalia's GDP. The crop sub-sector is the second largest contributor to GDP and exports, after livestock, which as estimated contributes to 20 percent to the gross domestic product (GDP), and also 95 percent of the variation in GDP is explained by agriculture sector (Rapsomanikis, 2015). It is also estimated between 30-50 percent of the country's cereals requirements of the country is domestic produce. According to FAO, small-holder farming accounts for 80 percent of total crop output and 70 percent of marketed agricultural produce.

However, the agriculture sector is still characterized by low productivity due to the use of traditional methods, such as inappropriate crop spacing, furrow planting and crop rotation. In addition, low productivity is attributed to inadequate access to finance, overdependence on rain-fed agriculture despite recurring droughts, poor and lack of irrigation infrastructure, poor quality of seeds, non-existent of extension services and researches. The general insecurity, especially in the southern parts of the country where crop production is the main economic activity, also remains a major challenge.

Over the past three decades, the volume of cereal production declined by almost 60 percent from its 1989 peak (SOMALI-NDP, 2020). With an estimated 8.1 million hectares of fertile lands around the Shabelle and Juba rivers and surrounding regions, farming has the potential not only to cover domestic food demand, but also to play an important role in the export market. Due to lack of technologies, inputs, and other factors, production and productivity have remained far below the potential and the regional average yields (SOMALI-NDP, 2020). The commercial small- and medium-scale irrigated farms produce commercial crops such as

banana, lemon, grapefruit, mango, papaya, and other vegetables and fruits located alongside the two main rivers (Shabelle and Juba) whereas cereal crops such as sorghum and maize and cowpea are produced in rain fed areas(WOLRDBANK-FAO, 2018).

Although some recovery has been made during the past two decades, the agriculture sector is still characterized by low productivity due to recurring droughts, floods, collapse of the country's technical memories (agricultural research centers and training extension services) infrastructure and pest and disease infestation. Other constraints in the agriculture sector include inadequate access to agricultural inputs (mainly, fertilizer, improved seeds, and pesticides), lack of access to credit by smallholders, poor irrigation infrastructure, the lack of application of improved agricultural production practices(WOLRDBANK-FAO, 2018).

The Federal Government is committed to create an enabling environment for private sector to participate in production and commercial activities; for example, in the areas of fertilizer, seed, agricultural & agro-processing machinery, and pesticide importation and distribution. There is great potential that if appropriately exploited, will significantly improve agricultural production and increase its contribution to the national economy and household food security. This will also improve efficient use of the public resources, accelerate diversification, enhance domestic competitiveness and effectively contribute to national development by ensuring national food security, poverty reduction and improving the standards of living of Somali population(CPP, 2019).

Agro-ecological areas of the most Somali regions are characterized by rain-fed agriculture and tremendous climate events drought and sporadic dry spells which increase the vulnerability of the poor- rural people. The agriculture sector is very important for Somalia as its population of over 60% rely on it. However, during the past two decades, the impacts of the droughts and floods have been addressed as a key disaster affecting the country. While implemented programs has been mainly short term based aimed at humanitarian lifesaving efforts(MoNR, 2013).

In in order to effectively and sustainably address the food and natural resource crises in Somalia, it is vital to tackle the effects of climate change as one of the main root causes of food and livelihood crises. In addition, it is necessary to structure and implement long-term developmental and policy strategies that promote the adaptation of the climate change and its effects.

In Agriculture areas, food availability differed markedly the different contexts of the feasibility study. In the intervention areas, those households with arable land have not been able to develop a better cropping system; use of seeds, and the cultivation of cereal crops and vegetables for

both consumption and market. Market access through the development of road infrastructure has not been improved by DDRSL. Cattle and poultry rearing and fish culture are important elements in livelihood (WORLD-BANK, 2020).

There are some Constraints to agriculture developments in Somalia include poor irrigation infrastructure, water shortage due to the changing weather pattern, and local salinity related to recurrent drought conditions and climate change effects. In addition, the Somalia civil war was also caused the collapse of the main crop production such as banana, limes, rice, cotton and sugarcane. There is also a lack of agricultural inputs and services due to lack of availability and access basic farm inputs and appropriate technologies.

5.2.1 Priorities for Agriculture and Rural Development

The priorities for assisting national administrations in the area of agriculture and rural development depend mainly on the specific context of each state.

In the field of ARD, the following main priorities can be noticed:

- Strengthening of administrative capacity of the agricultural administrations, in particular in the area of agricultural policy formulation, analysis, implementation and control.
- Building up of administrative capacity for future implementation of potential rural development measures (SHALABY, 2011).
- Rehabilitation of agriculture infrastructure, research and extension services
- Rehabilitation of feeder roads and transportation infrastructure with marketing options
- Seed quality production with other basic farm inputs, pest control and building agriculture policy and regulations
- Developing agriculture credit and agro business funding

5.3 Land management

There is a worldwide need to build understanding of the land management paradigm and for institutional development to establish sustainable national concepts. Land management in arid-semi-arid areas can benefit greatly from the application of agro-meteorological methods. The country's land management practices need to preserve result in healthy, natural systems. Management activities include restoration efforts of pasture lands and woody encroachment, forest management of agro-silvo-pastoral zones, and control of several invasive, exotic (non-native) plant species. This includes formation and adoption of a policy on land development, and approach that combines the land administration/land registration function with topographic mapping.

Overall Conceptual Approach

Land Policy:

- Determining values, objectives and the legal framework in relation to management of land as a legal, economic and physical object
- Basis for building sound land-administration infrastructure

Cadastral systems:

- Identification of land parcels and securing land rights
- Facilitation of land registration, land valuation, and land use control
- Underpinning sound land administration

Land Management:

- Management of processes whereby land resources are placed to good effect
- Facilitation of economic, social and environmental sustainability
- Underpinning and implementation of sound land policies

6.0 Exploitation of natural resources**6.1 The potential of water resources**

Somalia is highly vulnerable to climate change-related impacts such as drought, extreme flooding, pests (locust), and sudden disease outbreaks, changes of rainfall patterns, and sea level rise. These are serious concerns as Somalia's economy largely depends on its rural natural resources. Furthermore, over 60% of the population is rural-based engaged in farming, agro-pastoralism and pastoralism and therefore, highly dependent on favorable climatic conditions for their food and nutrition security(IUCN, 2007).

6.1.1 Impacts of Climate Change

The major impacts of climate change in Somalia, and can be summarized as follows:

- Increased water scarcity and reduced water quality – leading to increased hardship on rural food and nutrition security. Because Somalia's annual renewable freshwater has declined with a prediction of 363m³ decline in 2025. Once the annual renewable freshwater falls below 1,000m³/year water scarcity is a reality and will compromise human health and well-being as well as the economic development of the country
- Increased drought frequency, increased temperatures, and changes in precipitation patterns – leading to degradation of agricultural lands, soils and terraces;

- Deteriorated natural habitats and biodiversity – leading to expansion of desertification; Somalia's biodiversity (including more than 3,000 plant species, with remarkable plant endemism, and 1,332 animal species) spread across five main eco-regions are under extensive threats, especially from the war economy involving insurgencies. This ends up exerting massive pressure on the forest resource, contributing to desertification and the destruction of grazing and arable land. This level of emissions from biomass combustion fuels, estimated at 0.2 tons of CO₂-equivalent per capita per year in Somalia, can also have significant health impacts for the populations.
- Reduced agricultural productivity – leading to increased food and nutrition insecurity and reduced income generating activities;
- Increased sea levels – leading to deterioration of erosion, infrastructure damage, and seawater groundwater intrusion. Seawater may have invaded porous rocks, and contaminated underground water and the long-term effects of this on drainage and water systems are still unknown. The Tsunami event brought in a lot of aid, however it is difficult to assess the impact of this support(IUCN, 2007).
- Increased climatic variability – leading to the possibility of spread and growth of water borne diseases.

6.2 Soil Suitability for Cultivation

The country's upland soils are essentially of "low inherent fertility". Most of these soils are moderately leached sand, loams and clays. Their texture and structure vary considerably and hence their physical properties. However, the soils occurring in most Riverine areas are characterized by a dark color in the top 30 cm of the soil profile. Black color is chiefly on account of their high organic matter content (humus). The clay soils had supported crop production on a sustainable basis for several decades without having to apply external inorganic fertilizers on account of their organic matter and high nutrient pool. There is currently an increasing trend to erosion and land degradation due to low fertility status for crop production. The variation in soil fertility status of both upland and lowland soils has to be viewed and approached cautiously with different land management practices applied if production is to be sustainable(Chude, 2015).

Sustainability in food production would entail continuity of food production given that all limiting factors are mitigated. In agriculture, many factors contribute to proper and increased food production. Such factors include land in its broadest sense (soil, water, climate and vegetation), financial and human resources. It is understood that given all factors except water are present in abundance, food production is however not possible in the absence of water - one of the components of land resources. Sustainability implies that economic motivation and

maintenance of land resources encourages the farmer to produce on a continuing basis and that his work allows him to improve his standard of living.

6.2.1 Summarized Current Challenges/Gaps for building Food and Nutrition Agriculture programming

1. Recurrent droughts
2. Land degradation and soil erosion
3. Small amount of seasonal rains
4. Lack of funding for supporting in government budget
5. lack of agricultural mechanizations
6. Dependent on for supporting food and nutrition
7. lack of decentralization in Multisectoral coordination, governance, and planning
8. Lack of harmonization of existing frameworks (Policies, strategies)

6.3 Diagnosis of Crop Production

The impacts of changing climate are reducing the capacity of natural resources (biodiversity, soil and water) to sustain the demand for food for the world's increasing population (FAO, 2009). Food security and changing climate are thus interconnected barriers that need to be addressed simultaneously. Increasing resource efficiency in agriculture and building resilience to climate risks are the key actions for undertaking these challenges.

This entails a significant development for agriculture and food systems, with concentrated action and coordinated involvement of all stakeholders on a long-term perspective. For this concern, CSA is an integrated approach that helps guide actions and develops agricultural strategies to efficiently support development and ensure food security under the threat of climate change. It was highlighted as expressed by FAO at the 2010, The Hague Conference on Agriculture, Food Security and Climate Change (FAO-CGIAR, 2010).

6.3.1 Climate Smart Agriculture

CSA is composed of three main pillars:

1. Sustainably increasing agricultural productivity and incomes;
2. Adapting and building resilience to climate change;
3. Reducing and/or removing Greenhouse Gases (GHG) emissions, where possible. More specifically, CSA aims to achieve food security, climate change adaptation and mitigation

Crop yields are principally limited by the low and highly variable rainfall, both between and within seasons. This is being aggravated by the changing climate. The length of rainfall period is being reduced, as it is usually commencing later and finishing earlier. The declining trend of soil fertility also restricts crop production, as the farming practices do not adequately restore nutrients. This loss of soil fertility is also linked to a decline in soil organic matter content, resulting in low soil water holding capacity, poor water infiltration rates, thus limiting the availability of both water and nutrients to the crop plants. There is also evidence which indicate the temperatures are increasing, leading to higher rates of evapotranspiration and heat stress to crops, further lowering their yield potential.

The declining production in Somalia is leading to food and nutrition insecurity, and poverty. In order to address these identified problems, is required to establish effective research institute and extension system anchoring with policies and strategies to attain quality seeds, drought resistant, early maturing and heat tolerant crop species and varieties. The potential crops need to be technologically improved are sorghum, maize and sesame. Accordingly, funds for research, trainings and extension services are challenges.

Market challenges characterized by short term seasonal over supply of farm produce commodities resulting in price drop. The most farmers are lacking adequate storage facilities for their farm production; they drop immediately local farm produce to the markets.

There's high dependence on imports of food crops. The government has not clear policy and strategy for controlling imports of agriculture commodities and or for increasing local production in agriculture.

6.4 Livestock & animal production sectors

The livestock sector is the largest sector of the economy, the largest employer in rural areas with nomadic cultures, and the main driver of exports. The Livestock sector is the source of livelihood for pastoralists, contributes to Government revenues, and provides employment to a wide range of professionals and other service providers. According to NDP 2017-2019, the sector provides job opportunities for over 55% of the total labor force, plus indirect employment for another large segment of the labor force along the livestock value chains. The economic contribution of livestock production surpasses crop production and accounts more than 60% of the gross domestic product (GDP) and about three-fifths of foreign exchange earnings, while crop production contributes less than 20% of the GDP(FG-SOMALIA, 2016).

Pastoralism and livestock keeping is the mainstay of peoples' livelihoods and security, both in terms of daily subsistence and as the main source of export earnings. But greater awareness about, integration and coordination of pastoralist activities is needed. Goats and sheep are the most numerous (14 million in 1997 compared with 35 million in 1988), while more than 5 million cattle and 6 million camels are kept (UN 1998). The Somali pastoralists are knowledgeable land and resource managers with detailed time-tested knowledge about the importance of their natural resources as the basis for livestock management and their own sustenance. Knowledge is both general, but also gender specific depending on the roles of men and women in land use management. This is complemented by the many Somali customary institutions which are the basis for the management of their lands and lives. Such institutions are the social foundations for sound land use planning in the country, and to be able to better adapt to future pressures. For example, different clans have put in place resource sharing techniques for both fodder and water.

During periods of drought, competition increases and conflicts may arise, however it was noted that the Somalis are very competent in using traditional conflict resolution techniques. Livestock will continue to be the mainstay of rural people's livelihood strategies in Somalia. Pastoralism has proved to be the best way for rural people to secure their livelihoods while maintaining fragile arid and semi-arid ecosystems which ensures that biodiversity and natural resource use is both sustainable and integrated into land use planning and development. Access to, and use of Somalia's wet and dry season rangeland areas are key to the success (or not) of pastoralism. The Keyn forest in Somaliland illustrates this well (Box 2, (Barrow et al. 2002; Barrow 1998). Compared with other nomadic livestock systems, that of Somalia is very market-oriented. Approximately 2.5 million animals are exported each year with livestock exports (including raw hides and skins) representing about 40% of GDP and 65% of foreign currency earnings (CIA 2005). Verifiable data concerning the livestock and agricultural sectors is difficult to find, livestock exports from Somaliland in 1997 amounted to US\$121 million, or about 40% of gross domestic product.

Livestock exports, especially sheep, increase sharply during January and February, which coincides approximately with the Haj (USAID/FEWS 2003). This places temporal stress on localized grazing and watering points near main ports, as well as conflict over access rights. Perturbed by the export bans placed on Somalia by countries like Saudi Arabia, the export of live and slaughtered animals is also hampered by the 17 collapse of the public veterinary system and the absence of an animal health surveillance system in particular. Since the Saudi ban, the sector has been badly affected, and black markets flourish with the greatest importers being Yemen and the Arab Emirates.

The low productivity of Livestock contributed to the vulnerability of the effects of drought and problems. This linked to the diminished output and which made extreme poverty specifically affected pastoralist and agro-pastoralist communities. The impact of recurrent droughts increases the livestock productivity consequences. And brought the poorest people among the pastoral community. Livestock productivity can be shaped by clear policies and regulations which is being produced.

An increase in livestock production is required to invest broadly, in terms of supporting finance, feed, treatment, and vaccination input to all livestock owners; and to develop local breeds through increasing production.

6.4.1 Value addition of livestock

The value addition of certain species is to be increased, for example, Somalia has a huge number of dairy camels, which hopefully exist that there are ongoing projects trying to achieve sufficient diversification of value chain in milk and hides/skin. Value addition of milk and meat are generating employment opportunities for middle-aged people. Sales of raw milk in cities of Somalia are expanding due to large demand from elderly people and children's nourishment. Although the milk has a particular importance to Somalis, but its quality and productivity are low the decline in milk and meat yields production contributed by Low-level skills of breeding practices and genetic factors. The poor hygiene, sanitation in milk quality standard, water and fodder shortage also decreased the quality and livestock production/productivity. However, there are huge important opportunities for value addition of milk (milk powder and packaged milk). Somalia imports dairy products up to the US \$82 million yearly, and the scale of the market is rising each year due to the population of towns increase. (SOMALI-NDP, 2020)

Moreover, several technical steps are required to improve and increase livestock production chain particularly the value chain of milk from both dairy camel and cattle through lowering the cost, delivering faster in the market; supplying wind and solar power for cold chain purpose of the milk and meat are a great opportunity to livestock herders. The other interventions that can promote and raise the productivity of the livestock include establishing holding grounds, sustaining fertile rangelands, adequate fodder and water availability near cities(Mugambi, 2018).

In terms of meat quality, the construction of abattoirs and slaughterhouses are the modernization of meat processing and packaging. There are number constructed slaughter houses in Somaliland but these places are required enough sanitary and hygiene measures to meet required standard. Also, an increasing the value addition of meat with low-cost energy is required. The use of technology such as solar and wind can improve the quality of the meat, where there is no availability of electricity or the price of the cold chained meat is going up due to high cost of electricity in main towns. In addition, environment and animal welfare are also

two factors that contribute significantly to the decline in livestock production and economically. These challenges resulted from low management practice of livestock raising and recurrent droughts(SOMALI-NDP, 2020).

6.4.2 Feed/fodder production

The pastoral and agro-pastoral grazing system needs Animal health services, feed/fodder production and water to increase the quality and productivity of livestock. The pastoralists and agro-pastoralists are the most vulnerable to extreme weather conditions. Livestock markets or export livestock market shocks are also a major problem for pastoralists. The large number of animals and the lack of planning are also hampering and limiting the natural resources includes water, vegetation cover, and rangelands. The other problems that limit pastoral and agropastoral system are poor fodder production in commerce, increasing private enclosures with land grabbing that pushed livestock herders to corners, climate shocks, overgrazing, and poor rangelands management.

Similarly, the current technical know-how, investment of the private sector in feed/fodder production and policies cannot meet the scale of demand. Storing improved feed and fodder from pasture and other residues of crop consumption are also limiting factors that required improvement. Feeder roads connecting animal farmers to the main market generally unacceptable to use due to rain floods and lack of maintenance. The all-combined these factors are lowering down the pastoral grazing system. So, it is necessary that to establish commercial feed supplies to address environmental issue such as land degradation issue and pasture deterioration to produce a good live weight of the animal(IGAD, 2020).

6.4.3 Animal health services

Veterinary health service has low quality across the country due to very low institutional capacity in both professional development and malpractice to the private veterinary sector in veterinary drugs. The number of technical schools of veterinary is limited to one while higher veterinary institutions practice a little bit about the regulations and policies which led them to produce insufficiently skilled veterinarians.

National and regional veterinary health service delivery institutions are debilitated by limited funding to the large scale of overload of work in animal diseases. The transportation system of the animal welfare is also an issue which handlers treat inhumanely during loading and unloading animals and poor facility and services made risk to expose improper sanitation and inadequacy of veterinary care(MoLFR, 2016).

Misuse of pesticides and drugs by unauthorized people is increasing. In Somalia, the majority of the people who bring drugs or trade in them are uneducated people. This has resulted in drugs

being misused or imported unnecessary drugs into the country(Koshin, 2017). Mainly transboundary diseases have also a huge impact on livestock health and control is dependent on international support. There is a big challenge to various institutions both federal and member state ones to produce a license to local and foreign veterinarians, because there is weak of co-operation between neighboring states at cross borderlines.

To control transboundary diseases there should be effective diagnostic laboratories. Therefore, most laboratories specifically in quarantines run by private veterinary owners so the animal health authorities in the federal government and member states do not adequately supervise laboratories and the accreditation is so limited. Likewise, health certificates are practiced by private veterinary officers. Collaboration between Somalis and AU-IBAR focuses on improving laboratory facilities for confirmatory disease diagnosis and animal food residue testing but such supports are not efficiently seen in health service facilities. But livestock health data and information systems of disease surveillance and epidemic monitoring are in place despite they have drawbacks(Kwai, Kinyanjui, & Choke, 2020).

The veterinary private sector mostly imports drugs and other chemicals and put in higher prices and most of the livestock owners are unable to buy which then led to them to buy few vials and dilute to misuse to diseased animals, which in the long run creating resistance to drugs and risk for humans to utilize chemical residues from meat and milk due to their lack of knowledge of the bad effects of drugs and chemicals. Recently it is seen that returnees (private sector) are investing in dairy camel farms around the big cities to supply milk which changed the concept of people rearing camel to a commercial enterprise system(MoLFR, 2019).

Although this process of dairy camels is just the beginning with good marketing but there are many challenges that limiting dairy production including inadequate fodder in dry season where the majority dairy camel keepers are not able to feed their dairy animal and majority of these enterprises are unable to sustain their dairy business enterprises. Another problem is that these animals are not dairy breed animals, but they are good for meat. Some dairy camel keepers also keep large numbers of animals that they are not able to get enough water and fodder because Somalis consider livestock to be quantitative, not qualitative. The skills of milk production processing, hygiene and sanitation were also lost in during civil wars. Anyway, the production and quality of dairy sector depends on improving fodder, water, animal health services, raising awareness, improving milk hygiene chains and getting dairy breed animals(MoLFR, 2019).

6.4.4 Livestock Marketing

The livestock sector is the backbone of the Somali economy and culture life. The sector is the source of production, job creation and country's economy to over 60 percent of the Somalia population. Burao and Galkayo are the two largest livestock markets in the Horn of

Africa especially for export sheep and goats from the Somali region of Ethiopia and parts of southern Somalia ([FSNAU](#), 2021). The most livestock export through Berbera and Bosasso seaports transit or pass through these markets. Burao and Galkayo are two important reference markets for key pastoral livelihood zones of Hawd, Sool Plateau, Nugaal valley, and the Adun in the northeast and central regions.

Beletwayne in Hirshabelle state also has a livestock market that connects the south and central regions of the country, and is the supply source of export cattle through Bosasso port. Dinsor, Bardera, and Afmadow are important cattle markets in the agro pastoral livelihood zones in southern Somalia. Significant number of the cattle trekked to Garissa; Kenya transits these markets. Afmadow is largest cattle market in southern Somalia. It is the reference market for the largest cattle belt in the Juba valley. It is the main source of the cross-border cattle trade to the Garissa, Mombasa, and Nairobi markets in Kenya (WFP, 2021).

The Quality of livestock marketing depends on finding availability and rehabilitation of feeder roads that connect the livestock markets with the necessary care and facilities like shading hold grounds fodder, water etc. The most influential factors in livestock marketing are recurrent drought, international bans in livestock trade and spread of livestock disease. The all these factors interrupt export of livestock and their products in Somalia. They also affected on pastoralism and trade in livestock where the majority of rural people rely on livestock for their livelihood. The livestock ban or livestock market failure has led to unemployment, economic decline, inflation, displacement and migration of rural people to urban towns to get alternative livelihood. Also, the failed livestock exports remained on the environment that created land degradation due to overgrazing. In some areas, livestock and markets are too far apart, which can lead to problems such as fatigue, malnutrition, that can result weight loss or death.

Despite the collapse of livestock marketing services during the war in Somalia, there has been some improvement in livestock marketing. The public authorities in Somalia have done some shades, hold grounds and other facilities in the livestock markets in main towns that mainly funded by international donors. Improving of infrastructure of livestock market, feeder roads, and telecommunications enhanced market information. Local authorities and other relevant institutions also understood the importance of improving livestock marketing. However, there is a need to conduct further researches to improve livestock marketing. Some planning ministries in member states disseminate market data every week which providing suitable information for generating revenue and opportunities of selling products of the local people. The lobby of the local influenced people can also increase the opportunity of rehabilitating market infrastructures and connecting roads(MoPIED, 2020).

To secure livestock mobility and animal welfare through improvement transport, there should be policies regarding to animal welfare. The livestock trucks must have an appropriate condition and be suitable for livestock transporting, so that they do not carry more than the required quantity of heads in long travel distances to reduce livestock mobility and death. Improving livestock transport system and livestock marketing will make it easier for household to benefit from buying and selling commodities where rural and urban people can sell and purchase their products(MoLFR, 2019).

6.4.5 . Dairy value chain

Milk production sector is one of the main sources of pastoral and agro pastoralists' livelihoods. So, the improvement of such sector of dairy status can create sustainable economy and employment for pastoralists and other stakeholders who involve in this sector. The specific objective of dairy sector improvement is supporting developing entrepreneurial activities, particularly for women in all program sites to enable them and increase availability and sale of quality milk and milk products through improved market chain (from producer to consumer). The volume of milk production and its quality depends on the rainy season. During the dry season, there is no enough milk in the country and sometimes there is no milk totally due to severe droughts. Milk prices are also rise to highest record especially in the six months of dry period. The milk production is very low due to shortage of fodder, water, animal breeding and inadequate veterinary services for livestock health. Milk spoilage is also another constraint that caused by sanitation, markets, milk containers and poor feeder road transport which are very far from urban towns without cooling system.

All milk agents and producers use dirty plastic containers to transport milk to main urban towns that also cause milk spoilage. Moreover, the combined all factors of poor hygiene practices of milk hygiene, inadequate veterinary services, lack of raw milk inspection, milk proper containers and lack of cold chain and transportation system accelerated poor local milk supply and quality. This resulted that many people use imported dry milk powder with less nutrition.

To promote dairy, there is a need to improve interlinks and coordination and networking among the food chain actors and their service through training and inputs. The priority will be giving women working in the various food value chains to speed up milk hygiene and sanitation for supporting women milk groups including trainings with small equipments. Women are majority work in the food chain process in each sector of agriculture and livestock. Therefore, the improving livestock and livestock products can enable rural women and youth to get source of employment and household income

6.5 Exploitation of fishery Resources

According to updating national statistics in 1996, 4,500 fulltime fishermen and 5,000 part-time fishermen were registered across the state. The fisheries indirectly employed more than 30,000

full time and 60,000 part-time employees. Technical maintenance, improvement of refrigeration chain production, processing and manufacturing skills were given priority to raise production of fisheries. Somalia also has the longest coastline in Africa but the fishermen in different regions faced many challenges including lack of infrastructure, inadequate knowledge, ice, freezers and refrigeration storage facilities which are among the major obstacles to the expansion of the country's fisheries sector (MoFMR, 2020).

The illegal fishing in Somali waters has been a problem for last three decades. During the 1990s illegal fishing (engineering) was started in Somalia and Somali pirates began attacking foreign ships at Indian Ocean and Red Sea. In addition, the promotion of fisheries development in Somalia was also hampered by illegal foreign vessels plying, widespread unaccounted for violations and irregular foreign fishing. The modern vessels practiced fishing illegally in Somali waters, while local fishermen have not equipped well and they only use old traditional technology which is only for living consumption purpose or generating little money for running family expenses. Infrastructure and limited skills of the manpower are also essential for the situation which is necessary to improve the productivity of the fish. Market inaccessibility also increased the poor performance of the fish industry in Somalia. The other exploited fish sector including Landfills and waste disposal in Somali water, which are also a problem for fishermen. Fish stock or fish production is also affected by climate change such as rising sea temperature and acidification.

Fishing resources are exploited and only 4 percent of fishing resources used compared to all other sectors of livelihood (MoLFR, 2019). There is a fishery policy that is in a draft in Puntland state and the federal government of Somalia, while Somaliland is fully produced but enforcing makes it difficult to frame all the fishery resources in Somaliland (MoFMR, 2020).

Climate change also created land and water resources degradation. Monitoring of some licensed vessels is not enough and sometimes uses unregulated technology to capture fish. The number of population coastal line towns is pressurizing fishing due to their overfishing demands of certain species lobster and sharks. Coastline people consume only fresh fish, due to the limited infrastructure and storage system, which is characterized by the inaccessibility of near markets, so this wasted captured fish. Management of inshore fishing activities is affected by some factors includes the high demand of some species. Fishing inputs are not largely imported into the markets of Somalia, and it is a challenge for investors to join the fishing industry. Transpiration is so high most of the year in the coastal areas, where it reaches 2900 mm; and this is particularly increasing drought effects (AfDB, 2016).

Some pastoralists can supplement selling fish by enhancing their livelihood condition in coastal areas during rainy seasons. Those who diversified the income generation through fishing

obtained resilience to drought impacts, and this came after launching a savings association to build their livelihoods (Artan, 2020). Fish is also beneficial for fighting against insect infestation, as result fish consume insects' larvae (Dr. Gaspard BIKWEMU, 2012).

Fish processing has an advantage over exporting to land-locked countries and exporting to through sea, after being produced imported countries standard safety and quality demands. Fish quality in Somalia is not sufficiently understood by the people as well as its nutrition status for a bite of fish; this is lowered consumption of fish widely among the local people and they are not interested in iced fish. Value addition is not a factor for increasing sales of the fish but improved quality and safety of the fish can encourage consumption of fish and awareness is very important specifically once the standard meets the HACCP procedure.

Value addition facilities in onshore processing and marketing need to cold chain, refrigerated trucks, and other equipment for handling fish. It is also required to receive fishing vessels with modern equipment for conservation. Furthermore, ports for both jetties and large vessels are to be needed to be established which now are not available. A recent study showed that Somalia imports about 17.5 Million annually worth of canned processed fish. So canned fish has potentiality in value addition in Somalia fishing industry(SOMALI-NDP, 2020).

Inland fishery, aquaculture is very small and there is no promotion of fish in aquaculture, in history and even present. But there are two riverine areas of Juba and Shabelle, which produces each year 200MT, despite direct damage of fishing gear is none. and there are no fishing ponds in other regions but the people around the rivers have interest and value as a good source of food(MoPIED, 2020).

Coordination among the stakeholders is needed to be engaged for establishing public-private partnership (PPPs) for encouraging the investment of fish export and utilization of other marine resources, but as result Somalia, there is no such program due to a lack of clarity and collaboration to roles and responsibilities for the management of the asset under shared PPPs. Protection of fish and environment is key to keep away illegal fishing activities from coastal fishermen areas around 24 nautical miles from shore; which provided access to local fishermen to reach 24 nautical miles inside the sea but unfortunately this is something not happen in Somalia coast due to limited institutional capacity and law enforcement. Inland aquaculture does not receive protection from habitats.

Somalia has the longest coastline of continental Africa, approximately 3,333 km extending from the western passage of the Gulf of Aden to the Indian Ocean up to the border with Kenya. Fishing industry in Somalia has a potential to contribute to Somalia's economic development and poverty reduction. Despite the country's rich fishing grounds; coastal fishing has remained

small-scale and artisanal while foreign commercial vessels have enjoyed both legal and illegal harvesting offshore (WOLRDBANK-FAO, 2018).

USAID estimated the value of the domestic fisheries sector to the Somali economy was US\$135 million in 2015/16. The value of Illegal, Unreported and Unregulated (IUU) fishing was estimated to contribute US\$306 million in benefits to other economies, highlighting opportunities for this sector to better support Somali enterprises and livelihoods in the future (SOMALI-NDP, 2020).

Somalia does not have various policies and management plans in place nor does it have the means to manage its marine resources except some draft documents, specifically member states. There is no infrastructure to support the artisanal fishing industry with gear and equipment and the marketing chain is rudimentary in most places. On the other hand, the cultural preference for livestock meat instead of fish meat is dominant phenomenon in Somalia. Due to this reason, the importance of fisheries for food security in Somalia is relatively minor at a national aggregated level.

Nowadays, domestic fish price is relatively very expensive in Somalia compared to the red meat. This can be attributed to the rapid development of hotels in big towns and returning of many Diasporas from the outside of the country. Rebuilding storage and marketing facilities; improving transportation infrastructure and equipment; and the training of fisher folks on fish processing and handling are some factors that could promote the role of fisheries in food security in the country.

Some fisheries products are ideal sources of export earnings while other products are consumed locally (export substitution). Exports of value-added products generate higher earnings while at the same time help create new ventures thus creating new jobs for unemployed youth and women. Development of a fisheries export segment of high value species such as lobster and tuna could create new sources of foreign exchange. Fish export to Europe, USA and Japan generate high revenues, but the requirements could be demanding and time consuming. Somalia can market fish products in the region. The Middle East and Ethiopia with over 110 million people and growing urban centres is potential market for Somalia's fish products(SOMALI-NDP, 2020).

Increased fish consumption is partly a solution to improved nutrition and should be encouraged. For fish to be embraced as a common food on par with the traditionally common meat, it is essential to introduce and familiarize it as healthy and as alternative to meat. First has to be easily accessible and qualitatively attractive. It has to be promoted as a domestic product and a source of food security because it is available in large quantities in Somalia's vast waters(Kifle W. Hagos, 2015).

6.5.1 Challenges of Fishing

The main challenges and constraints in the fishing sector include:

- Absence of a sectoral policy and plan and inadequate fisheries legal framework and regulations;
- Inadequate landing facilities, with little or no provision of ice or hygienic handling facilities;
- Very high post-harvest losses, with a negative consumer perception of fish quality due to the poor handling and short shelf life;
- Poor domestic fresh fish consumption due to poor infrastructure and cultural practices which has restricted access to fish for a large portion of the population;
- Lack of reliable data to assess the status of fisheries stocks in both Indian Ocean and Gulf of Aden;
- Lack of technical experience among youth to actively participate and increase employment in the private sector (fishing, engine repair, boat building, fish handling etc.); and
- Limited private sector investment(MoFMR, 2020).

6.5.2 Implications for Food Security

Investments to improve the fisheries sector in general as well as addressing challenges and constraints of the sector described above will significantly increase incomes of rural people, creates jobs to the ever-increasing number of unemployed, while improving nutrition of urban consumers, addressing a big gap in food security and nutrition.

6.6 Forest resources

Around 1.6 billion people depend on forest for their livelihood, including 70 million indigenous people. Forests are home to more than 80 percent of all terrestrial species of animals, plants and insects(UN-Factsheet, 2004).

Somalia's limited forest is about 10.5 percent of the country's area, due to potential forest areas along the Shabelle and Jubba Rivers and the inter-riverine areas, were cleared for agricultural use. In addition, charcoal production for local cooking use and mostly export to Saudi Arabia and the United Arab Emirate (UAE) solely for tobacco smoking using "Shisha" had a negative deforestation impact. There is also some charcoal export to Yemen and India. Aerial survey reveals drastic clearing of forest throughout the southern Somalia. Thus, the production and export of charcoal caused massive deforestation that resulted in desertification(Ministries, 2015).

Due to lack of alternative source of energy for domestic cooking and the inefficient process of making charcoal has already been contributing to deforestation potential acacia species which have been basically the source of grazing for camel and goats, nitrogen fixation to enhance soil fertility and dry-dead trees were traditionally used for cooking. Such traditional local use has been sustainable, but cutting and burning of living trees for charcoal export resulted in extreme deforestation and is leading to degradation and desertification. In addition, the acacia trees do not grow fast enough to replace the consumed trees. Hence rangeland which consisted of forest trees of mostly Acacia species, shrubs and grassland are denuded and results in soil erosion. The Deforestation is also contributing to climate change such as low rainfall, increasing wind speed and flooding as well as loss of biodiversity. These factors lead to the reduction of land use for agriculture and pastoral livestock production. Most charcoal illegally exported has been produced in Southern Somalia (about 80 per cent of production) constitute a large share of all exports from the South (Ministries, 2015).

Forest and Woodlands and the vegetation in Somalia is predominantly dry deciduous bush land and thicket dominated by species of Acacia and with semi-desert grasslands and deciduous shrub land in the north and along much of the coast. The vegetation becomes denser towards the south, and many of the plains of the north-eastern part of the country are devoid of trees (ICPALD, 2020). Forest and woodland growth are limited by poor soils and low rainfall, and closed forest cover occupies only about 2.4% of the country. There is an annual deforestation rate of 0.97% of all types of forest and woodlands.

Over 60% of the country is covered by sparse savannah woodlands. These woodlands provide important browse resources and firewood, which is the dominant rural energy source, as well as material for house construction and livestock enclosures. Virtually all of the tropical floodplain forest that once existed along the Shebelle and Juba rivers has been cleared for agriculture and irrigation (for, in the past, sugar and banana), except for a small patch set aside as a reserve at Balcad by the Somali Ecological Society. Only the poorly accessible Middle Jubba, with its predominantly saline, alkaline, impermeable soils, has retained significant areas of relic floodplain forest. Compared with the surrounding woodland and bush, these floodplain forests are biodiversity rich (IUCN, 2007).

6.7 Biodiversity

Somalia signed the United Nations Convention Biological Diversity on 11 September 2009. This has been the 193rd party to sanction the convention on Biodiversity (CBD); the notice of sanctions has been recorded with the CBD secretariat on 10 December 2009. By sanctioning the CBD, Somalia was committed to obtain its objectives of ‘conservation of biodiversity; the sustainable use of its elements, and the fair and equitable sharing of the benefits arising from utilization of genetic resources’.

Somalia's biological environment is an important part of the Conservation International Horn of Africa biodiversity hotspot, that is marked by arid and semi-arid ecological conditions, in which pastoralism has proved to be the best way to sustain livelihoods while contributing to the maintenance of the frail ecosystems. Endemism among plant and animal species is quite high all over the Horn of Africa Region, and is reflected in Somalia's biodiversity, which gives the biodiversity global importance(Ullah, Saleem and Gadain, 2015).

The Horn of Africa was a renowned biological hotspot 5,000 years ago when the ancient Egyptians sent expeditions to the "Land of Punt" to bring back unique natural commodities such as frankincense and myrrh. Somalia, with the exception of a small portion of the south-east (part of which falls into the coastal forests of Eastern Africa Hotspot), falls into Conservation International's recently designated Horn of Africa Biodiversity Hotspot. This hotspot also includes coastal Eritrea, all of Djibouti, eastern Ethiopia and eastern Kenya, as well as stretching into Oman, Yemen and Saudi Arabia, and covers an area of nearly 1.7 million square kilometres(MoFMR, 2014).

Biodiversity – the species diversity of life on the planet – provides important contributions to human life such as crop pollination, climate regulation, water and air filtration, soil formation and disaster risk mitigation. It helps us fight climate change and adapt to it as well reduce the impact of natural hazards.

Somalia is rich and famous for its various species and endemism. It has been recorded that more than 5,000 plant species and 1,332 animal species; of these, over 55 percent of the plants are endemic. Somalia is home to a number of endemic and threatened antelope, such as the beira, the dibatag (Clarke's gazelle), and Speke's gazelle. Other important endemic species include the Somali wild ass and the sacred baboon (*hamadryas baboon*). Somalia has more endemic reptiles than any other region in Africa. Somalia is also considered a centre of floral endemism; of the 700 known species, 17 percent are endemic(Ullah, Saleem and Gadain, 2015). With the longest coastline in Africa, Somalia also has well-developed coral reefs that are home to abundant biodiversity, including coral, fish, and dolphins. This rich biodiversity provides fundamental ecosystems, goods, and services important to the social, economic, cultural, and human well-being of the Somali population. Indeed, biodiversity is the backbone of the national economy, supporting over 80 percent of the population.

In Somalia, biodiversity has been declining at an alarming rate in recent years, mainly due to unsustainable use of natural resource, poor governance system, Changes in land use (deforestation, intensive mono-culture, and urbanization), unpredictable rainfall with frequent droughts, pollution, direct exploitation such as hunting and over-fishing – illegally fishing, charcoal production, invasive alien species and climate change. This has affected heavily many Somalis' livelihoods. Globally, biodiversity is declining increasingly rapidly, mainly due to human-induced pressure. According to the latest worldwide assessment of the state of nature, it was recorded that

human activity responsible for significant alternation indicates 75% of the land-based and 66% of the marine environment will make one million plant and animal species to extinction, many within decades, unless broad policy action is taken to stem the drivers of this deterioration. Expected future climate change related temperature increases may threaten one in six species at global level.

The Somali wildlife is illicitly poaching and trafficking continues to frustrate conservation efforts, with approximately 60,000 gazelle skins, 250,000 dikdik skins, 18,000 kg of ivory and between 3,000 and 5,000 live monkeys were exported in 1960 and the wildlife animal and plants species have been not recorded those involved in illegal trade. This is consistent with the findings by UNODC, 2020 that illicit poaching and trafficking of wildlife continues worldwide where nearly 7,000 species of animals and plants illegally traded involving 120 countries(UNODC, 2020).

The majority of the Somalia known wildlife has become extinct and displaced to neighboring countries while remaining species are at risk of extinction. There is no accurate statistics recording of Somali wildlife since the civil wars in 1991, but many wild life species have been disappeared or extinct, such as lions, tigers, elephants, ostriches and many other species. Somalia, there is no special care for wildlife. Globally, of the 8,300 animal breeds known, 8 percent are extinct and 22 percent are at risk of the extinction.

Table 7: Somali Fact-sheet

Table 6: Somali Fact-sheet

UNIT	Covered area	Impacts
Forests and woodlands	3%	83%
Biodiversity and Conservation	0.8% Of the land is protected	24 bird areas depleted
Marine and coastal area	10% of marine areas are protected	(IUU) fishing by foreign vessels now a critical issue
Water and wetlands	Irrigation agriculture use to account for over 90% of water use	(berked, balley, wells) individually owned – increases pressures on rangelands
Agriculture	14% of the people are engaged in farming	rain fed cultivation removes land from livestock based systems
Livestock	Pastoralism accounts for over 50% of the population,	Private grass enclosures further alienating land from

		common property management
Urbanization and Infrastructure	36% of the population are in urban areas	Great demands on rural environments – charcoal, forage. Infrastructure under-developed – much destroyed during periods of insecurity. Economics a

6.8 Potential and Constraints of Natural Resource Management (NRM) in the Country

Adaptation to climate change in the agricultural sector and allied sectors is a main current and future crisis for Somalia. The majority of the country's population is dependent on extremely climate-sensitive agriculture. In last 30 years, frequent droughts, rainfall variability, changing temperatures, and floods have caused serious distress to agriculture dependent communities in Somalia. Somalia's DG of improving food and nutrition security and enhancing sustainable agriculture needs to be implemented in strategically sustainable system to adapt climate change. Somalia is highly vulnerable to climate change-related impacts such as drought, extreme flooding, pests (locust), and sudden disease outbreaks, changes of rainfall patterns, and sea level rise. These are serious concerns as Somalia's economy largely depends on its rural natural resources. Furthermore, over 60% of the population is rural-based engaged in farming, agro-pastoralism and pastoralism and therefore, highly dependent on favorable climatic conditions for their food and nutrition security.

6.8.1 Identification of key challenges and needs

Somalia's ECU Team identified five main sectors that are vulnerable to climate change, including water resources, agriculture, and livestock and environment zones. The Somalia effort focused on these critical

Table 8: summary of the main vulnerable sectors

Table 7: summary of the main vulnerable sectors

Sector	Major Vulnerabilities
Water	Water scarcity due to changing patterns of rainfall, impact directly on the livelihoods of the rural communities.

Agriculture	Drought, temperature variability, and changes in rainfall patterns can lead to disastrous consequences for agriculture and food and nutrition security. Climate change may cause degradation of agricultural lands, soils and terraces, desertification, which negatively affects agricultural productivity, incomes for rural communities which in turn leads to national food and nutrition insecurity
Biodiversity	Frequency in drought, temperature fluctuation, and changes in rainfall patterns due to climate change will lead to the deterioration of and changes in the habitats of endangered and endemic species.
Health	Changes in climate will create more suitable conditions for the occurrence and spread of water borne diseases such as malaria.

6.8.2 Possible mitigations

Table 9: Summary of Sector Mitigation

Table 8: Summary of Sector Mitigation

Sectors	Mitigations
Water	Harvesting of rainwater by using various techniques including traditional methods.
Agriculture	Promotion of research on drought resistant and heat- and salinity- tolerant crops. Develop and implement sustainable land management strategies to combat desertification and land degradation Planting and re-planting of potential trees with triple purposes including conservation for land, feed for animals and food or shade for human
Cross Sectoral	Develop and implement an awareness raising initiative schemes on drought mitigation to the potential impacts drought disasters on vulnerable sectors Incorporate Climate Change and adaptation into school education. Develop and implement strategies to improve Somalia's preparedness to cope with extreme weather events. Establishment and Maintaining of Climate Change Database.

Presently, 70% of the Somali population is engaged in agro-pastoralism, pastoralism, subsistence agriculture, and charcoal production as livelihood options. All of these livelihoods are heavily reliant on the natural resource base and provision of ecosystem services. However, in spite of land resources being the direct source of livelihood for the majority of Somalia's population, land is being continually degraded. Ecosystem services are under serious threat from a combination of deforestation due to charcoal production as well as unsustainable natural resource mismanagement which is contributing to loss of soil fertility, vegetation and grazing land (Lloyd McKay &, 2006).

Ecosystem services in Somalia are furthermore aggravated by extreme weather and climate change impacts, most notably increasing spatial and temporal variability of the rainy and dry seasons, floods and droughts. According to the World Bank's Natural Hotspots Study, 43% of Somalia's land area is exposed to flooding and droughts which entails that 54% of the population is highly exposed to extreme weather and natural risks. Officially, Somalia ranks 15th on the DFID list among the developing countries at high disaster risk (WORLDBANK, 2005).

Somalia's socio-economic vulnerability to natural risks is clear; the 2011 drought resulted in 260,000 deaths in Somalia. In the past decade, droughts have rendered 870,000 people foods insecure and an additional 2.3 million - one fourth of the population - vulnerable to food insecurity. Displaced by conflict and famine, over one million Somalis live as refugees in the Horn of Africa and Yemen and 1.1 million remain inside Somalia as internally displaced persons (IDPs). Women in rural areas have been identified as one of the most vulnerable groups to climate change impacts in Somalia due to unequal access to both material and natural resources.

Similarly, pastoralists are highly vulnerable because they are dependent upon rain-fed rangeland grazing for their livestock and tend to have very few fixed assets. Somalia's Arid and Semi-Arid Lands (ASALs), which make up more than 80% of the country's landmass and house the greatest national proportion of pastoralists in Africa, are particularly vulnerable to extreme weather conditions. With livestock contributing approximately 40% to Somalia's GDP and accounting for more than 50% of export earnings, Somali's economy is sensitive to climate change impacts. In the case of Puntland where 90% of the rural populations are pastoralists, Puntland's economy is losing at least USD 15m annually as a result of losses in the condition and services of ecosystems and their lack of resilience to extreme weather and climate change impacts. Such a downward trend in the economy will undoubtedly make Somalia even more disadvantaged. Already, the multi-dimensional poverty index (MPI) ranks Somalia 94 out of 104 countries and Somalia's rural and nomadic poverty rates are 94% and 99% respectively (WORLDBANK, World Bank Interim Strategy Note 2014-2016, 2013).

Inappropriate borehole design has resulted in low water tables and poor groundwater quality.

The lack of manpower to support environmental management conflicts with the fact that, at present, Somalia has 73 percent of its population below the age of 30, the highest in the country's history. Youth often have a stronger awareness of environmental issues and a greater stake in long-term sustainability, particularly as agents of change. Nevertheless, there is no long-term strategy to train the youth to be the next workforce to improve natural resource management. Consequently, many young people are trapped in an environment of violence, fear, unemployment and poverty. Experiences from Somalia and elsewhere show that when large numbers of young people are jobless and have few opportunities for positive engagement, they become a ready pool of recruits for extremists.

Similar to the limited budget for technical personnel, the proportion of budget allocated to conservation expenditure and adaptation actions is also negligible. Most government budget lines are used to support short-term priorities such as drilling boreholes when shallow wells (berkeds) become dry. Consequently, farmer and pastoralist communities in the regions of highest rainfall variability largely depend on humanitarian aid to buffer risks during drought periods (such as during the drought of 2011).

On the local level, proactive, community-based natural resource management and disaster preparedness is limited. Communities lack knowledge of effective rainwater harvesting techniques and are unable to efficiently capture and store runoff during heavy rains for use during the dry season. A small number of villages capture and store rainwater, but this is not done systematically. Water sources and reservoirs have deteriorated from silting due to weak community and government level management. Furthermore, rural communities are also unable to practice sustainable rangeland/pasture management so as to ensure sufficient food and fodder supplies during periods of drought.

Marginalization of the women and youth is furthermore exacerbating the potential to use natural resources sustainably in Somalia. Women in rural areas are identified as one of the most vulnerable groups in Somalia. Within the female headed household, women are obliged to grow food, to gather fuel and water, to cook, and to rear children. The sexual division of labour, unequal access to both material and non-material resources and women's diminished participation in decision-making in both political and private domains generally result in increased vulnerability of women to the impacts of climate change. In Somalia, women are found to be the ones who must find solutions to feed their families during crisis situations. Gender inequality is alarmingly high at 0.776 out of a value of 1 (complete inequality), with Somalia at the fourth lowest position globally on the Gender Inequality Index (GII) if internationally comparable data were available (MoNR, 2013).

Exacerbating the adverse impacts of unsustainable land and water management on communities and women is the fact that the government lacks hydro-meteorological infrastructure to monitor and assess the weather, the climate and water levels so as to forewarn Somalis of impending natural disasters. The situation is dire for Federal Somalia because no hydro-meteorological stations exist to assist in generating weather warnings. Consequently, limited drought and flood warnings are communicated to rural populations.

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jobless and have few opportunities for positive engagement, they become a ready pool of recruits for extremists (IGAD, 2013).

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7.0 Detailed Description of the Project Components

As the inception report objectives pursued these four components: (1) Strengthening Adaptive capacity to Climate Change (2) Supporting Agribusiness Development (3) Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo Pastoral Production systems to

Climate Change (4) Program Coordination and Management. The first three components will provide an efficient and professional response to the problems confronting the country.

The transformation of gender will be encouraged by the project through capacity building in livestock and agriculture value chain by sharpening their technical leadership and entrepreneurship skills. The proposed project enlarges activities for pastoral and agro-sylvo pastoral production system to climate change, agribusiness development and capacity strengthening. During implementation there should be intervention in project time frame and alignment with the project objectives.

This project will provide public consultation with beneficiaries and other stakeholders for building resilience against drought effect and coming up with coping mechanism of strengthening climate change including environmental and social impact assessment with ESMP. And, the project will formulate participatory approach with gender mainstream in three clusters. And the private sector will involve in value chains(IGAD-Secretariat, 2016).

The project area covers three clusters in Somalia and sites considered such as: These areas are: (1) Dikhil cluster (Awdal, Northwest, Togdheer, Sool) (2) Cluster 4 (Garbahaaray, Dolow, Luuq, Beled Xaawo, Mandera) (3) cluster 7 (Hiiraan, Bakol & Part of Galmudug).

7.1 Activities to be carried out

IGAD is a regional body, for eight countries in horn of Africa, serving as a platform to provide strategic guidance and supervise through individual's countries for development activities. The DRSLP II financed by AfDB to build resilience of nutrition and food security in of Africa countries. The program is multi-sectoral specifically minimizing drought effects. The individual Governments and stakeholders are to be involved in the review prioritize and validate sectoral needs and projects addressing those requirements, for alignment with the needs of IDDRSI implementation.

Table 10: The program is Composed Four Component, & number of proposed activities list

Table 9: Program Components

Components	Activities list
1. Strengthening the resilience of drought prone areas and pastoral and agro-sylvo-	<ul style="list-style-type: none"> • Assess SLM opportunities in select target areas • Promote Soil and water conservation as concerns land reclamation, erosion control. • Promotion of Agroforestry, Forestry, and Agro-ecology in selected target areas

<p>pastoral production systems to Climate Change, a) Sub- component</p>	<ul style="list-style-type: none"> • Promote strengthening of the gender dimension (women, men, boys and girls) across agro-sylvopastoral production investments • Strengthen participatory Land Use Planning and resource management policies to address population growth and use of marginal lands • Establishment and operationalization of local committees for Silvo-pastoral resource management • Management of stakeholders in Sustainable Natural Resources management • Improved surveillance and monitoring of transhumant herds (relative to drought events) • Restoration of degraded pastoral lands including the elimination of invasive species • Development of transhumance pathways for movement of animals through transhumance corridors (- out with sign-posts) and grazing zones (including building resilience through alternative livelihoods-trade, employment) • Strengthen pastoral risk management for drought-related hazards, fire breaks and response at national and regional levels • Implementation of breeding strategies and breeds conservation Programs • Promotion of access to natural resources for livelihood improvement (Non-wood forest products, honey, gums and resins, artisanal minerals, eco-tourism etc.) • Undertake support studies that inform on resources in pastoral areas (dry-lands) including non-wood forest products, honey and artisanal minerals and build the capacity of communities to harness and market them • Identification of livestock development clusters that link output markets to infrastructure (roads, feed, water resources) and access to finance,) • Promotion of feed and fodder production and conservation, harmonization of policies on feed reserves etc. regional policy on feed and fodder trade, SPS and Certification for fodder seed, regional feed balance.
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	<ul style="list-style-type: none"> • Rehabilitation / construction of hydraulic infrastructure (Water harvesting), small holder irrigation schemes, • Rehabilitation / Construction of rural feeder roads • Undertake investments in irrigation (promotion of PPPs) • Development of improved seed production centers (agriculture and agro-forestry) • Promote efficient post-harvest handling and reduction of post-harvest losses through the provision of adapted storage facilities • Improvement of access to cross-border natural resources (pastoral hydraulic infrastructure, rangeland and transhumance routes) • Assess feasibility for construction of livestock markets and vaccination parks and relevant technical and supervision studies • Improvement of access to cross- border natural resources (pastoral hydraulic infrastructure, rangeland and transhumance routes) • Support livelihood enhancement (honey production, non-wood forest products) • Promotion of the camel and goat value chains. • Support downscaling and communication of climate and biomass prediction products to inform relevant sectors including farmers and herders • Promotion of remote-sensing technologies for precision farming and life-cycle assessment tools • Support of integrated Soil Fertility Management Technologies • Support water harvesting (from Humidity) • Promote Stress Tolerant Crops breeding of crop varieties that are resilient to stresses including heat and drought • Support a regional feed and range platform and Animal health networks for sharing lessons and good practices on climate resilient practices • Facilitate access to quality inputs, including organic inputs and agro-pastoral production services (equipment, mechanization)
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	<ul style="list-style-type: none"> • Promote risk-management tools, high-quality fertilizer, irrigation techniques, livestock-related assistance in hotspots • Strengthening of vaccination against major Epizootics (Small Ruminants Plague (PPR), CBPP, Newcastle Disease in poultry; tsetse control etc.) • Support improved dietary diversity of targeted households • Promote landscaping of vegetable perimeters/nutritious gardens for women • Support dissemination of good nutrition practices
2. Supporting Agribusiness Development, a) Sub-component Energy	<ul style="list-style-type: none"> • Support the establishment/ operationalization of integrated agricultural service centers • Support setting up and equipping of youth advisory service / agropreneurs for support and advice to invest in value and value - chain addition • Establishment of inclusive financing mechanisms for farmers and SMEs • Strengthening market access and trade-improving market access of the agro-pastoralists and pastoralists to the intra-regional and international markets of livestock products • Promotion of environmentally-friendly, regional and international driven chains of agro- food values • Promotion of market orientation and competitiveness of producers and traders along the value chain • Promote policies-supporting countries that do not have policies and frameworks that would enhance the above initiatives towards resilience building • Promotion of Sanitary standards for livestock products, feed and fodder to ensure safe, healthy products for both pastoral consumption and export • Strengthening of livestock related products Market Information Systems (LMIS) including; electronically facilitated trade, of commodity and Livestock , and mainstream access to financial services in view of enhancing interregional trade • Support the harmonization of Grades and Standards of livestock & livestock products

	<ul style="list-style-type: none"> • Development of other regional policies and legal frameworks that will be domesticated at national level, coordination at regional level and promotion of value addition in areas of production and south-south learning • Promotion of value addition in livestock products and market linkages to create employment and wealth while injecting liquidity in communities. • Digitalization of commodity and livestock trading • Promote professionalization of agro-pastoral value chains actors and development of partnerships for access to regional and international markets • Assistance in the design and implementation of sub-projects for agro-sylvo-pastoral and fisheries value chains • Promote establishment of youth SMEs including establishment and operationalization of business incubation centers • Construction and equipping of small processing and marketing units for agricultural and dairy products • Support the establishment of food reserve systems for better future prices and as a means of enhancing resilience • Support regulatory, institutional, and policy arrangements at national level • Promote development of a catalogue of rural energies for agricultural transformation • Promote development of financing mechanisms or renewable energy sub-projects • Training of youth and women in the manufacture, application and maintenance of bio-digesters and solar energy systems • Development of a system of reliable information on the baseline and future status of sustainable energy access • Develop support for carbon certification
3. Strengthening Adaptive capacity to Climate Change	<ul style="list-style-type: none"> • Development of livestock and crops index-based insurance data for use by small holder farmers/pastoralists. • Development of hydro- climatic products and information in a format accessible to decision-makers and users

	<ul style="list-style-type: none"> • Support development of a regional communication strategy for hydro climatic information building on IGAD Climate Strategy • Support development and strengthening of integrated drought and fires, Army worms, EWS at regional and national levels • Training of specialists in the field of climate information • Strengthening of regional climate monitoring and reporting systems • Organization of annual on climate in the HoA region • Development of Climate Risk Mapping capability for the HoA region • Development of digitalized platforms for good practices/ technologies • Strengthening of institutional capacities, increasing data sharing, and improving platforms for delivery of climate services • Development and dissemination of reports on the State of resilience in the HoA • Support for coordination and monitoring IDDRSI. • Support to national / regional service in knowledge management • Promote regional and local climate insurance products and social safety nets to mitigate financial, agricultural, and health risks (includes mapping out Climate insurance needs of countries and small-scale producers and evaluation of the ongoing livestock and crop insurance programs to inform future insurance programs designed for resilience building) • -Promotion of access to risk-management tools (including livestock and crops index-based insurance) by small holder farmers/ pastoralists • Strengthen PPPs for establishment of insurance (regional and national) in crop and livestock sectors • Promote policy harmonization analysis and dialogue • Undertake mapping of surface a n d groundwater and assess their potential for agricultural development using remote sensing
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	<ul style="list-style-type: none"> • Strengthen dialogue and technical capacity to establish cross basin authorities in selected 3 shared river basins and 1 shared aquifer • -Develop mapping of resilience actions in the HoA • Develop and expand payment for environmental services • Support establishment of regional climate fund for the HoA region. • Promote mobilization and collaboration with relevant Centers of Excellence at national and regional levels • Promote setting-up and support for the operation of a regional observatory on climate, transhumance and mobility to generate and disseminate early warning information on shocks and risks in relation to conflicts • Assess the status of adherence of IGAD countries to the International Protocol on Transhumance and support the use of the adapted tool by IGAD countries • Promote mobility and displacement in the region as a strategy of coping with shocks and how this affects pertinent value-chains • Develop a regional common pro-poor, gender and sex-oriented (men, women, boys and girls) climate framework for resilience activities • Support the organization of annual climate investment forums in the Horn of Africa.
Program coordination and management	Coordination and management roles among and between stakeholders including IGAD, African Development Bank and Government.

7.2 Implementation strategy

The program to serve as the basis for adopting a comprehensive sustainable strategy for project implementation; and, identify priorities for developing sustainable financing mechanisms for implementation at both national and administrative states. Implementation of the components is a necessary to respond to climate change for the drought effects by strengthening various stakeholders; supporting vulnerability and adaptation of the climate change.

An integrated program management in national and regional level can be framed through existed or formulated policies; in order to use opportunities and strengthen implementation of the program.

To avoid main challenges, it should be strong policies on promoting building resilience across all ministerial levels for FG and member states. The IGAD focal point and IGAD national coordinator are needed to make efforts by cooperating all programs for same approach of implementation strategies, with obtain support from local stakeholders.

7.2.1 Support for Implementation Strategy

To support implementation of the strategies the program should consider following policies, regulations and bodies.

1. National and subnational level policies for climate change effects
2. Adaptation of new technology for implementation of facilities of eliminating droughts impacts;
3. Implementation network for hydro-meteorological technology on forecasting in national and sub national level;
4. To enhance living conditions of community of Somalia, in building fishery, livestock and crop production and creation of the value addition on the basis of this program;
5. Plan a network for all stakeholders and units in the ministerial levels to monitor activities on the implementation of the program;
6. Plan socio-economic development for responding climate change in lowland areas include rivers (Juba & Shabelle) as well as protection of soil erosion;
7. Plan development of breeding system of crops and livestock for maximum production;
8. Setting up sub committees in administrative state level for water management catchment management in the program;
9. Setting up and employing all models of resilience to encourage community coping effectively with drought effects.

Various national strategies are key to for implementation of the program and the stakeholder should mobilize the resource contributing significantly sustainable development.

7.2.2 Strategies for Multi-sectoral Coordination

The introduction of the National Policy on Food and Nutrition Security was aimed at addressing the challenges of the Integrated Food Security Strategy in coordinating and streamlining different sectors and programmes addressing food security. The strategies recommended in this article are aimed at addressing the challenges.

7.2.2.1 An assessment of the current institutional capacity for public policy implementation

The coordination of activities by government departments, each with its own institutional structure, vision, mission and strategic objectives generates the need for an assessment of institutional capacity to undertake activities that are common to a task team or working group.

Institutions that lack the financial and administrative capacity to implement their own activities also hamper multisectoral or stakeholder coordination. The lack of capacity in implementation; monitoring and evaluation can be a barrier to multisectoral coordination (Benson, 2008). Management involves the task of policy planning, capacity for policy analysis, organization of work, decision-making, roles and responsibilities, accountability and feedback review and evaluation (Garret and Natalicchio 2011:33). It is vital for the institution responsible for the management of multisectoral platforms to be able to work with, and around rules, structures and partners in bureaucracies and other organizations.

7.2.2.2 Public Policy Implementation

The active participation of civil society and private sector organizations in public policy implementation

- Provision of improved inputs to increase crop production,
- Moisture conservation and utilization,
- Natural resource development, -
- Trainings
- Support for additional income generating
- Provision of market information
- Income interventions
- As the food insecure households are resource poor, living in drought – prone and degraded on crop and livestock production alone may not entirely solve the problem of food insecurity
- For these income diversification through non – agricultural activities is important
- To this effect, the food security program complementary income sources in non – farm activities
- Social Protection Policy of Somalia
- The social protection policy document should be carefully developed for the country and it is submitted to the council of Ministers for endorsement.
- There are a number of policies, strategies, and programs/action plans that commit the government to look after the welfare of its citizens.

7.2.2.3 Evidence-based Research

Mapping and establishment of the hydrological capacities of the water resources in the potential selected states, Somaliland, Puntland, South-central Somalia, which will require studies to inform infrastructure design and development of maps and rehabilitation of water ways. Innovative approaches will be integrated in monitoring of water supply through an early warning system for the farmers.

7.2.2.4 Capacity Building

7.2.2.5 Technical support will be provided by:

- i. Draw lessons from the previous phase which indicated that timely consultations and dissemination of information is key to ensure continued engagement of the project participants. Such will lead to strengthening capacities of the rural farmers in the communities for schemes governance, promoting effective leadership, transparency and accountable structures.
- ii. Strengthening knowledge exchange and technical capacities for climate smart techniques (CST) through conservation agriculture and drip-irrigation technology. This will be facilitated through the Ministry of Agriculture (MOAI) Rural Development Areas (RDA) that will also have their capacities enabled through purchase of infrastructure. The MOAI Extension Department will provide officers that will manage demonstration plots, train the rural farmers and ensure outputs are in line with the national development targets.

7.2.2.6 Advocacy and Communication

The project will be utilized as a platform for advocating and communicating on climate change adaptive practices in the agriculture sector. This will promote the uptake of the CSA technologies for increased water efficiencies in agriculture production.

7.3 Expected results by component, sub-component

Results of the program are linked to the implementation smoothly within the timeframe. The components of the program are expected to contribute resilience against drought and climatic impacts and to develop for the following areas:

Table 11: Expected results from project Sub –Components

Table 10: Anticipated Results

Sub-components of the program	Expected results from each Sub-Components
Support Sustainable Management of Agro-pastoral land	<ul style="list-style-type: none">• Supported Sustainable Management of agricultural land• Supported Sustainable Pastoral Land Management
Develop Climate Resilient Infrastructure	<ul style="list-style-type: none">• Supported Agricultural Infrastructure• Supported Pastoral infrastructure• Supported Economic Diversification

Promote Climate-Smart Innovations and Technologies	<ul style="list-style-type: none"> • Supported diffusion of CSA Technologies • Supported knowledge management and technology transfer • Improved Nutritional Status of Households
Facilitating access to advisory services, financing and markets	<ul style="list-style-type: none"> • Established finance mechanism for SME • Reached international Standards for feed and fodder, livestock products, value addition • Digitalized commodity and Livestock trade
Supporting Development of Entrepreneurship	<ul style="list-style-type: none"> • Established cooperatives development, commodity-interest groups • Constructed dairy and crop product markets • Setting up PPPs through better marketing
Promoting Domestic Bio-digesters and Solar Energy	<ul style="list-style-type: none"> • Supported institutional policy and regulations arrangements at national level • Established bio-digesters and solar energy and the use of by-products
Development of Climate Services	<ul style="list-style-type: none"> • Improved the quality of climate data • Established centers for generating and disseminating climate information and service
Build capacities of main stakeholders of the agro-pastoral sectors in drought prone areas for mainstreaming and monitoring Climate Change	<ul style="list-style-type: none"> • Supported knowledge development and dissemination • Supported monitoring-resilience assessment • Supported the establishment of livestock and crops insurance
Strengthen the Operational Capacity for resilience	<ul style="list-style-type: none"> • in Selected Shared Small River Basins and Aquifers • Supported tools development and dissemination • Supported the operationalization of NDCs (national determined conditions) in HoA countries

7.4 ICT Sector in Somalia

ICT cuts across every business sector worldwide and reaches into the lives of almost every business on this planet today. Meanwhile, ICT sector is progressing fast in Somalia and can support and advance agro-business sector. There is evidence that ICT has made significant contributions to agro-business because it allows enterprises to manage their operations, and it has major impacts on the business. There are many institutions of private and NGOs applied ICT instruments in Somalia for various services that helping contribute to improve socio-economic conditions of the local communities. It is widely used for remittances particularly by Diasporas, E-cash transfers by private sector for business development. ICT instruments also supports loans, grants and can be used for disseminating weather related information such as rain forecast, early warning system and wind conditions. ICT instruments also take role in health for delivering awareness information.

8.0 Intervention approach

The study employed methods and data collection termed in the TOR of the program. So, to produce a report the study utilized following methods include (Documents review, KII, Observation, FGD).

8.1 Documents reviewed

- National Livestock, sustainable land management and agriculture policies
- National development plan 2020-2024
- Livestock sector strategy
- Country program paper
- Reports in DRSLP I
- IGAD strategies
- Somalia recovery and residence framework
- National fishery policy (draft)
- Impact needs assessment (Somalia)
- Other relevant documents

8.2 Key interview

- One and one interview carried out to deep understanding of the key expected persons for the project implementation of DRSLPI and DRSLP II and those people include:
- IGAD focal point
- IGAD national coordinator

- Livestock and pasture experts in the Ministry of livestock and range
- Environmental ministry and agriculture key experts
- Local community leaders in the cluster or affected areas
- Livestock/ fish/crop traders
- Chamber of commerce staff
- Associations/cooperatives of agriculture
- Livelihood managers of FAO, WFP,
- Key staff of the Ministry of water

8.3 Observation of Drought, Flood affected areas (Photo)

- Livestock market
- Meat/ slaughterhouse
- Dairy/milk market
- Riverine areas
- Coastal areas
- Crop/

8.4. Focus Group Discussion

- There will be sites in which local communities are concentrated, to conduct small discussion among the community for identifying needs, priorities and challenge overcomes are necessary and can be gathering such information from various age, gender and status of the community to obtain full participation of the local people to show the ownership of the ideas and needs.

8.5 Approach of the Study

The approach of the collecting information is different and three will be significant to produce for harmonization of the study. And these are: -

- Land sustainable approach
- Value chain and agribusiness approach
- Livestock/fishery approach

8.5.1 Land sustainable approach

- National SLM consultants will “**work as a team**” with their National Country Team Leaders (NTLs) alongside other national sector consultants, where and when necessary, to identify areas of mutual collaboration for data collection and engage in this approach to avoid duplication of effort and fatigue of actors and stakeholders.

- Based on “**prior information requests**”, consultants will collect data for the SLM study from actors, stakeholders and beneficiaries as specified in (a) section 2.2.2 of the Inception Report, titled, “meeting NICs in member States to facilitate access to data sources and organize meetings”; and (b) section 2.2.4 of the Inception Report, titled, “conduct field visits to the agreed sites and collect primary data.”
- National SLM consultants and the regional SLM consultant will adopt a “**fluid two-way communication approach**” to ensure rapid agreement and understanding of (a) data collection methods, tools and sources, (b) format and content of national SLM reports to ensure consistency among country reports, and (c) data analysis and format for the presentation of results in national reports.

8.5.2 Value Chain Agribusiness Approach

As a number of actors are involved between the farmers and the customers the study will be evaluating the strength and weakness of each value chain, market information system, access to inputs and finance.

The mapping process includes the existing and potential Value Chains: **The Livestock and livelihood Diversification activities. Potential diversification options** include innovative valued additions activities, supported by recent research information’s and piloted in similar environments.

8.5.2.1 Evaluation of existing Agribusiness Projects

- Key infrastructures for the development of the value chains project sites
- Sustainable energy & by-product utilization (circular economy)
- Activities of value chain actors, partners, enablers and stakeholders

8.5.3 Livestock/fishery approach

The livestock is significant for data collection and it has number of aspects to gather the information from the field, apart from KII, FGDs & observation. Following methods are to fully gather enough information.

- SWOT analysis approach
- Subsector analysis approach
- analysis approach
- Expenses/income of farm analysis approach
- trend analysis approach
- Cost benefit analysis
- Value of money modeling
- and financial feasibility

9.0 Detailed Cost of the Program

Table 12. Summary of costs for project components per State/region

Table 11: Project Cost

Component	Sub Component	Total Cost of Projects (USD \$)	Percentage (%)
SOMALIA			
SIX DIFFERENT STATES & BRA			
1. Strengthening the Resilience to Climate Change	1.1 Support for Sustainable Management of Agro-pastoral land	1,200,000	72.2%
	1.2 Development of Climate Resilient Infrastructure	12,581,850	
	1.3 Promotion of Climate-smart innovations and technologies.	300,000	
2. Supporting Agribusiness Development,	2.1 access to advisory services, financing and markets;	3,100,000	20.72%
	2.2 Supporting Development of Entrepreneurship; and	824,300	
	2.3 Promoting Domestic Bio-digesters and Solar Energy.	119,350	
3. Strengthening Adaptive capacity to Climate Change,	3.1 Development of Climate Services	75,000	7.08%
	3.2 Building capacity of main stakeholders	925,000	
	3.3 Strengthening the Operational Capacity for resilience.	381,350	
4. Program coordination and management.	4.1 Management of national components	0	
GRAND TOTAL		19,506,850	100%

BREAKDOWN OF ESTIMATED COST OF ACTIVITIES

IGAD DROUGHT RESILIENCE & SUSTAINABLE LIVELIHOODS PROGRAMME (IDDRSI SOMALIA) PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION SECURITY IN THE HORN OF AFRICA THE PROPOSAL OF ACTIVITIES AND SITES

Summary Somaliland Water Infrastructure

Somaliland	Region	District	Borehole	Canals	Dams	Berkeds	Shallow wells	Total cost USD
Togdheer								
Rehabilitation of Dams	Togdheer	Burao			1			120,000
Rehabilitation of Dams	Togdheer	Buhodle			1			120,000
Rehabilitation of rain fed diversion water canal	Togdheer	Odweyne/Xaaxi		1				150,000
Subtotal				1	2			390,000

Waqooyi Galbeed								
Rehabilitation of Shallow wells	Waqooyi Galbeed	Hargeisa District					5	10,000
Rehabilitation of Earth Dams	Waqooyi Galbeed	Hargeisa District			1			120,000
Subtotal					1		5	130,000
Awdal								
Maintenance of Borehole	Awdal	Saylac	1					15,000
Maintenance of Dams	Awdal	Boorame			2			240,000
Rehabilitation of communal Water reservoirs (Berkeds)	Awdal	Boorame				5		25,000
Rehabilitation of Dams	Awdal	Lughaya			1			120,000
Subtotal			1		3	5		400,000
Sool								
Rehabilitation of communal water reservoirs (Berkeds)	Sool	Lasanaod				10		50,000
Rehabilitation of earth dam	Sool	Taleex			1			120,000
Subtotal of Sool					1	10		170,000
Total			1	1	7	15	5	1,090,000

Summary Puntland Water Infrastructure								
Puntland	Region	District	Borehole	Canals	Dams	Berkeds	Shallow wells	Total cost
Bari/Sanaag/Mudug								
Rehabilitation of Dams	Bari	Iskushuban (Ufeyn)			1			120,000
Rehabilitation of Dams	Bari	Qardho			1			120,000
Rehabilitation of Dams	Sanaag	Badhan/Cawsane			1			120,000
Rehabilitation of Dams	Mudug	Galkacyo			2			240,000
Rehabilitation of Dams /Borehole	Bari	Baargaal	2					50,000
Subtotal			2		5			650,000
Nugaal								
Rehabilitation of communal Water reservoirs (Berkeds)	Nugal	Dangoroyo				5		25,000
Subtotal						5		25,000
Mudug/Waqooyi Gaalkacyo								
Rehabilitation of communal Water reservoirs (Berkeds)	Mudug	Goldogob				5		25,000

Rehabilitation of communal Water reservoirs (Berkeds)		Burtinle				10		50,000
Subtotal						15		75,000
Total			2		5	20		750,000

Summary Galmudug Water Infrastructure

Galmudug	Region	District	Borehole	Canals	Dams	Berkeds	Shallow wells	Total cost
Mudug Koonfur								
Rehabilitation of Dams	Mudug	Galkacyo			1			120,000
Rehabilitation of Dams	Mudug	Galkacyo			1			120,000
Maintenance of Borehole	Mudug	Galkacyo	1					120,000
Construction of Borehole	Mudug	Hobyo-Ceelhuur			2			240,000
Construction of Borehole	Mudug	Hobyo-Xeero-dhagaxley	2					240,000
Rehabilitation of communal Water reservoirs (Berkeds)	Mudug	Hobyo-Wisil				5		25,000
Subtotal			3		4	5		865,000
Galgaduud								

Rehabilitation of Earth Dams	G/gaduud	Guriceel			1			120,000
Rehabilitation of Earth Dams	G/gaduud	Dhuusamareeb			1			120,000
Construction of Borehole	G/gaduud	Caabuqwaaq			1			120,000
Rehabilitation of earth dam	G/gaduud	Galinsor			1			120,000
Rehabilitation of Earth Dams	G/gaduud	Adado-Qaradhi			1			120,000
Rehabilitation of Earth Dams	G/gaduud	Balanbale			1			120,000
Rehabilitation of earth dam	G/gaduud	Xananbuuro			1			120,000
Rehabilitation of communal Water reservoirs (Berkeds)	G/gaduud	Miirjicle				2		10,000
Rehabilitation of communal Water reservoirs (Berkeds)	G/gaduud	Bandiiradleey				2		10,000
Rehabilitation of communal Water reservoirs (Berkeds)	G/gaduud	Xeraale				5		25,000
Subtotal					7	9		885,000
Total			3		11	14		1,750,000

Summary Hirshabelle Water Infrastructure

Hirshabelle	Region	District	Borehole	Canals	Dams	Berkeds	Shallow wells	Total cost
Hiiraan/Middle Shabelle								
Rehabilitation of Dams	Hiiraan	Matabaan			1			120,000
Rehabilitation of Dams	Hiiraan	Mahas			1			120,000
Rehabilitation of Dams	Hiiraan	Ferfer			2			240,000
Construction of Borehole	M/Shabelle	Warshiiq			1			120,000
Rehabilitation of communal Water reservoirs (Berkeds)	Hiiraan	Mahas				2		10,000
Rehabilitation of communal Water reservoirs (Berkeds)	Hiiraan	Matabaan				7		35,000
Subtotal					5	9		645,000
Total					5	9		645,000

Summary Koonfur Galbeed Water Infrastructure

Koonfur Galbeed	Region	District	Borehole	Canals	Dams	Waro	Shallow wells	Total cost
Bay/Lower Shabelle region								
Rehabilitation of Dams	Bay	Diinsoor			2			240,000
Rehabilitation of communal Water reservoirs (Waro)	Bay	Baydhabo				10		350,000
Rehabilitation of Dams	Bay	Bardale			1			120,000
Rehabilitation of Dams	L/Shabelle	Wanlaweyn			1			120,000
Rehabilitation of Dams	Bay	Diinsoor			1			120,000
Rehabilitation of Dams	Bay	Baydhabo			1			120,000
Rehabilitation of Dams	Bay	Bur-hakabo			1			120,000
Subtotal					7	10		1,190,000
Bakol Region								
Rehabilitation of Dams	Bakol	Xudur			2			240,000
Rehabilitation of Dam	Bakol	Ceel-barde			1			120,000

Rehabilitation of Dams	Bakol	Rabdhure			1			150,000
Rehabilitation of Dams	Bakol	Wajid			1			120,000
maintenance of Boreholes	Bakol	Yeed	1					40,000
Subtotal			1		5			670,000
Total			1		12	10		1,860,000

Summary Jubaland Water Infrastructure								
	Region	District	Borehole	Canals	Dams	Berkeds	Shallow wells	Total cost
Lower juba								
Rehabilitation of Dams	Lower juba	Dhoobley			2			240,000
Rehabilitation of Dams	Lower juba	Afmadow			1			120,000
Subtotal					3			360,000
Gedo region								
Rehabilitation of Dams	Gedo	Ceel-waq			1			120,000
Rehabilitation of Dams	Gedo	Balad-xawo			1			120,000
Rehabilitation of communal Water	Gedo	Balad-xawo				2		10,000
Maintenance of Borehole	Gedo	Garbahaaray			1			120,000
Rehabilitation of Dams	Gedo	Garbahaaray			1			120,000

Subtotal					4	2		490,000
Total					7	2		850,000

Grand Total

6,945,000

Water infrastructure

35.60%

Summary Somaliland Feeder & Stock Routes Infrastructure

Somaliland	Region	District	From	To	KM	Cost	Unit	Total cost
Togdheer/Awdal								
Rehabilitation of Feeder Road	Togdheer	Burco	Balidhiig	Qoryaale	90	2,666.67	road	240,000
Rehabilitation of Feeder Road	Awdal	Saylac	Xariirad	Saylac	60	3,200	road	192,000
Subtotal								432,000
Total								432,000

Summary Puntland Feeder & Stock Routes Infrastructure

Puntland	Region	District	From	To	KM	Cost	Unit	Total cost
Bari								
Rehabilitation of Feeder Road	Bari	Allula	Lafoguray	Allula	100	4,800	road	480,000
Subtotal								480,000

Total								480,000
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Summary Galmudug Feeder & Stock Routes Infrastructure

Galmudug	Region	District	From	To	KM	Cost	Unit	Total cost
Mudug								
Rehabilitation of Stock routes	Mudug	Galkacyo	Galkcayo	Kalcad	61.25	4800		294,000
Rehabilitation of Feeder Road	Mudug	Hobyo	Ceel-dheere	Xeero-dhagaxley	50	4800		240,000
Rehabilitation of Feeder Road	Mudug	Hobyo	Gawan	Diga-gaw	50	4800		240,000
Subtotal								774,000
Galgaduud								
Rehabilitation Stock Routes	Galgaduud	Adaado	Adaado	Laas-Wardheere	50	1,000		50,000
Stock routes	Galgaduud	Dhusamareeb	Dhusamareeb	Mirig	60	1000		60,000
Subtotal								110,000
Total								884,000

Summary Hirshabeele Feeder & Stock Routes Infrastructure

Hirshabelle	Region	District	From	To	KM	Cost	Unit	Total cost
Hiiraan/Middle Shabelle								
Stock routes	M/Shabelle		Adale	Jowhar	60	1000	road	60,000
Stock routes	Hiiraan		Feerfeer	Baldweyn	60	1000	road	60,000

Rehabilitation of feeder road	Hiiraan		Feerfeer	Baldweyn	60	4800	road	288,000
Subtotal								408,000
Total								408,000

Summary Jubaland Feeder & Stock Routes Infrastructure

Jubaland	Region	District	From	To	KM	Cost	Unit	Total cost
Lower Juba								
Rehabilitation of feeder road	Lower Juba		Afmadow	Xagar	60	4800		288,000
Rehabilitation of Stock Routes	Lower Juba		Bashaadhe	Dhobley	60	1000		60,000
Subtotal								348,000
Gedo								
Stock routes	Gedo		Doolow	G/haaray	60	1000	road	60,000
Rehabilitation of feeder road	Gedo		Baldxaawo	Celwaaq	60	4800	road	288,000
Rehabilitation of stock routes	Gedo		Baardheere	G/haaray	60	1000	road	60,000
Subtotal								408,000
Total								756,000

Summary Koonfur Galbeed Feeder & Stock Routes Infrastructure

Koonfur Galbeed	Region	District	From	To	KM	Cost	Unit	Total cost
Bay, Bakol and lower Shabelle								

Rehabilitation of feeder road from Baydhabo to Xudur through labaatan jiro route	Bay/Bakool	Baydhabo/Xudur	Baydhabo/lab aatan jiro	Xudur	70	4800	1	336,000
Stock routes	Bakool		Ceelbarde	Xudur	60	1000	road	60,000
Stock routes	Bakool		Rabdhure	Xudur	60	1000	road	60,000
Rehabilitation of feeder road	Bay/Bakool		Waajid	Baydhabo	60	4800	road	288,000
Rehabilitation of feeder road	Bay		Diinsoor	Baydhabo	60	4800	road	288,000
Subtotal								1,032,000
Total								1,032,000

Grand Total

3,992,000

Feeder road/Stock route

20.46%

Summary Somaliland Veterinary Services

Somaliland	Region	District				Cost	Unit	Total cost
Togdheer								
Construction Livestock abattoir	Togdheer	Balidhiig				250,000	1	250,000

Construction of Animal health Border Post with fencing, cattle crush	Togdheer	Raydabkhaatumo				63,000	1	63,000
Construction of Animal health Border Post with fencing, cattle crush	Togdheer	Buhodle				63,000	1	63,000
W/Galbeed								
Construction of Animal health Border Post with fencing, cattle crush (checking certification point)	W/Galb eed	Baligubadle				63000	1	63,000
Awdal								
Construction of Animal health Border Post with fencing, cattle crush (checking certification point)	Awdal	Dilla					1	63,000
Rehabilitation Livestock Abattoir	Awdal	Boorame				150,000	1	150,000
Construction of Animal health Border Post with fencing, cattle	Awdal	Xariirad				63000	1	63,000

crush (checking certification point)								
Sool								
Rehabilitation Livestock market shade	Sool	Lasanod					1	65,500
Rehabilitation of a veterinary Service house at the district (DVO;s office inventory office, Cold chain room, Vet lab and store)	Sool	Lasanod				65,500	1	65,500
Total								846,000
Summary Puntland Veterinary services								
Puntland	Region	District				Cost	Unit	Total cost
Nugaal								
Rehabilitation Livestock Market (shade)	Nugaal	Burtinle				65,500	1	65,500
Mudug/Bari								
Rehabilitation Livestock Market (shade)	Mudug	Galkio					1	65,500
Construction of Animal health Border Post with	Mudug	Goldogob				65,500	1	65,500

fencing, cattle crush								
Livestock holding ground(fencing, water/Latrine/lives tock crash)	Bari	Qardho				63,000	1	63,000
Total								259,500

Summary Galmudug Veterinary services								
Galmudug	Region	District				Cost	Unit	Total cost
Galgaduud								
Construction of Animal health Border Post with fencing, cattle crush	Galgaduud	Balanbale					1	63,000
Construction of Animal health Border Post with fencing, cattle crush	Galgaduud	Guriceel				63,000	1	63,000
Livestock Market Shade	Galgaduud	Dhusamareb				200,000	1	200,000
Mobile Vterinery Clinic & Laboratories	Galgaduud	Adadado/Dhisamareb/Abduwaq/Guriceel				100,000	4	400,000

Rehabilitation of Milk collection center (shade)	Galgaduud	Adaado				50,000	1	50,000
Construction of livestock Market Shade	Galgaduud	Baxdo				74,000	1	74,000
Subtotal								850,000

Summary Hirshabele Veterinary services								
Hirshabelle	Region	District				Cost	Unit	Total cost
Hiiraan								
Construction of Animal health Border Post with fencing, cattle crush	Hiiraan	Feerfeer				63000	1	63,000
Rehabilitation of Milk collection center (shade)	Hiiraan	Beledweyne				63,000	2	126,000
Mobile Clinic & Laboratory	Hiiraan/M Shabelle	Beledweyne/Jowhar				100,000	2	200,000
Livestock Market shade with veterinary clinic	Hiiraan	Beledweyne				150,000	1	150,000
Subtotal								539,000

Total

Summary Jubaland Veterinary services

Jubaland	Region	District				Cost	Unit	Total cost
Gedo / Lower Jubba								
Construction of Animal health Border Post with fencing, cattle crush	Gedo	Celwaq					1	63,000
Construction of Animal health Border Post with fencing, cattle crush	Lower Jubba	Afmadow				63,000	1	63,000
Mobile Clinic and Laboratory	Lower Jubba	Kismayo				100,000	1	100,000
Rehabilitation of Milk collection center (shade)	Gedo	Beledxaawo					1	63,000
Construction of Animal health Border Post with fencing, cattle crush	Gedo	Dolow				63,000	1	63,000
Livestock Market shade	Gedo	Beledxaawo				74,000	1	74,000
Subtotal								426,000

Summary Koonfur Galbeed Veterinary services

Koonfur Galbeed	Region	District				Cost	Unit	Total cost
Bay & Bakol								
Construction of Animal health Border Post with fencing, cattle crush	Bakol	Ceelbarde					1	63,000
Construction of Animal health Border Post with fencing, cattle crush	Bakol	Rabdhure				63,000	1	63,000
Mobile Clinic and Laboratory	Bay/Bakol	Xudur/Dinsor/Baydhabo				100,000	3	300,000
Rehabilitation of Milk collection center (shade)	Bay	Dinsor/Baydhabo				63,000	2	126,000
Livestock Market shade	Bakool	Wajid				74,000	1	74,000
Livestock Market shade	Bay	Dinsor				74,000	1	74,000
Rehabilitation Livestock Abattoir	Bay	Baydhabo				150,000	1	150,000
Subtotal								850,000

Summary Federal Government of Somalia, Veterinary services & infrastructure

Federal Institution	Region	District				Cost	Unit	Total cost
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Ministry of Livestock Forestry and Range								
Construction Milk collection and posturizing	Banadir	Mogadishu				160,000	1	160,000
Leather Processing Center	Banadir	Mogadishu				233,000	1	233,000
Mobile Clinic and Laboratory	Banadir	FGS				100,000	1	100,000
Subtotal								493,000

Grand Total	4,263,500							
Veterinary services		21.86%						

Summary of Somaliland Conservation/land Management								
Somaliland	Region	District				Cost	Unit	Total cost
Togdheer								
Support to the Buro University with Soil Lab test and meteorology station	Togdheer	Burao				25,000	2	50,000
Soil and water Conservation, water diversion, restoration of severely degraded rangelands- 300 ha -cross borders and	Togdheer	Odweyne				2,000	100	200,000

community mobilization and sensitization.								
Total								250,000

Summary of Puntland Conservation/land Management

Puntland	Region	District				Cost	Unit	Total cost
Bari/ Sanaag/Nugaal/Mudug								
restoration and Management Severely degraded rangelands	Bari/nugaal					100,000	3	300,000
support 10 Community-base seasonal grazing reserves	Sanaag/nugaal/Bari					5000	10	50,000
Prosopis management and control measures	Bari/Nugaal/Sool					35,000	2	70,000
Soil and water conservation, water diversion, restoration and management of severely degraded rangelands -300 ha cross borders and community	Mudug/Bari/Sanaag					5,000	5	25,000

mobilization and sensitization								
reforestation or PMNR/NTR Natural Trees restoration	Nugaal/Sanaag/bar i					20,000	4	80,000
Construction of soul bunds and pits	Sanaag/nugaal/Bar i Xiingalool					5,000	5	25,000
Construction of model feedlot	Nugaal/Sanaag/bar i					85,000	1	85,000
Total								635,000

Summary of Galmudug Conservation/land Management

Galmudug	Region	District				Cost	Unit	Total cost
South Muddug/Galgaduud								
support 20 community-base seasonal grazing reserves						5,000	20	100,000
Prosopis management and control measures	Galgaduud	Cadaado /Baxdo				35000	3	105,000

Soil and water conservation, water diversion, restoration and management of severely degraded rangelands -300 ha cross borders and community mobilization and sensitization	Koonfur gaalkacyo	Gaalkacyo/Gelinsoor				2,000	200	400,000
Total								605,000

Summary of Koonfur Galbeed Conservation/land Management

Koonfur Galbeed	Region	District				Cost	Unit	Total cost
Bay/Bakol/ Lower Shabelle								
Prosopis management and control measures	Bay/Bakol					35,000	3	105,000
Sand dunes /fixation	L/shabelle	Marka / Barawe						150,000
Soil and water conservation, water diversion, restoration and management of severely degraded rangelands -300 ha cross borders and	Bay					2,000	150	300,000

community mobilization and sensitization								
Total								555,000

Summary of Jubaland Conservation/land Management

Jubaland	Region	District				Cost	Unit	Total cost
Gedo								
Prosopis management and control						35,000	3	105,000
Soil and water conservation, water diversion, restoration and management of severely degraded rangelands -300 ha cross borders and community mobilization and sensitization	Gedo					2,000	150	300,000
Total								405,000

Summary of Hirshabele Conservation/land Management

Hirshabele	Region	District				Cost	Unit	Total cost
Mataban /Maxas/lowershabele								
Prosopis management and control	Hiran	Mataban / Maxas Ferfer				35,000	3	125,000
Sand dunes	M/Shabelle	Warshikh				50,000	1	50,000
Soil and water conservation, water diversion, restoration and management of severely degraded rangelands -300 ha cross borders and community mobilization and sensitization	Shabelle Dhexe					2,000	150	300,000
Subtotal								475,000

Conservation/land Management 14.99%

Grand Total 2,925,000

Summary of Somaliland Capacity Building

Somaliland	Region	District				Cost	Unit	Total cost
Resilience and strengthen for Gender Equality (women and youth)	Togdheer/W/galbeed/Awdal					10,000	3	30,000
Establishment of Solar water heater for public places (schools, academies, prisons)	Somaliland					10,000	2	20,000
Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock Zoonitic diseases at cross borderline	Togdheer/W/galbeed/Awdal					100,000	1	100,000
Subtotal								150,000

Summary of Puntland Capacity Building

Puntland	Region	District				Cost	Unit	Total cost
Resilience and strengthen for Gender Equility (women and youth)	Sanaag/Nugaa//Bari					3,000	11	33,000
Establishment of Solar water heater for public places (schools, academis, prisons	Puntland					3,000	1	3,000
Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock zoonitic diseases at crossborderline	Bari/Sanaag/Sool/Nugaal/Mudug					4,000	5	20,000
Capacity builing for concerned public, private instutions, CSOs, and local pastoral commynities.	Bosaso/Galkio/Garowe					4,000	10	40,000
Community consultations	Puntland					7,000	3	21,000
Subtotal								117,000

Summary of Galmudug Capacity Building

Galmudug	Region	District				Cost	Unit	Total cost
Resilience and strengthen for Gender Equality (women and youth)	Galgaduud/Mudug					20,000	2	40,000
Establishment of Solar water heater for public places (schools, academies, prisons)	Bosaso/Galkio/Garowe					4,000	10	40,000
Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock Zoonitic diseases at cross borderline	Galmudug					10,000	2	20,000
Capacity building for concerned public, private institutions, CSOs,	Galmudug					7,000	3	21,000

and local pastoral commynities.								
Subtotal								121,000

Summary of Hirshabelle Capacity Building

Hirshable	Region	District				Cost	Unit	Total cost
Resilience and strengthen for Gender Equality (women and youth)	Hiiraan					20,000	2	40,000
Establishment of Solar water heater for public places (schools, academies, prisons	M/Shabelle/Hiran	Jowhar/ Beledwe yne				4,000	10	40,000
Research and study of land degradation in dry lands, impact of climate changes, range management/fodde r production, and livestock Zoonitic diseases at cross borderline	M/Shabelle/Hiran	Jowhar/ Beledwe yne				10,000	2	20,000

Capacity building for concerned public, private institutions, CSOs, and local pastoral communities.	Hirshabelle					7,000	3	21,000
Subtotal								121,000
Total								

`Summary of Koonfur Galbeed Capacity Building								
Koonfur Galbeed	Region	District				Cost	Unit	Total cost
Resilience and strengthen for Gender Equility (women and youth)						20,000	2	40,000
Establishment of Solar water heater for public places (schools, academies, prisons)						4000	10	40,000
Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and	S/w					10000	2	20,000

livestock Zoonitic diseases at cross borderline								
Capacity building for concerned public, private institutions, CSOs, and local pastoral communities.	S/w					7,000	3	21,000
Subtotal								121,000

Summary of Jubaland Capacity Building

Jubaland	Region	District				Cost	Unit	Total cost
Establishment of Solar water heater for public places (schools, academies, prisons)	Jubaland					20,000	2	40,000
Resilience and strengthen for Gender Equality (women and youth)	L/juba/Gedo					4,000	10	40,000

Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock Zoonotic diseases at cross borderline	Jubaland					10,000	2	20,000
Capacity building for concerned public, private institutions, CSOs, and local pastoral communities.	Jubaland					7,000	3	21,000
Subtotal								121,000

`Summary of Federal Government's Capacity Building								
FGS	Region	District				Cost	Unit	Total cost
Awareness Raising to the Communities	Respective Regions	Respective Districts				Lampsum		150,000
M&E						Lampsum		100,000
PIU-Administration						Lampsum		300,000

Capacity building Federal line Ministries including (Computers)	FGS					Lumpsum		80,350
Subtotal								630,350
Total								630,350
	Capacity building				7.08%			
Grand Total								1,381,350
Total cost								\$ 19,506,850

10.0 Economic and financial analysis

10.1 Economic profile of the project

The implementation of the project will have impact for the people around cross-border areas in Somalia, particularly pastoral and agro-sylvo-pastoral people. The livestock holders will be the main beneficiaries of this project and there will be other indirect benefits, for improved livelihoods, water availability and accessibility to the Livestock and crop farmers. Women and youth will access income generating activities during implementation and the post implementation, because the anticipation of enhanced their income. The project will cover land irrigation, Livestock health production services delivery, fodder production and management.

In addition to, construction of infrastructure includes animal health certification point at border areas, water dams and feeder roads. The produce of livestock and agricultural will have market accessibility due to the construction of feeder roads; which will link border community to the main markets in populated areas. During construction of infrastructures there will be indirect and direct employment to the labor around the infrastructure's sites. The other project benefits will include reduction of poverty, drought shock resistance, economic empowerment, and increase capacity of government specially developing regulations, strategies and policies; social and women empowerment.

10.2 Project Cost-benefit analysis

Pastoral and agro-sylvo pastoral project completion will have some factors for returning benefits, and the return of Livestock production will have higher rate than other productions due to the locality of the project in which mainly people rear animals and other production activities are relatively low. The financial investment of the project interventions of existing and new dams, Bekerds, shallow wells, heifers with other livestock extension services and agriculture support are expected to reduce water scarcity and its costs with travelling distances of water fetching by children and women. The rehabilitation and construction of water infrastructures will also mitigate drought prone and reduce economic losses due to recurrent droughts and flooding. Household income from livestock and livestock productivity such as dairy and meat fattening are also expected to increase. In addition to that, financial investment will enhance livelihoods for livestock/livestock value chain, expansion of crop areas/yields and fishing households. All project interventions contribute and increase in overall production of livestock and crop farm revenue.

The project households will also get extra income compared before project initiations which generated from fatted livestock, dairy, fodder and fruit/vegetables crops sales. As a result of increases water infrastructure rehabilitation and construction with other supports in project areas, are expected to rise the livestock production, and agricultural benefits to pastoralists and agro-

pastoralists. The livestock benefits in the project area are estimated to account for 75% of the overall economic of the country.

10.3 Project Benefits

A financial and economic analysis has been carried out in order to assess the viability of the investments proposed under program to build resilience for food and nutrition security for the above projects. The main project interventions include:

- 1) Rehabilitation/construction of water infrastructure – Dams, and Berkeds,
- 2) Rehabilitation of existing irrigation canals and drainage infrastructure;
- 3) Management, operation and maintenance of boreholes with solar system
- 4) Sustainable land management – soil and water conservation
- 5) Rangeland Management /fodder production for livestock support

The main benefits of these interventions are expected to be:

- (i) Improved livestock production and livestock incomes;
- (ii) mitigation of economic losses due to droughts and or flooding, and
- (iii) Reduced livestock mobility and mortality
- (iv) Soil and water conservation and watershed management increased
- (v) Livestock value production and productivity increased
- (vi) increased cropping intensity and higher crop yields;

A minimum of 600 households are expected to be the residents of each settlement along with almost rural nomadic of 1500 HH in the surrounding area are expected to benefit from each water source of each settlement. The average Number of persons per HH is 7. So, 14,700 persons ($1500 \times 7 + 600 \times 7$) will benefit from each settlement water source.

The water needs of a community is the amount of water currently used by people for domestic purposes as drinking, cooking and cleaning as well as for irrigation and for livestock. Around 14,700 persons of 20 lpcd will get their supply water from each settlement. During dry periods which is 294,000 liters per day. Assuming that those three months of dry period or 100 days, the expected water demand is 29,400,000 which is equivalent to (29,400 m³). To estimate the amount of water needed for livestock, the estimated number of livestock per households are as follows, - the estimated number of nomadic households surrounding the settlement is 1500. The estimated number of sheep/goats per household is 150. The estimated number of camels per household is 30. Assuming that the Camel requires water for every ten days and goat/sheep for every five days, the following table will demonstrate the water demand for the livestock.

Table 12

S#	Particulars	Quantity of water facility rehabilitating	Total capacity of water facility capacity
1	60,000 m ³ earth dam with complete ancillary works including water tank, animal troughs, water point and with solar system	47 earth dams	2,820,000 m ³
2	Cracked berkeds with average water supply capacity of 2000 m3	60 berkeds,	120,000m3
3	Water catchments (Waro) of 5,000 m3	10 warro	50,000 M ³
4	9000m3 supply water shallow wells	5 shallow wells	45,000 M ³
5	43,800 m3 water supply boreholes	7 boreholes	306,600 M ³
6	2000 m3 rain-fed canals	2 canal	4,000m3
	Total water supply per year		3,305,600 M³

10.4 Pasture degradation and livestock feed shortages

Pasture use in cross border areas between Ethiopia and Somalia particularly situated around central regions, Somaliland and Puntland has been based on livestock seasonal mobility that allows for re-growth of pasture plants. Field assessment report shows that increment in movement is detrimental to pastures in terms of quality and quantity of forage plants and soil condition.

Meanwhile, the pastures further away from settlements have become under-utilized while the more accessible pasture areas are over-utilized. This is reported to lead to eco-system degradation mainly due to unregulated grazing. About xxx km of grazing land degraded to land loss (soil erosion) will be restored and maintained. Also about 720 **km** long feeder roads and **720 km** long stock routes will be rehabilitated. The vet services will be rehabilitated is **47** centers.

I. Demand

- The livestock sector is the largest contributor to Somali livelihoods with over 65% of the population engaged in some way in the industry.. Exports of livestock and their products account for 80 percent of exports in normal years but exports have been periodically interrupted by droughts and international banks such as the one imposed by Saudi Arabia in 2000.
- In spite of this, livestock exports continue to be the largest traded commodity in Somalia. Livestock are shipped to various countries in the Arabian Peninsula, and transported to markets in Kenya, Djibouti, and Ethiopia. Livestock also enter Somalia through the borders with Ethiopia and Kenya. Furthermore, livestock is a key local consumption commodity for household food and nutrition security in the Horn of Africa. Livestock is also the main source of employment in the country.
- Pastoralists exist throughout Somalia with high concentrations of **strict pastoralists in the north and central areas and pastoralists and agro-pastoralists in the southern areas**. Throughout greater Somalia (including areas of Ethiopia and Kenya), rainfall patterns force a complex series of movements in search of grazing-land between the different seasons.

II. Financial returns to Agro-Silvo-pastoralists

Table 13: Financial return

S@	Year	2021	2022	2023	2024	2025	2026
1	Livestock trade						
1.1	Shoats heads		4,000,000	4,000,000	4,000,000	4,000,000	4,000,000
1.2	Camel heads		75,000	75,000	75,000	75,000	75,000
1.3	Cattle heads		340,000	340,000	340,000	340,000	340,000
	Revenue from livestock sales		360 Million	360 Million	360 Million	360 Million	360 Million
2	Livestock Milk Production						
2.1	Cattle Milk production /litres		586 Million liters	586 Million litres	586 Million litres	586 Million litres	586 Million litres
2.2	Camel Milk production		2,415 Million litres	2,415 Million litres	2,415 Million litres	2,415 Million litres	2,415 Million litres
2.3	Goat Milk production		303 Million litres	303 Million litres	303 Million litres	303 Million litres	303 Million litres
2.4	Sheep milk productin		250 Million litres	250 Million litres	250 Million litres	250 Million litres	250 Million litres
	Cattle Milk sales @ 1 us/litre		586 US	586 US	586 US	586 US	586 US

	Camel milk sales (2,415*1\$)		2,415 Million USD	2,415 Million USD	2,415 Million USD	2,415 Million USD	2,415 Million USD
	Goat milk sales (0.8 \$ /litre)		242 Million USD	242 Million USD	242 Million USD	242 Million USD	242 Million USD
	Sheep Milk sales@0.8 \$/litre		200 Million USD	200 Million USD	200 Million USD	200 Million USD	200 Million USD
3	Taxes collection						
3.1	Livestock sales 10%						
3.2	Milk sales 10%						

The project contributes to substantial and sustainable livelihoods and economic impacts for both target beneficiaries and GDP.

10.5 Aggregated Value Chain

Aggregated Components								
Value chains								
Year	12/30/2021	12/30/2022	12/30/2023	12/30/2024	12/30/2025	12/30/2026	XNPV	12,771,094
Market(abattoir)	(380,000)	278,100	289,140	257,460	342,540	11,056,131	IRR	58.4
Market(Livestock Shade)	(676,000)	201,500	200,500	196,500	192,700	311,000		
Market (Milk collection shade)	(614,000)	127,500	127,500	127,500	127,000	458,500		
Market access (Feeder road)	(2,706,000)	1,639,600	1,639,600	1,639,600	1,639,600	2,092,600		
Market access (Stock route)	(633,000)	343800	343800	343800	343800	332800		
Leather Processing center	(222,000)	39,400	39,400	39,400	39,400	158,400		
Feedlot	(75,000)	43,000	43,000	43,000	43,000	43,000		
Somalia Total Value chain	(5,306,000)	2,672,900	2,682,940	2,647,260	2,728,040	14,452,431		

11.0 Program sustainability

The Project incorporates several features designed to promote long term sustainability including;

i. Institutional sustainability:

In direct response to the Government's Master Plan for agriculture sector particularly development of pastoral and agro-pastoral in Somalia, the Project will support agro-silvo-pastoral in Somaliland, Putland and South-central Somalia for strengthening their livelihood conditions through infrastructure development, and strengthening the country's institutional technical support system in the area of livestock production, climate change services and marketing, and action research. The continued strengthened institutional technical support by MoA and its technical departments' operational structures is the best guarantee of sustainability.

Furthermore, the program adopts a two pronged approach to sustainability by enhancing the capacity of both the stakeholders and communities. In line with the operations and standards, Modalities will be site specific with technical guidance including monitoring being provided by the responsible ministries. Each community will select a private operator who will be trained by the involved line Ministries of the Government on how to manage and operate the infrastructure with clear responsibilities to ensure sustainability.

The involved line Ministries will also be strengthened by developing capacity for operation and maintenance, procurement and contract formulation and supervision including ability to develop PPP concepts appropriate to the management of the infrastructures.

ii. Operational sustainability

The design gives attention to the market-led value chain development in agro-silvo-pastoral in partnership with private sector groups involving in livestock trade and production and other active market players and supporters. Support will also be placed on the development of improved market access and linkage involving better communication, processing, transport efficiency, post-harvest loss control, contractual relationships, production of quality products, better vet services and capture of premium prices;

iii. Production methods and technologies

Enhanced production methods and technologies aim at introducing responsive and competitive coping strategies in agriculture and livestock production and taking into account the environment

protection and conservation, climate-smart and based on income generation specialization and diversification, instead of ordering pre-identified production activities. Livestock production models are compatible with the local production activities, which are profitable at current prices with full accounting of operating and capital costs. Demand for these products is based on local consumption and market, with potential of export sales;

iv. Technical sustainability

The technical service support is designed to promote increased responsiveness of the infrastructure development and marketing services to real needs, and increased accountability to agro-silvo-pastoral groups or households. Government is already showing increased willingness to strengthen the service support system in line with the results being achieved; success of such service support mechanism can be referred to the system as good practice and for systematic replication;

v. Social sustainability:

The design emphasizes the development of self-sustaining community- based organisations such as farmers' interest groups in production, marketing and water management, which will be strengthened to play a key role in the implementation of project activities.

12.0 Risks and Mitigation

Table 13: Outcome/ Mitigation and Risks

Table 14: Outcome and Risks

Risks	Mitigation	Outcome
Weak Project Management capacities in particular the monitoring and reporting responsibilities to the Donor	PMU trained on the IGAD modality application.	Timely project activity implementation, and Project Monitoring and Evaluation Framework updated regularly together with reports submission
Unavailable Government of Somalia – MOA cost-sharing resources.	cost-sharing resources for project activity implementation MUST be allocated	Government of Somalia – cost-sharing resources timely availed

Disengaged government institutions, communities /states structures and have radical different ideas to support project.	Continuous mobilization, lobbying and briefing of local authorities/states /community/traditional leaders and structures through established decision-making processes.	Local authorities /states and structures support for development outcomes.
Competing MOAI Extension Department activities resulting inconsistent technical and advisory support to the rural communities	Engagement will include assigning roles and responsibilities on the project activities to the various partners.	Consistent support from the MOAI Extension Departments and ownership of the national development outcomes as advanced by the project
<p>In Somalia drought is less rainfall with conditions of water scarcity and variability that can causes livestock death and crop failure in areas of several months or years.</p> <p>The extent of land degradation.</p>	<p>Early warning and storing or harvesting a large amount of water for future use, building of dams/ reservoirs to block water flow, and repairing of boreholes and shallow wells in remote areas.</p> <p>Planting of drought-resistant crops/plants in dry areas.</p> <p>Restrictions on water usage during drought conditions to conserve water</p> <p>Soil and water conservation through agro forestry and water diversion</p>	<p>Improved water infrastructure for domestic and livestock use .</p> <p>Travel long distances for water collection reduced.</p> <p>Community and governments are committed to working together to maintain water sources. Reduced Livestock mortality and mobility.</p> <p>Improved water shed management, reduced erosion and environmental degradation</p>
Conflicts among communities for resource competition	Empowering community participation . communication, arbitration, dialogue discussion and mediation with deep	Clarification of individual views that build learning, and team work/cooperation

	understanding of root of causes and peace building .	Increased community participation, good management and creativity
Political instability may increase weakness of relevant government institutions leading project implementation to halt.	IGAD / Government will keep monitoring / observing the political situation and will change the implementation plans as and when necessary to avoid of project implementation.	Improved situation analysis to avoid any situation that can cause delay
Climate change or climate variability with environmental shocks	Empowering wind power and solar energy, reforestation with forest protection.	Reduced Human emission of greenhouse gases through use of renewable energy.

LOGICAL FRAMEWORK MODEL (FOR PROJECT ACTIVITIES)
PROGRAM TO PROGRAM TO BUILD RESILIENCE FOR FOOD AND NUTRITION
SECURITY IN SOMALIA

Table 15 Logical Framework (For project activities)

Program	Program to build Drought resilience for food and nutrition security in Somalia				
Purpose	Contribute to improving the living conditions of populations and food and nutritional security in the Somalia				
The overall program objective	Performance indicators			Means of verification	Risks/mitigation measures and assumptions
	Indicators (including CSI*)	Baseline	Target		
The overall objective of the Program as defined in the project identification mission of the AfDB is to contribute to improving living conditions and food and nutrition security in the Horn of Africa.	No of infrastructure rehabilitated/maintenance/constructed functioning. % Improving agro-silver pastoral food security and nutrition system	Baseline data collection in 2021	Baseline in 2025 Base line survey Monitoring and evaluation	Reports , baseline information from concerned institutions	Risks: security, drought, delay funds, conflict and weak coordination. Mitigation: situational analysis, on time funding releasing, early warning, conflict identification and solutions, strengthening coordination among concerned institutions
<i>Component 1: Strengthened the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change</i>	N° of HR recruitment of program staff No of community based risks reduction trained N° of mobilization and awareness raising and mitigation plan	Baseline in 2021 Baseline data collection	Baseline in 2025 Base line survey Monitoring and evaluation progress.	Measuring and resilience status of the progress communities. -Progress monitoring and evaluation of disaster risk reduction	Adequate risk analysis. Mitigation measures will developed. Financial / community contribution committed Government fully assisting Project team and IGAD

				Reports from government statistics services in the line Ministries and relevant institutions.	
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Impacts	<ul style="list-style-type: none"> Improved resilience of communities to CC, droughts, pandemics and shocks Communities stability improved through a secure income basis . Communities and their needs recognized by the political administration 	<p>N° of organizational capacity built for disaster risk reduction.</p> <p>N° of people /families with improved incomes through improved water and feeders etc.</p> <ul style="list-style-type: none"> N° of policy and plan of CRR formulated <p>N° of community members trained in DRR,</p> <p>N° of early warning takes place</p>	Baseline in 2021	Target in 2025	<ul style="list-style-type: none"> Reports from centers of excellence (relevant research centers/universities) Reports from IGAD and related institutions Centers Reports from IGAD including the IDDRSI Platform, and IGAD program partners Reports from other NGOs and International organizations working on community resilience in Somalia Government 	<p>Risks: security, drought, delay funds , conflict and weak coordination.</p> <p>Mitigation: situational analysis, on time funding releasing, early warning, conflict identification and solutions, strengthening coordination among concerned institutions</p>
	Increased availability and accessibility of water in Somalia regions through rehabilitation of <i>water infrastructure</i>	<p>N° of boreholes, dams berked and shallow wells rehabilitated</p> <p>N° of water conflict incidence reduced</p> <p>N° of livestock access adequate water.</p> <p>N° of village and households access water sources .</p> <p>N° people have access adequate and safe water</p> <ul style="list-style-type: none"> N° of people aware water hygiene and sanitation N° of canals rehabilitated and distances 	Baseline in 2020	Target in 2025		
	Improved access of communities to water for irrigation and	<ul style="list-style-type: none"> N° of workshops training on good farm practices. N° of areas under cultivation covered 	Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		
			Baseline in 2020	Target in 2025		

	<p>training on farm system .</p> <ul style="list-style-type: none"> Improved resilience of agro-silvo-pastoral production systems Strengthened regional economic, legislative and institutional integration 	<ul style="list-style-type: none"> N° of involvement of farmers shared the canals N° of children/ women/ men /families with improved access to food & nutrition N° of children who are underweight N° of people/ families/ communities benefiting from irrigation and H2O sanitation systems Area/ha of restored agro-silvo-pastoral systems N° of internally displaced persons (IDPs) in the HOA. 			<p>ent statistical services in the Ministries of Water/ Hydrology, Agriculture/Lands, Livestock and Fisheries</p>	
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Outcomes	1. Increased agro-silvo-pastoral and piscicultural entrepreneurial capacity and ability in the somalia	<ul style="list-style-type: none"> - N° of agricultural entrepreneurs - N° of livestock entrepreneurs - N° of diversified entrepreneurs i.e. seed dealers, fodder production, honey and value chain of milk etc. - N° of intra/inter entrepreneurial networks - N° of legislations supporting exploitation of local solar energy for sale 	Situation in 2020 in project sites -	Target in 2025 Target in 2025	<ul style="list-style-type: none"> - Government statistical services in the Ministries of Agriculture, Livestock, Fisheries & Forestry 	Risk 1: Highly infectious variant of COVID – 19 <u>Mitigation</u> With the demonstrated political will manifested by the highly mediated national and regional dialogues on COVID – 19, all IGAD Governments are likely to order the now available and appropriate vaccines in the short term as solution to the crisis.
	Improved feeder roads, stock routes and veterinary services infrastructures network for livestock trade	<ul style="list-style-type: none"> - N° of KM of feeder roads and stock routes rehabilitated over the period of the project. - N° of provinces, districts and villages network increased. - Level of transport cost reduced with number of access to rural villages. Number of equipment for the maintenance of feeder roads . No of alignment of improved feeder roads. No of workers and contractors worked feeder road maintenance. - N° of contact, review of bids and reports signed and accepted 	- Situation in 2020 at departmental level -	Target in 2025 Target in 2025	<ul style="list-style-type: none"> - Ministries of Economy, Finance, Commerce, - Ministries of Trade, - Ministries of Customs and Cross-border Trade 	Risk 2: Regional Conflict. <u>Mitigation:</u> Somalia government promotes peace and stability in the regions.
	Strengthened drought management by cross border pastoralist & agro-pastoralists	<ul style="list-style-type: none"> Number of strategic water sources and pasture areas developed/rehabilitated Number of CoPs developed Number of CBDRM plans. Early warning info system in place 	Situation in 2020 at provincial / sub-national level -	Target in 2025	<ul style="list-style-type: none"> - Government Gazettes compounding Laws, Policies & Legislations 	Risk 3: Low human and institutional capacity in IGAD and National Implementing Agencies <u>Mitigation:</u> The capacity of national implementing agencies will be enhanced institutional capacity building enhanced
			Situation in 2021 at national level			Risk 4: Engagement of women is difficult due to cultural barriers. <u>Mitigation:</u> The support of men will be solicited to ensure that women and youth are involved from the design phase of all program phases. Risk 5: Capacity of pastoral communities

		linking community and national information .				to adopt and adapt is low. Mitigation: Communities will be mobilized, trained and sensitized. An effort will be made to ensure that women assume leadership roles where appropriate.
	3					
	Increased human and institutional capacity developed in Somalia	<ul style="list-style-type: none"> - N° of people trained in efficient handling of pastoral/ livestock production systems in each country - N° of people trained in efficient handling of land conservation / agricultural and livestock production systems. 	<p>Situati on in 2021 in projec t sites</p> <p>Situati on in 2020 at nation al level</p> <p>Situati on in 2020 at IGAD field staff level</p>	<p>Target in 2025</p> <p>Target in 2025</p> <p>Target in 2025</p> <p>Target in 2025</p> <p>Target in 2025</p>	<ul style="list-style-type: none"> - Ministrie s of Agricultu re, Lands, Livestock & Fisheries - Ministry of energy and water - IGAD and NGOs partners 	
	<p>Component 1: <i>Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change</i></p> <p>Sub-component 1: <i>Support for Sustainable</i></p>	<p>% of the CBDRM committees develop community DRR and contingency plans.</p> <p>Total areas under conservating of soil and water and land reclamation.</p> <p>Community contingency plans are reflected in local government contingency plans</p>	<p>Situati on in 2021 in projec t sites</p> <p>Situati on in 2021 at nation al level</p>	Target in 2025	<p>Reports by Agriculture, Lands, Livestock & Fisheries</p> <p>-Ministry of energy and water , livestock , agricultur e and</p>	<p>Risks: security, drought , delay funds , conflict and weak coordination.</p> <p>Mitigation: situational analysis, on time funding releasing, early warning, conflict identification and solutions, strengthening coordination among concerned institutions</p>

	<i>Management of Agro-pastoral land</i> <ul style="list-style-type: none"> • <i>Erosion control, support for promotion of community based agro forestry</i> 		Situation in 2021 at IGAD field staff level		other concerned institutions - IGAD and NGOs partners	
	Sub-component 2, <i>Development of Climate Resilient Infrastructure and proposed activities revolving around Agricultural Infrastructure</i> <i>Rehabilitation/ construction of water infrastructure</i> Rehabilitation of rain-fed canals Rehabilitation of shallow wells Réhabilitation of feeder road and stock routes	No of dams rehabilitated (42) No of boreholes maintained (7) No of water reservoirs (63) No of Warro rehabilitated (8). No of people who benefited No of rain fed canals rehabilitated in Beer and Odweine Togdheer No of shallow wells rehabilitated in Awdal Somaliland (5 wells) 720 km of feeder road and - 720 km of stock routes No of Set up of veterinary services for livestock markets (47).	Situation in 2021 at IGAD field staff level	Target in 2025	Agriculture, Lands, Livestock & Fisheries - Ministry of energy and water - IGAD and NGOs partners	

	Construction Veterinary Services					
	Sustainable Land Management <ul style="list-style-type: none"> • Support to the University of Burao with Soil Lab test and meteorology station • Soil and water Conservation, water diversion, restoration of degraded rangelands- • cross borders and community mobilization and sensitization 	No of soil lab test and meteorology station 300 ha réerves No of people reached and trained				

	<p>Restoration, seasonal grazing reserves, Prosopis control, agro-forestry practices, reforestation and natural tree re-vegetation and construction of soil bunds and construction of feedlot</p> <p>Soil and water conservation, water diversion, restoration and management of severely degraded rangelands</p> <p>Capa city building Resilience and strengthen for Gender Equality (women and youth</p>	<p>Number of areas and ha controlled and restored</p> <p>Number of sites cleared</p> <p>Number of equioment and materials distributed</p> <p>Number of bunds and construction of feedlots</p> <p>300 ha of soil and water conservation</p> <p>Number of awareness and sensentation</p> <p>Number of youth and women trained.</p> <p>Case studies of women and youth participating for the first time in community level forums.</p>				
	<p>Research and study of land degradation in dry lands, impact of climate changes, range management/fo dder production, and livestock zoonitic diseases at</p>	<p>Number of research and study to be conducted</p> <p>Number of institutions and CSOs and local pastoral</p>			<p>Line ministries , CBOs, NGOs, IGAD</p>	

	<p>cross borderline</p> <p>Capacity building for concerned public, private institutions, CSOs, and local pastoral communities. (Formulation of Policies, strategies, regulations)</p>	<p>communities trained in advisory services</p> <p>No of policies and regulation formulated</p>				
	<p>COMPOENEN T 2: Supporting Agribusiness Development</p> <p>Sub-component 1: <i>Support for Sustainable Management of Agro-pastoral land</i> = proposed activities revolving around sustainable agricultural land management and the sustainable management of pastoral lands</p> <p>Sub-component 3: <i>Promotion of Climate-smart innovations and technologies</i></p>	<p>No of of agribusiness supported</p> <p>No of trainings in agriculture land management of pasroral land</p> <p>% Increase in profitability of livestock enterprise.</p> <p>% of the targeted households women generate enough income.</p> <p>Number of groups engaged in fodder and live animals production and marketing</p> <p>Women and youth identified and trained.</p> <p>No of rural youth and women participating in the program.</p> <p>.</p>				

		<p>Sub-component 3: <i>Promotion of Climate-smart innovations and technologies</i> promotion and diffusion / vulgarization of CSA technologies transferred</p> <p>knowledge management, technology transfer</p> <p>Number of households their improved nutritional status improved</p>				
	<p>COMPONENT 3: Strengthening Adaptive capacity to Climate Change</p> <p><i>Building capacity of main stakeholders in the agro-pastoral sectors in the drought prone areas for mainstreaming and monitoring Climate Change</i></p> <p><i>Sub-component 3:</i></p>	<p><i>Number of Climate Services developed</i></p> <p>the quality of climate data and climate information and services disseminated</p> <p><i>No of Monitoring-on resilience assessment, support for the establishment of livestock and crops insurance</i></p> <p><i>No of people received knowledge development and dissemination,</i></p> <p><i>No of support for operationalization of states Nationally Determined Contributions (NDCs)</i></p>			Line ministries , CBOs, NGOs, IGAD	

	Strengthening the Operational Capacity for resilience																																										
Major Activities	<p><u>COMPONENT 1</u></p> <p><i>Strengthening the resilience of drought prone areas and Pastoral and Agro-Sylvo-Pastoral Production systems to Climate Change</i></p> <p>Sub-component 1: Support for Sustainable Management of Agro-pastoral land</p> <p>- Sustainable agricultural land management, - Soil and water conservation (e.g. land reclamation, erosion control, support for promotion of community-based agro-forestry)</p> <p>Sub-component 2, Development of Climate Resilient Infrastructure and proposed activities revolving around Agricultural Infrastructure Rehabilitation/construction of water infrastructure (Dams/borehole maintenance and canals rehabilitation for small holder irrigation schemes)</p> <p><u>COMPONENT 2</u></p> <p>Supporting Agribusiness Development</p> <p>Sub-component 1: <i>Support for Sustainable Management of Agro-pastoral land</i></p> <p>= proposed activities revolving around sustainable agricultural land management and the sustainable management of pastoral lands</p> <p><u>COMPONENT 3</u></p> <p>Sub-component 3: Promotion of Climate-smart innovations and technologies</p> <p>= proposed activities revolving around the promotion and diffusion / vulgarization of CSA technologies, knowledge management, technology transfer and improved nutritional status of households</p> <p>Capacity building :</p> <ul style="list-style-type: none">• Resilience and strengthen for Gender Equality (women and youth)• Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock zoonitic diseases at cross borderline• Capacity building for concerned public, private institutions, CSOs, and			<p>Program to build Resilience for Food and Nutrition Security in Somalia</p> <p>Estimated Budget in USD Million : \$ 19,506,850</p> <p>Estimated Budget in USD Million per component</p> <table><tr><th>Components</th><th>Sub components</th><th>Beneficiaries</th><th>Total budget</th></tr><tr><td>Component 1</td><td></td><td></td><td></td></tr><tr><td>Component 2</td><td></td><td></td><td></td></tr><tr><td>Component 3</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>				Components	Sub components	Beneficiaries	Total budget	Component 1				Component 2				Component 3																							
Components	Sub components	Beneficiaries	Total budget																																								
Component 1																																											
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	local pastoral communities. (Formulation of Policies, strategies, regulations	
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13.0 List of Program Goods and Services

We collected all the activities and services in the program and are as follows:

13.1 List of Constructions

1. Rehabilitation of Feeder road
2. Rehabilitation of Stock route
3. Rehabilitation of earth Dams
4. Construction new Haffir Dams at national political Borders
5. Construction new Livestock abattoir at national political Borders
6. Rehabilitation of Livestock Market
7. Rehabilitation of Animal health Post
8. Construction of New Animal health checkup and Certification point at Borders between Ethiopia and Somalia
9. Construction new Solarized hatchery
10. Construction of new Solarized Borehole
11. Rehabilitation of veterinary service office house at District level
12. Water diversion to grazing valleys through Construction sand bands and pits
13. Establishment and operationalization of farmers for application of agroforestry systems and practices in 5 farming sites
14. Establish and operationalize 10 ha of government agricultural research center with advanced labs (tissue culture, soil lab, seed lab, plant protection for both disease and insect) including demo sites and extension services
15. Establishment of 50 greenhouses for 50 farmers in Bari, Sanag, Sool, Nugal and Mudug
16. Provision of solar system for irrigation for 100 farmers in Bari, Sanag, Sool, Nugal and Mudug
17. Installation of solar water heater systems for 10 public places (colleges, police training academy, prisons and orphanage) for charcoal reduction

13.2 List of Services

- 1.** Provision of institutional capacity formulating (Policy strategy, regulations)
- 2.** Provision of Operational capacity at Community level in prone areas of the project
- 3.** Operationalize and expand the meteorological networks under meteorological department at MoEACC
- 4.** Conduct 3 coordination meetings with relevant stakeholders to mainstream convention on climate change in policies and plans
- 5.** Training of Meteorological department staff at MoEACC on climate forecasting and information dissemination
- 6.** Training of 5 communities in Coastal areas on early warning information management and application
- 7.** Organize a forums leverage tax exception meeting for alternative energy items (LPG, Solar for cooking, green stoves etc.) at Ministerial/decision making level (Ministries of Finance, Commerce, water and Energy; and MoEACC).
- 8.** Restoration and management of severely degraded rangelands- 10 gullies
- 9.** Support 20 community-based seasonal grazing reserves
- 10.** Prosopis management and control measures in 3 pilot sites
- 11.** Reforestation and/or PMNR/NTR (natural tree regeneration) - 300 ha in 4 sites
- 12.** Community seed collection and propagation/broadcasting for rangeland reforestation in 3 sites
- 13.** Provide support for continuation of existing FMNR sites in 11 sites
- 14.** Procurement of Equipment for Prosopis control
- 15.** Sand dune stabilization in 3 districts
- 16.** Land use assessment and mapping
- 17.** Conduct assessment on pests and diseases
- 18.** Training of stakeholders in sustainable natural resources management - 100 participants
- 19.** Training - climate smart agriculture for 20 farming sites

20. Procurement of certified seeds, seedlings and smart agriculture tools (farm inputs)
21. Provision of community level agriculture machinery to enhance productivity
22. Support 3 existing Pastoral Association in Qardho, Iskushuban and Eyl for community based awareness on environmental protection
23. Conduct 10 community level campaign outreach in 10 districts to enlighten communities on the respective roles and responsibilities on the implementation of Puntland Environmental Management Law (100 participants per districts from local police, courts, municipality, elders, charcoal traders, women groups and LPG companies) through the engagement of existing CBO (environmental committees, and District Pastoral Associations)
24. Provision of 5 farm tractors for 5 farmer associations in Bari, Sanag, Sool, Nugal and Mudug
25. Distribution of 1,000 efficient cooking stoves for charcoal reduction in IDPs camps in Galkacyo, Bosaso and Qardho
26. Promote production and value additions for date palms and cash crops (papaya, guava, tomatoes, onion, corriander, pepper, melons, citrus, etc) (transportation, cooling systems and packaging)

13.3 Recommendation, Solution and Action Areas

1. Water infrastructure facilities for domestic and livestock use.
2. Institutional Capacity building, policy frame work and institutional reform.
3. Strengthening livestock value chains and linkage among stakeholders
4. Fodder production in cross-border areas particularly livestock trade routes and improving marketing of live animals
5. Setting up livestock health services particularly at the cross-border areas to control trans-boundary livestock diseases
6. Soil and water conservation (e.g. land reclamation, erosion control, support for promotion of community-based agro-forestry.
7. Research /study on rangeland/fodder production/seed system/degradation of rangelands
8. Establishing metrological station for climate change

9. Strengthening resilience and gender equality for women and youth
10. Strengthening collaboration and coordination among line ministries and institutions including IGAD

Table 15: Infrastructure facilities proposed in selected regions/zones

COUNTRY: SOMALIA

Estimated costs of the activities related to Environment Management- {Rural Infrastructure}

Table 16: Rural Infrastructure

COUNTRY: SOMALIA					
Estimated costs of the activities related to Environment Management- {Rural Infrastructure}					
Locations/Sites	Components	Target	Units	Unit cost/US\$	Total cost/US\$
States					
Galmudug	Rehabilitation of Haffir Dam with water supply systems	Laanwaale; Gowlalo; Sax-qurun, Galinsor,	4	120,000	480,000
	Prosopis management and control measures in 3 sites including Procurement of Equipment for Prosopis control	Galmudug	3	30,000	90,000
	Rehabilitation of Communal Water reservoirs (Berkeds)	Balanabale, Caabuq Waaq, Guriceel	10	5,000	50,000
	Veterinary services	Adado,Balanbale and Abudwaq	3	150,000	450,000
	Maintenance of Boreholes with solara instalation and troughs	Bacadwayne,Adado,Guriceel, Abudwaq, balanbale xerale and maaban	7	120000	840,000
Hirshabele	Maintenance of water dams	Ferfer/Defow/Bacad//Xoday waggale of Hirshabeele	5	120,000	600,000
	Stock routes	Beledwayne	2	100,000	200,000
	Maintenance of Boreholes with solar instalation and troughs	Beledwayne,jowhar and Buloburde	3	250,000	750,000
	Rehabilitation of Communal Water reservoirs (Berkeds)	Yeed, farjano	10	5,000	50,000
	Veterinary services	Hirsabele	3	150,000	450,000
	Feeder roads	Yeed to Baladweyne	1	200,000	200,000

Jubaland	Rehabilitation earth dams	Bohol village of Geddo region	1	120,000	120,000
	Rehabilitation of earth dams	Garas/Dhoobley/Qooqani	2	120,000	240,000
	Stock routes	Beledhawo,garbaharey and bardere	2	60,000	120,000
	Veterinary services (clinics)	Beledhawo,garbaharey and bardere	3	150,000	450,000
	Rehabilitation Communal Water reserverrrs (Berkeds)	Gedo region	10	5,000	50,000
	Feeder roads	Beledhawo,garbaharey and bardere	2	150000	300,000
South/west state/Bakool	Rehabilitation of earth dams (warro)	Diinsoor/Qansaxdheere/X abaalebarbaar of Baay region	4	120,000	480,000
	Stock routes	Ceelbarde to Xudur	2	60,000	120,000
	Feeder road rehabilitation	Baydhabo to diinsoor	2	200,000	400,000
	Reliance and strengthen for Gender Equality (women and youth)	Cross border (Somalia/Kenya, Ethiopia).	3	10,000	30,000
	Soil and water conservation, water diversion, restoration and management of severely degraded rangelands- 300 ha -cross borders and community mobilization and sensitization.	Galmudug, Bay/Hirsh abele/and Gedo	300	2,000	600,000
	Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock zoonitic diseases at cross borderline	Galmudug/Hirshabelle/Jubaland/Banaadir region	1	20,000	20,000
	Capacity building for concerned public, private institutions, CSOs, and local pastoral communities.	south central	1	300,000	300,000
Subtotal (Galmudug, Hirshabele, Southwest, Jubaland)					7,390,000
SOMALILAND					

Togdheer	Rehabilitation of Haffir dams in Buhoodle/Odweyne	Odweyne/Buhodle/ Raydab Khatumo/Balidhiig	3	120,000	360,000
	Rehabilitation of Water Dam	Beer	1	120,000	120,000
	Rehabilitation of diversion rainfed water canal	Beer	1	150,000	150,000
	Rehabilitation of diversion rainfed water canal	Xaaxi	1	150,000	150,000
	Rehabilitation of Feeder Road	Baliidh - Qoryalle	1	1,200,000	1,200,000
	Construction Livestock abattoir	Buhodle/Balidhiig	2	250,000	500,000
	Construction of Animal health Border Post with fencing, cattle crush	Raydabkhatumo/Durukhsi/Buhodle	3	63,000	189,000
	Rehabilitation of Milk collection center (shade)	Burao	2	50,000	100,000
	Support to the Buro University with Soil Lab test and meterology station	Burao	2	25,000	50,000
	Relience and strengthen for Gender Equality (women and youth)	Cross border (Somaliland, Ethiopia/Jabout)	3	10,000	30,000
	Research and study of land degradation in dry lands, impact of climate changes, range management/fodder production, and livestock zoonitic diseases at cross borderline	Somaliland	1	20,000	20,000
	Rehabilitation of Communal water reserves (Berkeds)	Hawd cluster (Coodanle, dhaxagdheer, dharyalay, sibidhlay, riyo xidho, yucub yabooh	30	5,000	150,000
	Soil and water conservation, water diversion, restoration and management of severely degraded rangelands- 300 ha -crossborders and community mobilization and sensitization.	Togdheer	300	2,000	600,000
Waqooyi-Galbeed					

	Construction of Animal health Border Post with fencing, cattle crush (checking certification point)	Bali-gubadle/Farawaeyne/Sayla Bari	3	63,000	189,000
	Rehabilitation of earth Dam	Sayla Bari/Cabdgeedi/ina Guuxa	3	120,000	360,000
	Rehabilitation of communal Water reservers (Berkeds)	Sayla Bari/ina Guuxa	10	5,000.00	50,000
	Rehabilitation of Shallow wells	Dhaboolaq	10	2,000	20,000
Awdal					
	Construction of Animal health Border Post with fencing, cattle crush (checking certification point)	Dilla/Qolujeed/Xariirad	3	63,000	189,000
	Maintainance Borehole	Fardaha/Ceelgaal	2	15,000	30,000
	Rehabilitation of Communal water reserves (Berkeds)	C/qaadir/Qolujeed/	5	5,000	25,000
	Rehabilitation of Earth Dam	Dilla, Gargaara, Cashocado	3	120,000	360,000
	Feeder road	Xariirad to Saylac (75km)	1	360,000	360,000
Sool					
	Rehabilitation Livestock market shade	Lasanod	1	65,500	65,500
	Rehabilitation of communal Water reservers (Berkeds)	Kalabaydh/Saaxdheer	10	5,000	50,000
	Construction of Border post with fencing, cattle crush (Checking Certification point)	Dharkeyngeenyo	1	63,000	63,000
	Rehabilitation of a veterinary service house at the district(DVO'S office, inventory office, cold chain room, vet lab and store)	Sool/Lasanod	1	166,350	166,350
	Rehabilitation of earth Dam and Maintainance of Borehole	Sarmaanyo	2	90,000	180,000
	Capacity building for concerned public, private , CSOs, and local pastoral communities. (Formulation of Policies, strategies, regulations)	Somaliland	1	100,000	100,000

Subtotal/ Somaliland					5,826,850
PUNTLAND					
	Rehabilitation of feeder road	Lavatory-Alula Mountainous Feeder Road	1	1,200,000.00	1,200,000
	Restoration and management of severely degraded rangelands- 10 gullies	Rako, Dangorayo, Waciye, Carmo, Ufeyn, Gubato, Caano-yaskax	10	100,000.00	1,000,000
	Support 20 community-based seasonal grazing reserves	Xubeera - badhan, Xallin, Libaxar- qardho, Nugal gihin, Dharoor, Ceeldheero - Ufeyn	20	5,000.00	100,000
	Prosopis management and control measures in 3 pilot sites including Procurement of Equipment for Prosopis control	Burtinle, Dhumay-Xallin and Iskushuban	3	35,000.00	105,000
	Provide support for contineation of existing FMNR sites in 11 sites	Salaama, Libaxo, Qardho, Ufeyn, Barookhle, Jedad, Gumar, Haylaan, Hadaaftimo, Rad, Carmo-qardho	11	3,000.00	33,000
PUNTLAND	Conduct assessment on pests and diseases	Puntland wide	1	30,000.00	30,000
	Establishment and operationalization of farmers for application of agroforestry systems and practices in 5 farming sites	Bari,Mudug, Karkaar and Sanaag	5	5,000.00	25,000
	Establish and operationalize 10 ha of government agricultural research center with advanced labs (tissue culture, soil lab, seed lab, plant protection for both disease and insect) including demo sites and extension services	Garowe	1	400,000.00	400,000
	Establishment of 50 greenhouses for 50 farmers in Bari, Sanag, Sool, Nugal and Mudug	Bari, Sanag, Sool, Nugal and Mudug	50	5,000.00	250,000

	Installation of solar water heater systems for 10 public places (colleges, police training academi, prisons and orphanage) for charcoal reduction	Garowe, Galkio and bosaso	10	7,000.00	70,000
	Reforestation and/or PMNR/NTR (natural tree regeneration) - 300 ha in 4 sites	Jalam, Cawsane, iskushuban, Rabcad - Xingalool	4	20,000.00	80,000
	Construction Animal Health post with fencing, cattle crush (certification point)	Goldogob/Bursaalax/Saxo	3	63,000	189,000
	Livestock market shade	Burtinle/Galkio	2	65,500	131,000
	Construction Livestock Holding ground (Fencing, Water, latrine, Cattle crush)	Qardho	1	500,000	500,000
	Livestock abattoir	Goldogob	1	932,000	932,000
	construction soil bunds and pits in 5 sites	Xiingalool	5	5000	25,000
	Rehabilitation of Borehole	Qandalla/Allula	2	25,000	50,000
	Rehabilitation Dam with water supply system	ufayn/ Saxo/uusgure/dangaryo//cawsane/xalin	6	120,000	720,000
	Construction of model feedlot centres	Garowe	1	250,000	250,000
	Rehabilitation of communal water reserves (Berkeds)	Boocame/jalam/kalabaydh/Goldob/libaaxhadh/	20	5,000	100,000
	Capacity building for concerned public, private institutions, CSOs, and local pastoral communities.	Puntland	1	100,000	100,000
Subtotal of Puntland					6,290,000
Total					19,506,850

Table 16: The proposed institutional arrangements for the Household Food and Nutrition Security Strategy

Table 17: Proposed arrangements

S#	National working Group	Involved institutions
1	Food fortification	
2	Improving access and availability of food	
3	Support for small-scale producers and food production	
4	Nutritional needs of the most vulnerable and most food insecure	

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Other Documents Consulted

1. Somalia recovery and resilience framework (2018)
2. Somaliland national development
3. Somaliland veterinary code
4. Appraisal report (building resilience to water stress in Somaliland)
5. Project completion report (drought resilience and sustainable livelihoods programme in the horn of Africa (drslp - i)
6. Assessment of drought resilience frameworks in the horn of Africa (2015)
7. Baseline survey-building opportunities for resilience in the horn of Africa (boresha) program (2018)
8. Milk matters feasibility study (2017)
9. Understanding igad and caadp (by Paulina Bizzotto Molina)
10. Recommendations of the 11th igad drought disaster resilience and sustainability initiative (iddrsi) (2020)
11. Country implementation progress report (cipr) federal government of Somalia (2020)

Annexes

Field Report

Summary Mission Report- Somalia

1-17/07/2021

Project Background

The Program to Build Resilience for Food and Nutrition Security in the Horn of Africa follows the Decision by the African Development Bank at the February 2019 roundtable on financing the Climate Investment Plan for the Sahel Region. The aim was to support implementation of the ‘Priority Program to Catalyse Climate Investments in the Sahel. This was operationalized by the Bank’s commitment to support a regional Program for CILSS countries and a regional Program for IGAD countries. These two zones face recurrent droughts and unpredictable rainfall patterns, characteristic of arid and semi-arid lands.

The Horn of Africa Program builds on previous and ongoing Bank programs, with a regional approach, such as the ‘Drought Resilience and Sustainable Livelihoods Program – DRSLP’, which are being undertaken within the framework of the ‘Drought Disaster Resilience and Sustainability Initiative – IDDRSI’. The objective of the program is, among others, to maintain momentum and ensure that the gains made from previous efforts are not undermined by the continuing shocks and stresses, especially from the impact of climate change on food availability and nutrition security. These pressures threaten to overwhelm institutional capacities for managing social, economic and environmental challenges, with the risk of increasing fragility likely to lead to regional spill-over effects.

The objective of the project is to create sustainable solution to food and nutrition insecurity in the Somalia through improved resilience to climate change, financing of the agricultural sector, trade development and regional integration. By making sustained, longer-term investments in household resilience, the costs of emergency assistance will be significantly reduced and the cycle of recurrent famines will be broken. This will also contribute to the poverty reduction, food

security and accelerated sustainable economic growth in the country through enhanced rural incomes to enhance drought resilience and improve sustainable livelihoods of the communities.

Introduction

ECU INC consulting firm in joint venture with GAIC S.A was awarded to conduct feasibility study in IGAD member states with specified task in the agreement framework. As part of this agreement, a team of ten (10) national experts was hired to conduct Somalia country level feasibility study on behalf of ECU INC/GAIC S.A and prepare country document for the for the program for building resilience for nutrition and food security financed by the African Development Bank to invest in the second phase of recently concluded Drought Resilience and Sustainable livelihoods program (DRSLP). To determine the socio economic of the proposed program and propose the suitable interventions of the program in Somalia. The team conducted the feasibility study in the country and proposed the most appropriate infrastructures in line with the government priority and the current national development plan of the country.

This report summarizes the objective of the field visit, methodology employed and the outcomes of the field visit.

Objective of the field visit

The objective of the field visit was to consult with the relevant government institutions to align the project components with the priority of the government, conduct field visit to the sites prioritised by the government to propose the appropriate interventions and propose the required budget for the proposed interventions. The field visit also aimed to assess the socio environmental impact of the proposed interventions and develop possible mitigation measures.

Methodology

The team in Somalia comprising ten national experts divided themselves into three sub groups to perform the works in the given timelines due to the delays in the initially proposed timelines. These groups were based on the geographic zones of Somalia namely South-central Somalia under which Galmudug state, Hirshabele state, Southwest state, Jubbaland state and Banadir Regional Administration are categorized. Puntland and Somaliland as second and third zones respectively. The sub-team conducted the feasibility study in parallel but under the leadership of

the team leader and in cooperation. The team has gone through the following steps in the feasibility study:

6. Reviewed the current existing documents of the project included the project document, narrative reports of the DRSLP II and the guidelines given by the other teams and interventions information from DRSLP project and other relevant reports.
7. Developed the skeleton of the feasibility study report in cooperation and consultation with the project stakeholders.
8. Reviewed the existing government policies, strategies, regulations.
9. Consultations with stakeholders-DRSLP-government implementing institutions. These institutions include the different ministries in both federal and state levels.
10. Visited sample of the previously implemented activities under DRSLP.

Consultations with the federal government of Somalia

During the study feasibility team in South and Central Somalia met with Minister of Livestock, Director General, Staffs and National Expert Panel for IDDRSI to the federal republic of Somalia and IGAD Desk NIC Somalia (Osman Elmi) in Mogadishu on 15-21 July 2021. During the meeting the two sides discussed about the Program of building Resilience for Food and Nutrition Security such as priority areas of interventions, identification of program sites/list and criteria. The Ministry of livestock submitted the list of project sites and priority areas of project components although the list of sites was too many which consisted of many places. The areas of interest in the program that recommended by Ministry of livestock included rehabilitation /construction of water infrastructures, rehabilitation of water reservoirs in dry areas, improving value addition of livestock chain through set up of veterinary clinics and other livestock support, improving feeder roads and stock routes and improving other livestock products and fodder, rangeland rehabilitation and reclamation of degraded rangelands, sustainable land management, building the capacity of the public institutions and gender resilience.

The team also met with ministry of energy and water and other line ministries to identify ongoing projects which are relevant to building resilience programs in Somalia. The Ministry

of water shared with consultants the ongoing water projects to prevent resource overlapping. The ministry shared with the team all the information about ongoing projects and areas of implementation. they indicated about three water projects such as Biyoole Project funded by World Bank, Ground Water Resilience in drought areas and Integrated Water Management. funded by UNDP.

Somalia experienced water scarcity due to droughts and inadequate investments in the water sector in dry areas. The Ministry of livestock and Water of the federal government of Somalia highlighted those areas of the southern states of Jubbaland, Hirshabele, Galmudug southwest and Banadir Regional Administration (BRA) and Hawd Cluster of Somaliland and Puntland. The central areas are the most areas affected by droughts due to the lack of sufficient water infrastructures for the surrounding pastoral and rural communities. The water supply situation in south central of Somalia is poor, particularly

In rural areas, where women and children travel long distances in dry seasons to collect water for domestic and livestock use. Surface water resources in over there are generally limited because of their dependency on seasonal rainfall. Some areas, the rainfall is limited and surface water storage unreliable and ground water is the main source of water and it depends the quality of water.

In the South and Central Somalia, 42 Earth dams were built in the 1988 but the entire water infrastructure collapsed after the civil war. The Communal Dams were left in a condition of disrepair while others were taken over by private individuals. As a result, livestock relied on these dams travel long distance and die of thirst particularly cattle population in south central reduced due to water shortage because cattle are more susceptible to thirst or drought compared to camels and goats. In addition, the decline in cattle population in Somalia leads to more malnourished children. According to the reference from ministry of energy and water in Mogadishu, a total of boreholes, shallow wells, dams, spring and catchment in each region and location in south central of Somalia is attached below.

The recurrent droughts with water scarcity in those areas have also devastated communities across the horn of Africa or affect entire region that result decline of livestock populations and forcing rural people to move to other regions. Climate change is further exacerbating these challenges through the increased severity and frequency of droughts and floods. Lack of basic service as well as adequate water infrastructure, weak government capacity with poor water resources development and management of rural water supply systems, security issues and lack of improvement of surface water and sanitation services are also major contributing factors to water scarcity and poor water quality. Weak institutional capacity to deliver basic services and inadequate financial resources with limited technical, managerial and institutional capacities are also other obstacle to investment and development in water storage and distribution facilities in the country. All of these combined factors caused acute water shortages and conflict among communities in the country.

The Somalia people live in rural areas and their livelihood depend on rural water points such as dug wells, balleys and dams, reservoir water are the most common sources of water for livestock and human consumption. Water availability also depends on the rainy season. The hardest times for water shortages are the six months of winter and summer time, which is why livestock die if the drought continues. During this time, not only water scarce, but the quality of water is deteriorated for both livestock and human consumption, which can lead to water borne diseases that can result death of children under five years old.

Only around 45% of the population in Somalia has access to a basic water supply according to the WHO, while majority of rural population depend on water surfaces with poor hygiene and sanitation practices or water sanitation infrastructure. Construction and rehabilitation of water storage infrastructure with building sanitation infrastructure are major contributing factors to the severe outbreaks of water borne diseases and water scarcity in the rural areas to sustain basic socio-economic activities, including livestock rearing, which contributes significantly to the economy of Somali people. Therefore, if not well managed, the changes and challenges could affect regional peace and security.

Strategic water points rehabilitation and construction of new water storage facilities as part of drought mitigation measures and water resources development, management and conservation.

Improvement of water infrastructure will also reduce competition and conflict between communities for water due to scarcity in the country. It also provides Water security that contributing building resilience to severe drought and climate change in many parts of the country. The program will contribute long-term resilience, sustainable peace and stability, and significantly improve the livelihoods of millions of rural people, notably the pastoralists and agriculturalist. In addition, the improvement of Water and Sanitation services through rehabilitation and construction of new facilities will contribute to addressing gender inequality, social cohesion and improving social services such as education and health care by increasing productivity and reducing expenditure on water and health.

Rainwater harvesting and watershed conservation will promote improve the quality of life and promote inclusive growth by provision of water for human and livestock reducing time and monetary burden of water and increasing livestock productivity.

Now, the federal Government of Somalia and the federal member states are committed to reducing the country's vulnerability to disasters, especially drought as articulated in the National Development plan (NDP-9), and this program is in line with the National Water Strategy of the country which aims accelerating water coverage through the rapid rehabilitation and development of water infrastructures. The program will target the selected sites by the federal government of Somalia including hawd pastoral cluster livelihood zones in Somaliland, Puntland and South-Central Somalia at cross border line of Ethiopia and Djibouti which are drought-stricken areas and environmental shocks with inadequate water infrastructure facilities.



Consultations with Puntland authorities – 15- 20th July 2021

During the study feasibility, members of the team visited Puntland state of Somalia and met with Ministry of Environment, Agriculture and Climate Change on 15-07- 2021. During the meeting the team presented the objective of the program, the thematic areas and its components. During the presentation, the team deeply explained the subcomponents of the program to clear equip the ministry officers with clear objective and selection criterion.

The meeting was attended by the Minister, director general, departmental directors and senior consultants.

The ministry technical team from their end also deeply explained the challenges that Puntland environment is experiencing and the importance of the rangeland restoration for the livestock.

Puntland's environment is currently under various degrees of stresses which have led to deterioration of the state's environment and its natural resources. Most Puntland regions are showing signs of environmental degradation as a result of drought, overgrazing and the continuous uncontrolled cutting of trees for charcoal and fuel wood. The people of Puntland are heavily depended on natural resources for their livelihoods. The environmental and socio-economic characteristics of Puntland are those that represent dryland ecosystem. It is characterized by low annual rainfall in most parts except in the western region and on the Golis Mountains (with about 450 – 600 mm). The soil is mainly sandy in the coast, silty loam in the piedmonts and clayey in the plateaus. Low rainfall amounts and the dominant soil types support rich dryland vegetation, which make pastoral livestock production a key economic activity.

Natural resources form the basis of rural livelihoods in Puntland, with over 65% of the population living in rural areas (UN OCHA Somalia, 2006). Pastoralism is the most prevalent land use in Puntland; livestock and livestock products contribute to more than 40% of GDP and over 50% of export earnings (African Development Bank, 2013). Puntland rangelands receive low rainfall (less than 300 mm) are home to annual grass and shrub species. Productivity of Puntland rangelands have been declining, complete rangeland assessment has not been done for whole the state, but selected studies carried out for last decade have

indicated that most of the grazing reserves are now degraded and perennial grass species have been replaced by increasers, according to Ministry of Environment baseline report biomass per hectare for four selected rangelands e.g. Tuuyo, Aroori, Bookh, Lafaruug is very small which means that carrying capacity of those assessed rangelands can no longer support surrounding pastoral communities. Biological degradation of rangelands in terms of loss of vegetation and diversity of plant species has been reported as 30.48% for Puntland (Omuto, Vargas and Alim et al., 2009). Rangeland's degradation has put a burden to livelihood of pastoral communities at one hand, on the other hand, it has prompted economic loss at household level and government level. The Ministry of Environment, Agriculture and Climate Change (MoEACC) proposed rangeland rehabilitation interventions aims to increase the knowledge and adoption of sustainable land management practices at community level, to rehabilitate degraded rangelands and improve herd management. It particularly includes, improvement of rangelands with a community basis and planning with a focus on rehabilitation based on the ecosystem. The Ministry selected sites with set criteria and community-based on their experience on rangeland management.

The ministry also proposed interventions for the agricultural support to improve the production capacity of the farms to in return in lead into food security.

The team also met with the ministry of livestock and animal husbandry, ministry of public works housing and transport and Puntland water development Agency.

The proposed interventions are combined with the other components of the other geographic zones of the country.







Consultations with Somaliland authorities– 11-17th July 2021

The other team members in Somaliland met with the Somaliland authorities including the ministry of Water resources development, ministry of Agriculture and ministry of livestock and Animal Husbandry. During the consultations, the respective institutions were given brief background of the program and the expected outcomes at the end of the implementation. The components of the project and target areas were also explained.

The ministries proposed interventions in their respective areas of scope of work and mandates.

The proposed interventions are attached below as an annex. After the consultation meetings the team also visited some near sites previously rehabilitated by the DRSLP.

gad Consultant team leader and enumerators conducted a Baseline survey in Balli dhiig district in Togdheer region that located on bonder Somaliland and Ethiopia. Village seems the one of most potential livestock rearing include goat's sheep's and camels. Currently bali dhiig facing a lot challenges such as lack of veterinary f service, poor range land management, poor infrastructure water and availability, lack of environmental protection, and economic lack support. In addition, that team also met district Admistration include chairman, deputy chairman, and the secretary and discussed community needs in area about in infrastructure, health, water, agriculture, livestock, roads, education, climate change and the lives of households in bali-dhiig district.

Focus group discussion

District Admistration selected seven teen members of community that from youth, women, elders, business group and mullah's team divided two groups and discussed these components land management ,Agro-business, triggering adaptive capacity .



Photo community drawing Balidhiig village

Major challenges observed

There were major challenges team observed and others were shared by the community and we ranked according to their priority.

- 1) Poor water infrastructure and scarcity of water .
- 2) Lack range land management.

- 3) Poor energy like solar system.
- 4) Lack of veterinary service.
- 5) Un exist livestock markets.

1. Staggering resilience sustainable Agro-pastoral land (Land management)

- Create soil bunds to restore degraded land and catch running water.
- Make massive campaign of afforestation that planting shade plants.
- Start massive awareness that stop deforestation of the plants.
- Provide training and knowledge building community.
- modernization of Dum include desalting, installing plastic ,and rehabilitation fence
- develop research program that search root causes of land degradation
- Establish range land protection team.
- Empowering and provide training

2. Support Agribusiness development.

- New build small market that buy meat, milk and crops (saribad)
- Create new slaughter house.
- Provide kitchen gardening and enhance small farmers.
- To support individuals who entrepreneurship in area gardening, toilers ,shoes makers and small business start-up.
- Increase Connection link between banks and small business as loan
- Provide training in small business.
- To build new solar system
- Support and Develop training of solar energy to enhance capacity.

3 strengthening and adaptive capacity of climate change

- To create voluntary groups to protect environment.
- Provide training community towards climate and adaption.
- Develop new research to find solution climate change obstacles
- Modernization of weather station in area of capacity building and increase size of station.
- Building mind capacity in state holders.

- Start connection all stake holders such as government, LNGO, INGO and community of the village.



Bali dhiigh Dum consultant team leader assessing situation of Dam



Consultant team leader and enumerators and community after finished focus group discussion.

General outcome of the field mission

1. Rehabilitation and Construction water points

The project is also to expect to construct 9 Veterinary clinic service and service room for the communities and Rehabilitation restoration of degraded pastoral areas with using flood diversions and water spreading in 500 ha in 15 locations and establishment of fodder banks at all regions. The program interventions were also included market access and trade and rehabilitation of rural feeder roads, stock routs/stock market along main livestock markets with loading ramps, watering points, sanitation and shelter.

However, the project is expected to combine small-medium scale water storage facilities and use of ground water to increase water quantity and availability, and to support adapting to the impacts of climate change and to building resilience. The project will emphasis on water infrastructure development to harvest surface water or flood water specially in the construction and rehabilitation of earth dams and solar equipment for water boreholes to contribute to a resilient and sustainable water and sanitation sector as well as to provide water supply and sanitation infrastructure in drought-stricken areas. The project will be also rehabilitated water boreholes through providing solar energy for pumping, power generated from the system

2. Livestock value chain

Livestock, crop production and fishery in Somalia contribute more than 60 % of the country's GDP, 80% create employment opportunities and 90% of export particularly livestock. The great potential of livestock export and local slaughtered for local consumption provide national food security and nutrition. This sector is not only food security but is also main sources of employment opportunities in the country, particularly for rural youth migrant returnees, urban entrepreneurs and other relative institutions. However, the agriculture sector in Somalia has low level production and productivity due to susceptible to climate change or climate variability, recurrent droughts and poor product quality and infrastructure. Inadequate inter-linked chains of markets and poor connection of food supply chain between stakeholders are also bottlenecks in that agricultural value chain level of production. A value chain is a various stage of

activities started to producing product from its consumption to the final consumer. In addition, value chain is the set of businesses and their interactions that bring a product from raw material to final customer. It is narrower than a sector or a sub-sector, but broader than a single firm's supply chain.

The livestock value chain is key of the program to promote quality of food items or products through improving feeder roads, increasing fodder production, rangeland conservation, rehabilitation of water points for domestic and livestock use livestock health services, marketing and linkage between stakeholders from producers to final consumption of consumers. The strengthening livestock, crop production and fodder production chains with chain stakeholders will increase value of addition chain from primary producers to consumers' level. The improvement of value chain is an important because is one of the most different sources of employment for different stakeholders including producers, transporters, processors, storage, trades, retailers up to consumers. Each step of value chain requires adding a new element of value that increase value of product and creates new source of employment particularly women groups who involve in different stage of value change and services.

Since the livestock is one of the back bone Somali livelihoods on which 65% contribute national income food security and nutrition, the programs aim to analyses the gaps and the weaknesses in the livestock sector to improve livestock market and value chain system. The areas of improvement for food value chain include dairy sector, fodder, meat and fattening of animal selling and other components or services of food value change.

a. Dairy value chains

In South Central states of Somalia, milk and meat production and livestock marketing sectors are the main source of livelihood of pastoralists and agro pastoralists. According to the feasibility study by consultant's African development Bank that was conducted at central regions, the income of milk producers, ranges between 0.5 to 0.70 per liter of raw milk per day for camel milk in dry season. All milk agents and producers use dirty plastic containers

to transport milk to main urban towns. Milk selling is source of income and employment for household pastoralists and other milk agents, traders and transporters. So, the improvement of such sector of dairy status can create sustainable economy and employment for pastoralists and other stakeholders who involve in this sector. The specific objective of dairy sector improvement is supporting developing entrepreneurial activities, particularly for women in all program sites to enable them and increase availability and sale of quality livestock products through improved market chain (from producer to consumer); and enhanced protection of pastoralists assets through support to private veterinary service delivery.

i. Feed/fodder production

Feed shortages and the poor quality of available feed are the major constraints to increased livestock productivity in pastoral and agro-pastoral villages, because customarily livestock producers do not have livestock feed storage facility to store excess feed during the wet season to use during the dry season. In addition, no selection system of qualitative seed of fodder for livestock feed. Sowing a new pasture or improving an existing natural pasture requires a reliable source of seed or vegetative material of species recommended and adapted for the area. The objective of a forage seed programme is to make available high quality seed or vegetative material that is suited to farmers' needs for livestock production. Farmers' needs are variable depending on the environment, type and class of grazing animal and the animal product required (meat, milk, and productivity in drought periods).

During the study feasibility of the project, the minister of livestock and expert panels from line ministries agreed that the fodder production are essential for all regions of Somalia where there is no enough fodder for livestock. Livestock population and fodder demand for livestock are increased. On other hand there is a fodder scarcity and declining natural pasture due to environmental degradation and recurrent droughts which cause millions of livestock to die each year. The Somalia regions that have low pasture and fodder scarcity include central of Somalia, Hawd cluster of Somaliland and Puntland regions. The project promotes fodder value chain production and improvement through range conservation and fodder seed production which is suitable to environmental conditions as well as developing the fodder

chain commercial activities for both public and private sectors. The project will also train different stakeholders of fodder producers, harvesters, transporters, traders and women groups who involve selling the fodder.

Animal health services

ii. Livestock Marketing and market structures

The livestock sector is central to the economic and culture life of the Somali people that provides food and income to over 60 percent of the country's population. The main livestock markets in south and central of Somalia are tabulated below.

Table 4. Livestock market routes of Somalia

Table 18: Livestock Market routes

Livestock market	Type of livestock Transporters
Beldwayne	Transported in truck or herded over long distances to markets.
Galkacayo	Transported in truck or herded over long distances to markets
Afgoi	Transported in truck or herded over long distances to markets
Qoryoolay	Transported in truck or herded over long distances to markets
Baydhabo	Transported in truck or herded over long distances to markets
Afmadow	Transported in truck or herded over long distances to markets
Dhoobley	Transported in truck or herded over long distances to markets
Diinsoor	Transported in truck or herded over long distances to markets
Qoqaani	Transported in truck or herded over long distances to markets
Hudur	Transported in truck or herded over long distances to markets
Dhuuso mareeb	Transported in truck or herded over long distances to markets
Baardheere	Transported in truck or herded over long distances to markets
Mogadishu	Transported in truck or herded over long distances to markets

However, the biggest livestock market in the horn of Africa is Burao of Togdheer region and Gaalkayo in mudug region. The majority of livestock exported particularly sheep and goats and camels from the Central, Togdheer, Sool plateau Nugaal valley and Somali region of Ethiopia through Bebera and Bosaso sea port transit or pass to Saudi Arabia and Aden. Burao and Galkayo are two major important references markets which are key pastoral livelihoods zones of hawd cluster.

The livestock market in Beldweine connects the south and central regions of Somalia and is the supply source of export cattle through Bosasos port and Berbera. Baardheer and Afmadow are important cattle markets in the agropastoral livelihood zones in southern Somalia. Number of cattle is exported to Garissa Kenya, Memmbasa to Nairobi markets in Kenya. Afmadow is the largest cattle market in southern Somalia particularly in the Jubba valley.

b. Constraints of livestock markets in Somalia

- Insufficient water supplies and fodder
- Poor market structure and fluctuating prices
- Livestock ban and lack of permanent markets
- Diseases and drought affect animal production and marketing
- Long distances and travelling with poor feeder roads
- Continuous movement of pastoralists from place to place that affect livestock body condition that causes weight loss.
- Poor transportation facilities for selling animal livestock products

c. Possible interventions of livestock markets

- Provision animal health services such as veterinary services
- Rehabilitation and construction of proper distribution of water points with enough fodder in stock routes
- Improving transportation facilities and improving feeder roads to livestock markets
- Creating market access and information about livestock market prices
- Improving market structures along supply chain from producers to final consumption

3. Capacity Building:

The program interventions will include improving management and capacity development of water and sanitation sector through provision of training facilities, Sanitation Initiatives and equipment to relevant line Ministries and establishing water committees from beneficiary community to strengthen resilience and raise the quality of life of the rural. A total of beneficiaries they will benefit from the project in general an estimated 750,000 people

Training for communities will include hygiene promotion and sensitization with emphasis on scaling up Community Led Total Sanitation (CLTS) and community based climate change adaption activities (water resources protection through soil management, conservation, optimization of green water and re-forestation (including strengthening traditional regulations that govern use of water resources). Improved management and Development capacity of water and sanitation sector with MOWR supporting communities

a. Program Management:

This relates to the implementation of the program and will entail the management costs as well as logistics and routine program operating expenses. The cost of program supervision and Monitoring and Evaluation (M&E) will be part of this component. The Program Implementation Team (PIT) will come from line ministries and NGOs in different states of south-central Somalia, Somaliland and Puntland with adequately skilled personnel who have capable to deliver the program objectives, implementation, and program audit, monitoring and evaluation are also part of this component.

b. Program's target area and beneficiaries

Geographic coverage

The program will benefit the rural population in Somalia, including pastoralists and agro pastoralists with vulnerable groups such as IDP's in the peri-urban areas of those areas.

Priority will be accorded to strategic water infrastructures along the dry areas and cross border line of Haud cluster and drought prone areas within the country and regional cross border lines. The implementation of the project will be led by the federal government of Somalia in contact and collaboration with the member states of Galmudug, Hirshabeele, Puntland, Jubbaland, Southwest, Somaliland and Banadir Regional Administration (BRA). To avoid conflict and negative socio-economic impact, the study feasibility accounted for and gave priority to the regions having most vulnerable and affected by drought through identifying water sources or water infrastructure with clear community ownership.

c. Direct Beneficiaries.

A total population of direct beneficiaries of the program estimated 500,000 (30% women) including livestock units and agriculture through multiple water infrastructure, feeder road use and capacity building for line institutions) will benefit from the program. The vocational training institutes of Animal health science, livestock clinic health facilities, markets and range will benefit from the program and also will train youth and women under the program.

Indirect Beneficiaries

The program will also provide employment opportunities to local people, including youth as well as service providers including consultants, NGOs and contractors. All the population in the program area and beyond will benefit from the hygiene promotion through the local media and mobile phone platform. Women and young people will be a focus of efforts to deliver the planned activities through labor-based construction services. Through micro-irrigation, small scale agricultural food production will be stimulated in the program area.

List of Somali Experts (Local Consultants)

Table 19 Local Consultants

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