



**THE GLOBAL
MECHANISM**
United Nations Convention
to Combat Desertification

The Federal Republic of Somalia

Land Degradation Neutrality Target Setting Process in Somalia

Country Report

Implemented by

UNDP Global Policy Centre on Resilient Ecosystems and Desertification (GC-RED)

&

United Nations Development Programme (UNDP) Somalia

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Acronyms and Abbreviations

AfDB	African Development Bank
ANPP	Annual Aboveground Net Primary Production
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of Parties
CSO	Civil Society Organization
DLDD	Desertification, Land Degradation and Drought
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Organization
FBO	Faith Based Organization
FGS	Federal Government of Somalia
GC-RED	Global Policy Centre on Resilient Ecosystems and Desertification
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gasses
INDC	Intended Nationally Determined Contributions
IOTC	Indian Ocean Tuna Commission
IPCC	Intergovernmental Panel on Climate Change
LCCS	Land Cover Classification System (FAO)
LDN	Land Degradation Neutrality
LDN/TSP	Land Degradation Neutrality Target Setting Programme
LPD	Land Productivity Dynamic
NAP	National Action Plan
NAPA	National Adaptation Programme of Action
NDC	Nationally Determined Contributions
NDP	National Development Plan
NDVI	Global Normalized Difference Vegetation Index
NERAD	National Environment Research and Disaster-preparedness
NGO	Non-Governmental Organizations
NPP	Net Primary Productivity
OPM	Office of the Prime Minister
POPs	Persistent Organic Pollutants
SEAs	Sectoral Environmental Assessments

SOC	Soil Organic Carbon
SWALIM	Somalia Water and Land Information Management
th. ha	Thousands of Hectares
TSP	Target Setting Programme
UNCCD	United Nations Convention to Combat Desertification
UNCCD (GM)	Global Mechanism of the UNCCD (GM)
UNCCD	United Nations Convention to Combat Desertification
UNDAF	United Nations Development Assistance Frameworks
UNDP	United Nations Development Program
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar

EXECUTIVE SUMMARY

Introduction and Background of Land Degradation Neutrality (LDN): Somalia covers an area of about 637,657 Km². Between 2000 and 2015, the total degraded land was 147704 km², representing 26.7% of the total land area of Somalia. Desertification, along with climate change and the loss of biodiversity were identified as the greatest challenges to sustainable development during the 1992 Rio Earth Summit.

Leveraging LDN in Somalia: Somalia is a signatory to the UNCCD, which addresses desertification and land degradation issues and is engaged in the LDN Target Setting Programme. The LDN program areas target the 3 components; ecological, economic, and administrative of the Somali connection to land. There are several opportunities in Somalia for leveraging to achieve LDN. For instance, the constitution and Vision 2030 set out an obligation to environmental sustainability and improvement as a basis of promoting wellbeing and quality of life to its citizens. Its main aim is to increase investment in environmental protection, transport and communication, and energy supply. The leverage plan sets out existing leverage opportunities, required intervention/actions and the responsible Institutions.

Assessing LDN in Somalia: the Somali landscape is predominantly arid and semiarid, with annual rainfall ranging from 250 millimetres in the northern plains to approximately 400 mm in the south and 700 mm in the south-west. Overall, approximately 27.5% of the area was considered degraded. The most prevalent types of land degradation are the following:

- Soil degradation through water, wind, and chemical erosion
- Water degradation, resulting in aridification and a decline in surface water quality
- Biological degradation, which includes the loss of biomass, vegetation cover, and biodiversity

The direct drivers of land degradation include; overgrazing, non-sustainable agriculture, over-exploitation of forests and woodlands for charcoal production, resettlement and urbanisation among others. Indirect drivers include but not limited to poverty/wealth, population pressure (human and wildlife), governance, institutional setting and policies, and poor implementation of policies.

Strengthening the policy and regulatory framework is one way in which LDN can be achieved. Institutional and legal framework analysis governing management of land and natural resources is of principal priorities in understanding contexts and identifying gaps, inconsistencies, weaknesses and opportunities in order to enhance the national regulatory environment to achieve LDN.

LDN at the National and sub National Level

- (i) LDN is achieved by 2030 as compared to baseline 2015 (no net loss), an additional 10% territory has improved by 2030 (net gain).
- (ii) National forest cover planned to be increased approximately from 10.14% (2022) to 10.40% (2025) and maintained at 15% by 2030 through agroforestry and SLM in existing forests.
- (iii) Level of land productivity and SOC at country level maintained and improved by 2030 compared to 2015 baseline.
- (iv) Traditional Biomass energy consumption reduced from 65.77% in 2015 to 32% in 2024.
- (v) Increase land protected against soil erosion to 1,034,509 ha by 2024.
- (vi) Areas of stressed or declining land productivity reduced by 50% by 2030.

- (vii) Rehabilitation of degraded forests from 6363 ha in 2015 to 17, 988 ha by 2024
- (viii) Improve land productivity on 33342 ha of Tree-covered areas, 472,227 ha of grassland, 7709 ha of cropland currently showing stressed productivity through sustainable land management practices

The LDN Measures and Priorities are informed by

- (i) LDN Needs and priorities such as strengthening the capacity of national institutions to monitor and report on the status of the country's soil resources.
- (ii) Institutional and policy measures such as mobilizing and sensitizing the public on the meaning and magnitude of environmental degradation and its impacts.
- (iii) Vegetative, Agronomic and Management Measures such as improved land-use planning, and soil erosion control must be prioritized.
- (iv) Disaster preparedness and response, SLM, sedentary pastoralism, use of sustainable energy sources, reclamation of protected areas, gender mainstreaming and ecosystem management.

ACHIEVING LDN

Some of the leverage achieved includes:

- (i) The National Working Group formed to spearhead the LDN target setting process has promoted coordination and collaboration to effectively implement the LDN targets.
- (ii) LDN leverage opportunities have been mapped out and are based on strong justification in pursuance of LDN agenda to deliver on Sustainable Development Goals.
- (iii) In 2019, Somalia committed to meet the three Rio Conventions on climate change, biodiversity, and desertification. Somalia has voluntarily committed to the LDN Target Setting Process (UNDP, 2019).
- (iv) Somalia established a National Adaptation Program of Action (NAPA) in 2013)

The long term and short term actions include

- (i) Integrated and Sustainable Land Management
- (ii) Afforestation and Sustainable Forest Management
- (iii) Agroforestry and Soil Conservation
- (iv) Efficiency in the Use of Energy and Promotion of Renewable Energy
- (v) Increase Productivity, Sustainability, and Resilience of agricultural production
- (vi) Enhanced Environmental Management and Resilience to Climate Change
- (vii) Private sector and community engagement
- (viii) Institutional Capacity Building and Strengthening of LDN National Working Group

1.0 INTRODUCTION

The increasing rates of land degradation are negatively affecting livelihoods and sustainable development across the world. Target 15.3 of the Sustainable Development Goals (SDGs) sets a global ambition for a land degradation-neutral world by 2030 (UNCCD, 2018). One of the objectives of Land Degradation Neutrality (LDN) is to inspire countries to assess the current land resource use and planning. In the LDN framework, the minimum target is equal to baseline since the aim is to establish a state of “no-net-loss” of the land-based natural capital. Tracking of the progress towards LDN can be communicated in terms of vegetative cover, productivity, ecosystem service, biodiversity, and the socio-economic benefits.

The three LDN indicators: land cover, soil organic carbon stock, and land productivity offer good coverage of conditions of land-based natural capital and ecosystem service. LDN is a flexible target that can be implemented locally, regionally, and nationally. It recognizes and comes from the government ownership on establishing a national LDN agenda to manage the trade-offs and to capitalize on the synergies between biological and economic productivity.

Somalia, located in the Horn of Africa, is vulnerable to land degradation with different magnitudes of effects, due to various causes and process that will be discussed hereafter. The Government of Somalia recognizes land degradation as a major impediment to national economic development as it adversely affects the livestock and agriculture, which contribute heavily to its Gross Domestic Product (GDP). Land degradation, particularly caused by drought, has severely reduced agricultural production, which is the main driver of Somalia's economy. The Republic of Somalia is a member of the Land Degradation Neutrality (LDN) global initiative of the United Nations Convention to Combat Desertification (UNCCD). The framework for effective governance will enhance achievement as well as protection of the rights of vulnerable communities in Somalia.

2.0 LEVERAGING LDN IN SOMALIA

2.1 Country's Interest to LDN Target Setting

Somalia is a signatory to the UNCCD and is actively engaged in the LDN Target Setting Programme (LDN TSP). The country has already formulated the National Action Programmes (NAPs), which aims to combat desertification and mitigate the effects of drought in Somalia. The NAP has identified the factors contributing to desertification and the practical measures necessary to combat desertification and mitigate the effects of drought. The National Adaptation Plan of Action (NAPA) for Somalia has also been documented and focuses on; sustainable land management, integrated water resource management, and disaster management. The National Biodiversity Strategy and Action Plan, on the other hand, has identified sustainable land management as a priority.

LDN action is not limited in scope but cuts across different sectors including agriculture, forestry, urbanization and settlement, and energy among others. The implementation of LDN provides an opportunity to prioritize land-based sustainable management practices, foster policy coherence, climate change actions and tap into new financing options for UNCCD implementation.

The combined effects of drought and floods have resulted in soil and land degradation, which have affected the production and productivity of livestock and have impacted the food security of pastoralists. Recurrent floods along the Jubba and Shabeelle rivers also severely affect agricultural production in the country by destroying crops and on-farm infrastructure, hence affecting the country's food security. The threats to livelihoods and food security that result from Drought, Land Degradation and Desertification (DLDD) were the primary concern of the majority of the stakeholders consulted. The national economy's dependence on land for grazing, livestock production, and agricultural production was also considered a critical part of the rationale for immediate and concerted efforts to combat land degradation.

Since climate change directly impacts land degradation, LDN contributes to the mitigation and adaptation to its adverse impacts. LDN provides significant benefits for the mitigation & adaptation to climate change. LDN actions can transform land into a carbon sink by increasing vegetation and carbon stocks in soils.

LDN implementation is vital for national climate action. The adoption of sustainable land management practices like; low-emissions agriculture, ecosystem conservation, and restoration have a great potential for carbon sequestration and therefore emissions reduction. LDN interventions will help to advance Somalia's climate action since it will mobilize different stakeholders, particularly institutions at national, regional and district levels, civil society organizations, and international cooperation partners to implement nationally coordinated activities.

The LDN agenda will resuscitate initiatives in various natural resource management sectors and improve implementation and coordination of different stakeholders towards achievement of the SDGs, particularly Goal 15 target 15.3. Ultimately, this will contribute to the country's efforts in fighting rampant land degradation.

The Federal Government of Somalia supposes that the LDN targets will support the implementation and monitoring of Land Use, Development Plan and management related policies and laws. The LDN TSP also relied on the national initiatives and processes for the implementing other Rio Conventions, such as the CBD and the UNFCCC, and on the interventions implemented by multiple development partners.

2.2 Country Commitments to LDN

Achieving land degradation neutrality and attaining no net loss of land-based natural capital is a crucial effort that involves LDN preparation (data, tools, enabling policies, land stratification, resilience and capability assessments); LDN planning (assessing options, planning interventions and stalking anticipated impacts); and LDN governance. Interventions like Identification of land, fostering changes in land management and practices require active interactions between decision-makers and stakeholders to promote an enabling environment to support land-use decision.

The LDN programme areas target the three components: ecological, economic, and administrative of the Somali connection to land. Each Programme represents a biophysical and socio-economic focus that targets the reversal of desertification and land degradation and mitigates the effects of drought.

Integrated Land and Water Management as the first program with an ecological focus. The choice of program unit of analysis will be ecological, i.e. a watershed, catchment area, agro-ecological zone, or resource units such as rangeland or forest area. Activities in this program area are aligned with Operational Objectives of the Somalia National Action Programme (NAP).

Zoning and Urban Land Use is the second programme focuses on the economic and productive uses of land and its resources, with the aim of establishing a zonal system that distributes land uses based on soil suitability and the productive capacity of the land. Programmatic focus under this program area should include institutionalizing an understanding of different and geographically adapted livelihoods across agro-ecological zones. Activities in this programme area are aligned with operational objectives of Somalia NAP.

Thirdly, Access and Rights to Communal Land has an administrative focus with the aim of clarifying the delineation and enforcement of the rights to access and use land and its resources. In Somaliland, this follows the recommendations from the Burao conference held on April 2015. The aim is to secure communal access for pastoralists and institute measures for the rehabilitation of communal land. Activities are aligned with Operational Objectives of the Somali NAP.

Hence, LDN needs and priorities of sustainable land management include the following interventions:

- Inventories of land resources, including soils, are limited only to some parts of agricultural potential areas hence there is a need to conduct soil survey and mapping of soil resources throughout the country.
- Strengthening the capacity of institutional, technical, and financial institutions in the country to monitor and report on the status of the Somali soil resources.
- There is a need to diversify and use alternative sources of energy and move away from charcoal production, which is a major cause of deforestation and denudation of rangelands.
- Promote the adoption of sustainable technologies and land management practices including integrated soil health management and extension services among others.
- Creating an agricultural/soil research institution should be a priority as it has been absent for a long period.
- Instituting a land degradation monitoring system.
- Preparation of databases on the abiotic natural resources
- Development and promotion of updated irrigation systems

- Mapping soil alkalinity, water table levels, salinity, and soil productivity
- Mainstreaming gender issues in the LDN program is essential and recognition of the important role women play in environment decision-making. Women-targeted training and capacity-building measures should also be undertaken during the LDN implementation to reduce their vulnerability to the impacts of land degradation. National Development Priorities

Land degradation, particularly caused by drought, has severely reduced agricultural production, the main driver of Somalia's economy. The impact of the drought on the agriculture and livestock sectors can be considered as two-fold; losses in terms of crop production failures, and livestock and livestock-related products; and damages caused to crops and from deceased livestock. Losses in terms of crop production failures and livestock-related products have been estimated at USD 1.7 billion. Damages caused to crops and from deceased livestock have been estimated at USD 350.7 million. Furthermore, the drought has resulted in declining livestock prices, which has caused the rapid increase in off-take as herders try to salvage the value of their herd and as they face rising prices for fodder.

The greatest impact of land degradation in the agriculture sector has been on crop production losses arising from both reduced land area under cultivation and reduced yields at harvest. This accounts for (USD 63.8 million in damages; USD 247.7 million in losses). Rain-fed staple food crops (mainly sorghum, cowpeas, and some rain-fed sesame) in the inter-riverine regions of Bay and Bakool suffered from a multiple-season lack of rains. The irrigation crops in the Shabeelle valley regions (mainly maize, most sesame, and rice, bananas, and tomatoes, among other crops) suffered from the double impact of lack of rains and a drying river. The southern part of Somalia, which is the major crop-producing region of the country, saw a 49% reduction in spring (Gu' in Somali) cereal production to 65,000 tonnes.

An estimated 18 percent of the total national landmass in natural standing vegetation on average is lost in the drought period, potentially affecting the lives and livelihoods of an estimated 6 million, or more than 50 percent, of the estimated total population. Some 93,000 tons of topsoil has been eroded as a direct result of the drought in 2017, resulting in aggregate damages and losses in soil fertility functions and ecosystem services estimated at USD 36 million and USD 3 million, respectively.

Damages estimates of about USD 42.0 million and USD 20.5 million in losses are caused by the current drought on water supply and sanitation. Damage is mainly on water sources (boreholes, shallow wells, Berkads), while losses resulted largely from the increased burden on insufficient household income to pay more for water. Additionally, multiple shallow wells have dried up, and water levels in most boreholes have decreased to abnormally low levels. The increased demand has also worn out and damaged most of the existing boreholes.

Drought-related displacement has similarly drastically affected children's access to education services. Because of the prolonged drought, the education sector experienced the following effects: disruption of the school calendar in some regions of the country, scarcity of adequate safe water in schools, scarcity of nutritious food for children and their families, and increased enrolments in displacement destinations resulting in stretched existing school resources. More than 384,000 school-aged children were affected by the prolonged drought.

Land degradation has also had immense negative impacts on livelihoods & employment leading to (USD 46.6 million in losses) in Somalia. Over 900,000 livestock dependents are affected, with an estimated USD 875 million of direct income lost in the livestock sector alone. Impacts are particularly significant on women who predominate in livestock dependent chains, with an estimated loss across 4,500 micro-enterprises/kiosks of USD 26 million. It is estimated that the open unemployment rate is over 50%.

The land degradation caused by drought has exacerbated the existing vulnerabilities and social marginalization of women and has induced massive displacement, with the majority of the displaced women and children. With the drought, these vulnerable populations are exposed to protection risks such as forced evictions, discrimination based on status and family separations. Women and girls are exposed to higher rates of gender-based violence (GBV).

The drought in Somalia has exacerbated conflicts over pasturelands and natural resources. Conflict was the most frequently cited of the difficulties or shocks in the survey undertaken for this assessment in October 2017, with almost one in four households having experienced conflict or violence in the previous month. Most displacements are due to conflicts brought about by the effects of drought.

Reference data has shown great evidence that biodiversity and its ecosystems such as rangelands, savannah grasslands, wildlife, marine and coastal ecosystems among others are on a decline. The main threats to biodiversity and its ecosystems are habitat losses and degradation, climate change effects, overexploitation, and invasive species. Habitat losses and degradation is because of, among other factors, agriculture expansion, and overexploitation of genetic resources, charcoal production, and the unsustainable use of water.

2.3 Identified Leverage Opportunities

Somalia can leverage on a number of opportunities in order to achieve LDN. For instance, its constitution and Vision 2030 set out an obligation to environmental sustainability and improvement as a basis of promoting wellbeing and quality of life to its citizens. The overarching goal is to increase investment in environmental protection, transport and communication, and energy supply.

Leverage opportunities for LDN in Somalia have been identified. For LDN to be used as a tool to fulfil the SDGs, particularly SDG 15, huge modifications need to be undertaken. Institutions and individuals, among other leverage areas, to be engaged in the LDN target setting programme have also been identified.

The leverage plan sets out existing opportunities, required interventions, and responsible Institutions. It highlights the existing opportunities, financial sources, and the institutions that need to be engaged in order to promote and enhance LDN attainment in Somalia. A logical framework is shown below.

Table 1: Framework for the National LDN Targets Setting Leverage Plan

Leverage Opportunities	Actions/Interventions	Responsibility
Why does LDN matter?		
Creating Multiple Benefits; Social & Economic benefits of LDN	(i) Link LDN to the implementation of SDGs (ii) Link LDN to National Development Plan (iii) Engagement of multi-stakeholders in LDN TSP	(i) Ministries of; Environment, Agriculture and Land and Natural Resources (ii) Ministry affiliated Agencies
Tapping financing opportunities like; Climate Change funds	(i) National budget to LDN related sectors (ii) Somalia's Green Fund (iii) Regional funds/Economic Centres e.g. ADB, (iv) Bilateral & Multi-Lateral sources (WB-Special Climate Fund; WB- Carbon Fund; UNFCCC-GEF; UN-REDD; Green Climate fund) (v) Private Sector Finance and Foreign Direct Investments (FDIs)	(i) Ministry of Environment, Agriculture, Lands and Finance (ii) Sector Ministries. (iii) NFPs of UNFCCC, UNCCD, CBD (iv) NGOs (v) Private Sector (vi) Parliamentary Committees
Fostering Policy Coherence	(i) Revise related policies to evaluate LDN adherence, set policy recommendations to realize adherence. (ii) Combine LDN and other SDGs in the national development plan (iii) Include LDN in donor collaboration plan (iv) Mainstream LDN into relevant policies & programs	(i) Donors (ii) Ministries of land and water, environment (iii) LDN TSP Consultant (iv) Parliamentary Committees
WHAT to Leverage?		
National development programmes, priorities and objectives	(i) SDGs / Sustainable Development agenda already mainstreamed into the Vision 2030 (ii) Fostering coherence with Sector Strategic Plans related to SLM	(i) Ministry of Environment (ii) Sector Ministries (iii) Ministry of land and natural resources
Country commitments and engagements	(i) Link with the implementation of other SDGs; (ii) LDN an accelerator of implementation of its National and sub-national targets	Ministries of Agriculture, Land and Water
WHO to engage to create Leverage?		
Senior Government (Prime Minister and DG of agencies and Ministries)	(i) Coordination of implementation of LDN interventions (ii) Resource Mobilization for LDN (iii) Building Synergies in the implementation of SDGs (iv) Fostering Policy Coherence	(i) UNCCD Focal Point (ii) Permanent Secretaries, Director Generals and CEOs of relevant Agencies and Authorities. (iii) LDN TSP Consultant
International Development Partners	(i) Resource Mobilization for LDN (ii) Financing (iii) Building Synergies in implementation of SDGs (iv) Incorporate LDN in on-going investment frameworks	(i) Agriculture Sector Working Groups (ii) UNDP, UNDP, DFID, (iii) LDN TSP Consultant
National coordination mechanisms; Set up LDN National Working Group	(i) Coordination of implementation committees of LDN interventions (UNCCD, LDN working groups, UNCCD, UNFCCC) (ii) Resource Mobilization for LDN (iii) Capacity building (iv) Science Technology and knowledge	(i) All Relevant Sectors (ii) Disaster management agencies – SODMA, NADFOR, HADMA (iii) Ministry of Environment (iv) LDN TSP Consultant
NNGO Stakeholders; Private sector, financing institutions, CBOs and FBOs	(i) Advocacy; (ii) Awareness raising and education (iii) Financing (Private sector; FBOs etc.)	(i) CSOs; FBOs; District and Village level committees (ii) Financing Institutions (iii) Media

3.0 ASSESSING LDN IN SOMALIA

3.1 Land Degradation Baseline in Somalia

The Somali landscape is predominantly arid and semiarid, with annual rainfall ranging from 250 millimetres in the northern plains to approximately 400 mm in the south and 700 mm in the south-west. Within each region and across catchment areas, there are wide spatial and temporal variations in the rainfall patterns e.g. Coastal areas adjacent to the Gulf of Aden receive less than 20 mm of average rainfall annually, whereas the western parts of the Togdheer/Nugaal basin receive 240 mm per year.

Similarly, the Dharoor Basin in the north-east of Somalia receives 93 mm per year of rainfall on average, whereas annual rainfall in the south-east Lag-Badana basins averages 549 mm per year. In addition to spatial variations of rainfall across catchment areas, there are wide variations within catchment areas. For example, the Jubba and Shabeelle upper catchments in the Ethiopian highlands receive 1,300–1,800 mm/year, whereas annual rainfall at Luuq and Beledweyne averages 271 mm and 330 mm respectively.

Land degradation is a major threat to ecosystem functioning in the areas classified as having both high and low agricultural potential in Somalia. Recent spatial studies extrapolated on local findings to point out that land degradation is increasing in both severity and extent in many parts of the country. Remote sensing analysis classified about one-third (~31%) of the country as degraded and 17 % as exhibiting evidence of land condition improvements. The most productive areas of the country, the Shebelle and Juba basins, are experiencing the highest risk of degradation due to deforestation, overgrazing, poor cultivation methods, and land fragmentation.

The most prevalent types of land degradation in Somalia are:

- Soil degradation through water, wind, and chemical erosion
- Water degradation, resulting in aridification and a decline in surface water quality
- Biological degradation, which includes the loss of biomass, vegetation cover, and biodiversity

Land degradation has contributed to the loss of vegetation, gully erosion, loss of topsoil, siltation of surface dams and irrigation canals, invasive non-palatable plant species, and loss of plant nutrients in areas with agricultural potential.

Somalia's ASAL landscape is at a high risk of desertification and is prone to extreme variations in weather conditions. The unpredictability of these variations includes high diurnal temperature ranges, torrential rains, periods of extended drought, highly erratic rainfall, and strong winds. As a result, Somalis are in a constant flux between two extremes: adapting to prolonged droughts and coping with recurring flooding.

3.2 Estimate of the Proportion of Degraded Land over the Total Land Area for Somalia

Between 2000 and 2015, the total degraded land is 147704 km² representing 26.7% of the total land area of Somalia. The country has suffered serious environmental due to a combination of factors including soil erosion, biological degradation, and gully erosion among others. Although Somalia experiences the different types of degradation, wind erosion was a dominant cause of loss of topsoil in the north; aridification was dominant in the south and loss of vegetation prevalent in southern and central Somalia. Loss of topsoil by water erosion covered the largest area and could be said to be the most widespread type of land degradation in Somalia. In overall, approximately 27.5% of the land area in Somalia is considered degraded.

Table 2: Extent of Prevalent Land Degradation Types in Somalia

Land Degradation Type	Area coverage (Km ²)	Area coverage (%)
Soil erosion by water	217054.73	34.11
Biological degradation	241043.73	37.89
Water degradation	68865.73	10.82
Soil erosion by wind	15766.48	2.48
Chemical soil deterioration	5429.99	0.85
Urban	175.10	0.03
Temporal water bodies	186.33	0.03
None	87717.91	13.79
Total	636240	100

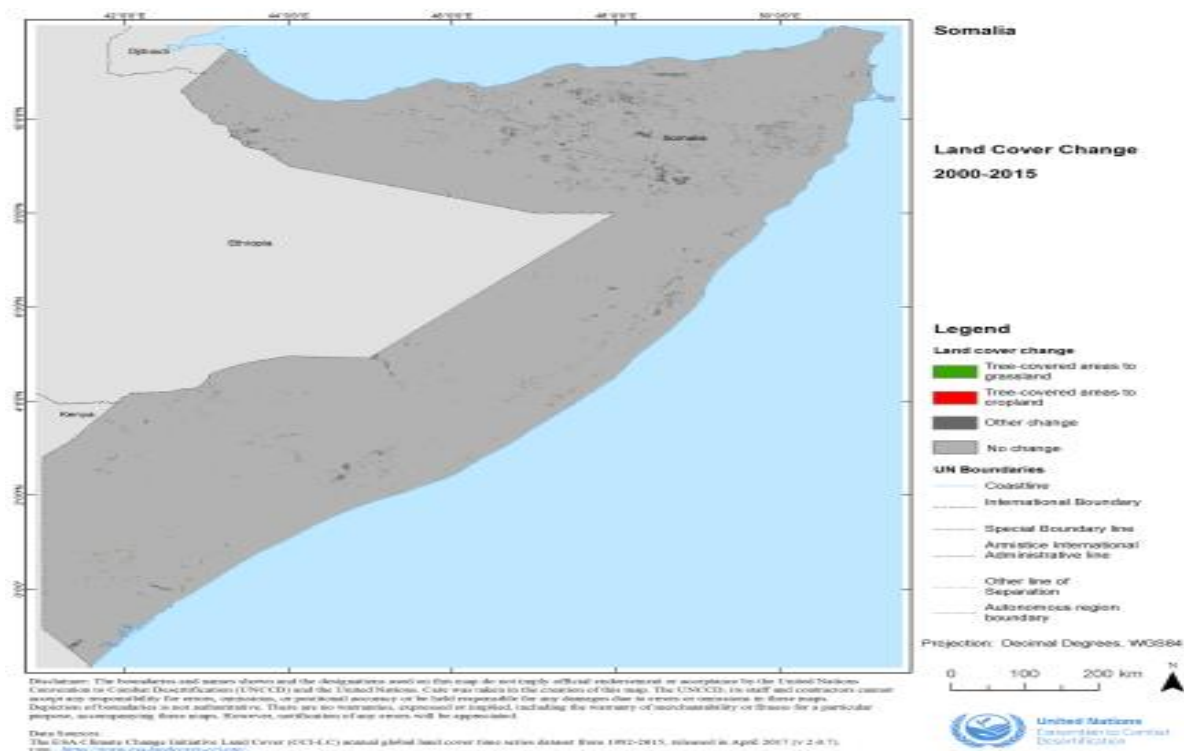


Figure 1: Land Cover Change (2000-2015) (CCI-LC, 2017)

The land degradation types were combined to produce the below land degradation Map through expert assessment. The Table below shows the areal extent of land degradation in Somalia. Overall, approximately 27.5% of the area was considered degraded.

Table 3: Extent of Land Degradation in Somali

Land Degradation status	Area coverage (Km ²)	Area coverage (%)
None	85086.39	13.43
Light	212761.78	33.58
Moderate	195070.83	30.79
Strong	140328.06	22.15
Total	633608.50	99.95

Remote sensing analysis identifies numerous places experiencing loss of vegetation cover between 2000 and 2015. Although there were minimal changes between the two periods, a majority of the changes negatively impacted soil services, socio-cultural services, and productive services.

3.3 Land Degradation Trends

3.3.1 Land Cover/Land Use Change

Land-use change assessment is a critical step in understanding the status of land degradation and informs the process of the LDN target setting. Land in Somalia has undergone significant transformation in the past 120 years. Land in Somalia is mainly used for pastoralism. The expansion of agriculture, growing population, increase in several water points, tree cutting, and expansion of rangeland enclosures have also contributed to the land changes. Since the 19th-century natural forest and meadow ecosystems have gone through significant change, most of them degraded due to a combination of natural and anthropogenic factors.

A Land cover change map shows the trends in land use and where they are happening in the country. The map identifies both gains and losses from one LC class to a different LC class, which is useful in determining land degradation areas. Causes of land cover change can be anthropogenic, such as agricultural expansion, deforestation, and reforestation, or natural such as floods, drought, and extreme weather). Below (Figure 2) is a map showing land cover change for Somalia between 2000 and 2015.

Somali predominant land cover remains grassland while pastoralism is one of the principal land-use activities. Other types of land use include cropland, forest, wetland, artificial surfaces, and water body. As shown in Table 4 below, the most noted change in recent (2000-2015) land cover/use structure is the decline in the water body (-6182 th. ha or by -91%) and grassland by (-4774740 ha or by -91%).

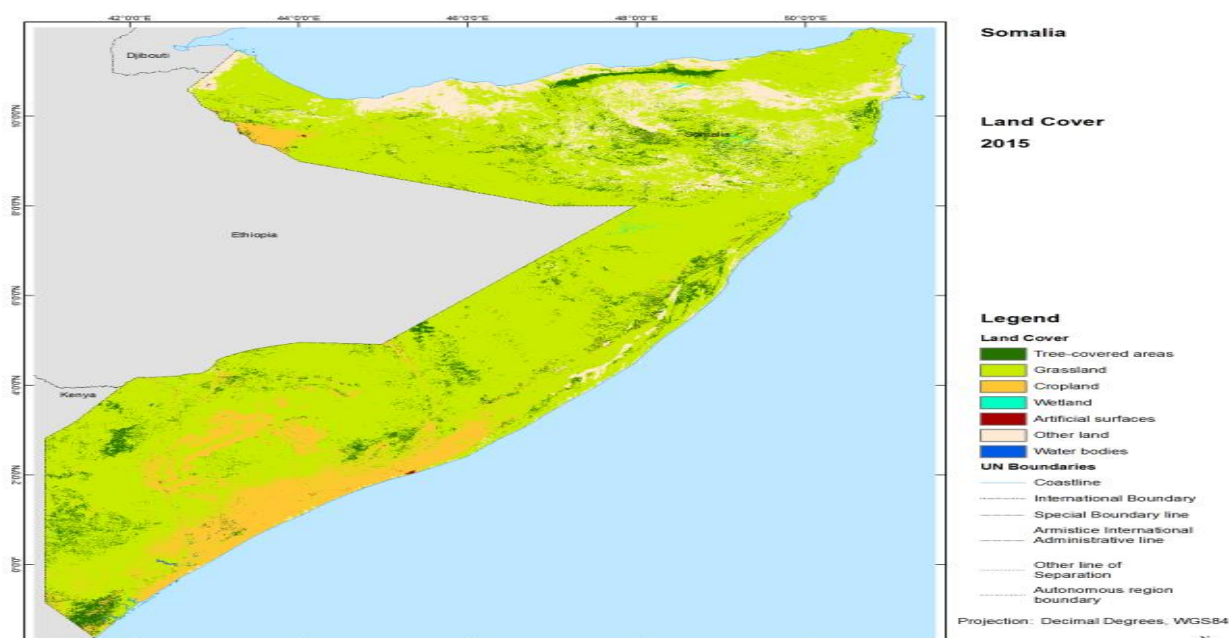


Figure 2: Land Cover 2015 (CCI-LC, 2017)

Table 4. Land Use/Cover Change, th. ha (2000-2015)

Land Category	Indicator, th. Ha				Difference, 2000-2005		Difference, 2000-2015	
	2000	2005	2010	2015	th. Ha	Proportion, %	th. Ha	Proportion, %
Tree-covered areas	370464	384662	34620	33342	14198	3.832491146	-337122	-90.99
Grassland	5246967	5266654	473999	472227	19687	0.375207239	-4774740	-91.00
Cropland	687752	695461	62591	61898	7709	1.120898231	-625854	-90.99
Wetland	6974	6974	628	628	0	0	-6346	-90.99
Artificial surfaces	4688	4787	431	422	99	2.111774744	-4266	-90.99
Other land	577588	623157	56084	51983	45569	7.889533716	-525605	-90.99
Water body	6793	6797	612	611	4	0.058884145	-6182	-91.00

3.3.2 Land Productivity Dynamic

Land productivity dynamic map will help in identifying the areas where biomass activity is declining. The map will help in signalling long-term changes in the health and productivity capacity of the land and the net effects of changes in ecosystem function on biomass and plant growth. LPD does not necessarily quantify the magnitude of change in the productivity of Annual Aboveground Net Primary Production (ANPP) kg/ha/year but shows where productivity is decreasing (negative) or stable for the reporting period. The LPD trends will provide qualitative assessments and do not directly relate to an absolute unit (e.g. t/ha) to measure the biomass productivity's dynamics.

As shown in the figure below, the LPD is indicated for a 15-year time series from 2000 to 2015 of Global Normalized Difference Vegetation Index (NDVI) observation composited in the 10-day interval at 1km spatial resolution. The map encompasses the land/cover category for Somalia and helps in examining the intensity of both positive and negative alterations of land productivity in land/cover/land use categories. The Net LPD will be provided for all land/cover/use that remains unchanged between the periods.

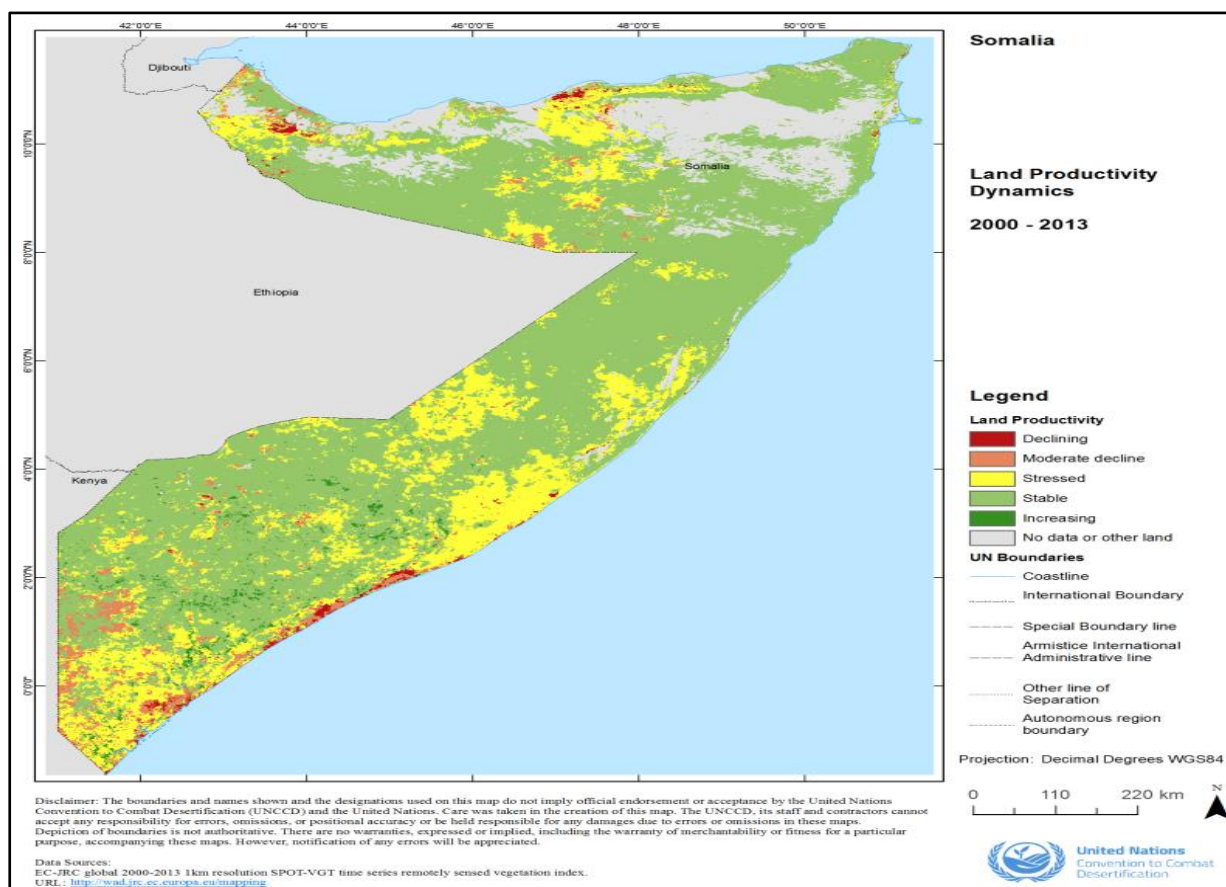


Figure 3. Land Productivity Dynamics (EC-JRC, 2013)

3.3.3 Soil Carbon Stocks/Soil Organic Carbon (SOC)

Soil Organic Carbon balance is the difference between carbon entering the soil (organic fertilizers and humification of vegetable residues) and carbon coming out of the soil due to organic matter mineralization process. It helps in identifying locations where organic matter is reducing and where SOC content is improving. If there is either a neutral or positive balance, the absence of Green House Gas (GHG) emission is indicated. When the carbon emanating from the soil exceeds the amount of organic matter stored through humification process, the soil is losing carbon and reducing the fertility of agricultural soils; thus, a negative balance.

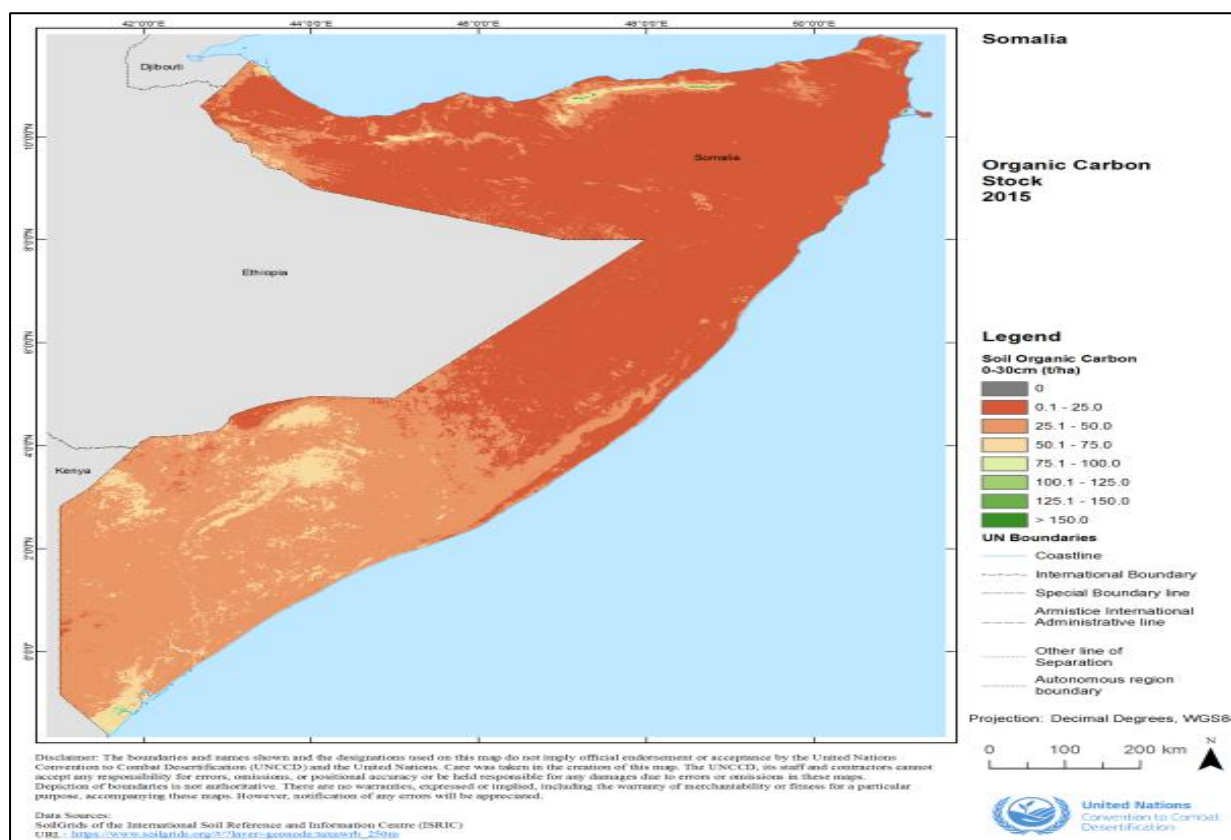


Figure 4: Organic Carbon Stock 2015 (ISRIC)

The default data on stocked SOC (ton ha^{-1}) used for 2000. To arrive at the baseline estimates and trends in the change of SOC stocks beyond 2000, the method for compiling National Greenhouse Gas inventories was employed. As shown in Table 2 below, grassland has experienced a catastrophic decrease in soil carbon stock that led to the transition from a positive carbon balance 15t/ha in 2000 to 8.5t/ha in 2015. Between 2000 and 2015, the total degraded land is 147704 km^2 representing 26.7% of the total land area of Somalia.

Table 5: Soil Carbon Stocks Trends

Land Conversion		Net Area change (km^2)	Soil Organic Carbon (SOC) Stock Change (2000-2015)				
From	To		Initial SOC stock (t/ha)	Final SOC stock (t/ha)	Initial SOC stock total (t)	Final SOC stock total (t)	SOC stock change (t)
Grassland	Other land	2682	15	8.5	4016421	2270781	-1745640
Tree-covered areas	Grassland	147	21.4	21.3	315747	315090	-657
Cropland	Grassland	135	40.3	43.4	545391	587223	41832
Grassland	Artificial surfaces	35	27.7	21.6	98820	77337	-21483

3.3.4 The Synergistic Effects of Soil/Land Degradation

The Land is an essential factor in the carbon cycle for the terrestrial ecosystem, hence, it has significant implications as part of the carbon inventory requirements in the context of biodiversity conservation and climate change monitoring. Land helps in mitigating the adverse effects of drought, increasing biodiversity conservation, and improving the quality and quantity of water resources. In Somalia, cropland is the primary source and sink of emissions followed by grassland and forest lands.

3.4 Land Degradation Drivers

3.4.1 Direct Drivers

The main drivers contributing to land degradation in Somalia are overgrazing, non-sustainable agriculture, overexploitation of forests and woodlands, resettlement and urbanization, and other natural causes (See Table below). Somalia's population is increasing, thus putting tremendous pressure on existing resources. This has led to the expansion of agricultural land, destruction of forest covers, and minimal time for natural regeneration of soil fertility. More forests are cut for charcoal and firewood. Rangelands are also subjected to overgrazing leading to a decline in land productivity.

Traditional biomass fuels, mainly firewood, charcoal, and inefficient fuels, account for 82% of the country's total energy consumption. Most of the nomadic and rural populations rely on firewood and inefficient biomass stoves for energy. Close to 98% of urban dwellers in Somalia use traditional charcoal stoves. This has contributed massively to the rampant deforestation in the country. An average annual tree loss of -2.8%, coupled with the total absence of regrowth during the 5 years study period, confirm the grave ecological impacts of charcoal-driven tree cutting on tiger bush vegetation.

3.4.2 Indirect Drivers

The leading indirect causes of land degradation in Somalia are; increase livestock and human population, lack of appropriate policies and enforcement, poverty and poor implementation of policies (See Table below). Poverty is also another indirect cause of land degradation. As the resources base is limited, people demand more goods from the foremost assets such as pastoralism and farming activities. Since the household income is limited, the land users cannot invest in any input for improving land management and consequently degrading the land. Lack of appropriate policies and strong law enforcement by the government are also other indirect causes of land degradation in Somaliland. Other indirect causes of land degradation in Somaliland are lack of knowledge and education and increasing consumption pattern.

Table 6: Direct and Indirect Drivers of Land Degradation

Indirect Drivers	Direct Drivers
○ Poverty/wealth ○ Population pressure (Human and wildlife) ○ Governance, institutional setting and policies ○ Compliance with land use and management policies and plans ○ Lack of appropriate policies, poverty ○ Poor implementation of policies. Poverty	○ Overgrazing, ○ Non-sustainable agriculture ○ Over-exploitation of forests and woodlands for charcoal production, ○ Resettlement and urbanisation ○ Industrial activities, waste deposition and mining and quarrying ○ Soil erosion, landslides, flooding

3.5 LDN Institutional and Legal Framework

3.5.1 Legal Framework

The consolidation and strengthening of the policy and regulatory framework is one method by which LDN can be attained. An analysis of institutional and legal framework governing land and natural resources management is vital in understanding contexts and identifying gaps, inconsistencies, weaknesses, and opportunities in order to enhance the achievement of LDN.

Policy, Legal and Institutional Frameworks are the key legal instruments for the management of environmental affairs in Somalia. The Constitution, specifically Article 25 (“Environment”), Article 43 (“Land”) and, Article 44 (“Natural Resources”), and Article 45 (in Chapter 3–Land, Property, and Environment) are about environmental management. Article 43, on its part, provides guidelines on environmental and social safeguards that can be observed. However, there are no standing environmental and/or social safeguards in terms of legislated and or/drafted regulations.

The policies related to addressing desertification, land degradation, and managing land use and drought issues have been enacted. The national policies and environmental institutions that are able to influence the success of LDN have been analysed based on current relevant policies, laws and regulations related to land use, land tenure, land use, and land cover, agriculture, environment, climate change, infrastructure development, water and forest resources management, mining. The policies deal with the following land-related aspects:

National Policies that govern management of land natural resources

- Statutory Land
- Environmental Health / Public Health
- Population
- Education
- Information and Communication Technology
- Gender
- National Housing
- Transport Policy
- National Disaster management policy

Sectoral Policies Promoting Growth & Management of Land and Natural Resources

- Agricultural
- Fisheries
- Climate change
- Energy
- Water, Sanitation and Hygiene
- Wetlands
- Wildlife
- Forest
- Biodiversity
- Touring
- National Petroleum and Mineral

3.5.2 Institutional Framework

The upstream environmental institutions at Federal Government level and Member State levels are in place. The Directorate of Environment under the political leadership of State Minister of Environment has been created in the Office of Prime Minister. The roles of the Directorate include the following:

- (i) Formulation of National Environmental laws, policies and regulations
- (ii) Develop guidelines for conducting Sectoral Environmental Assessments (SEAs), Environment Impact Assessments (EIAs) and Environmental Audits (EAs);
- (iii) Coordinating with the Federal Institutions, Federal Member States, Local Governments, International Partners, Civil Society, Academia, the Private Sector, Media etc.; and,
- (iv) Acting as the focal institution for the multilateral environmental agreements (linked to the UN conventions and protocols)

In addition to the OPM, responsibilities of the environment and natural resources management at the Federal Government level is to be shared with the following ministries (FGS, 2016a):

- (i) Ministry of Agriculture;
- (ii) Ministry of Fisheries and Marine Resources;
- (iii) Ministry of Livestock; Forestry and Range
- (iv) Ministry of Natural Resources and Petroleum;
- (v) Ministry of Animals, Plant and Pasture;

Environmental Agency in Office of the Prime Minister is also involved in National infrastructure planning in the five key federal ministries (FGS, 2016a):

- (i) Ministry of Public Works, Housing and Reconstruction (incl. roads authority)
- (ii) Ministry of Ports & Marine Transport
- (iii) Ministry of Transport & Civil Aviation
- (iv) Ministry of Energy & Water Resources
- (v) Ministry of Post & Telecommunication

3.5.3 Context/SWOT Analysis of Legal and Institutional Framework

Despite the existence of these policies, the benefits of these legislative frameworks have not been fully realized due to weaknesses in implementation and enforcement as analysed in the SWOT matrix below. These constraints of the legal and institutional policies that influence the achievement of LDN in Somalia.

3.5.3.1 STRENGTHS

- The Draft Constitution of Somalia 2012 specifically deals with matters related to environment and natural resources management under Article 25
- There is Land Policy of the Federal Government of Somalia being developed under NDP 2017-2019 (FGS, 2016a).
- The Legal system converted into Sharia's with the possibility for appeals.
- Easy access to seek right with the law as small localities have courts,
- Availability of a Land Resources Tenure and Agricultural Land Policy in August 2002
- Somalia is a signatory member and has signed a number of important international treaties and coding into the national laws relating to natural resource use and management, including;

The National Climate Change Policy (NCCP) provides strategic direction and coordinates climate change issues in Somalia primarily effective adaptation and mitigation to climate change as well as social development. National charcoal policy – provides recommendations on tackling charcoal production (attached for reference)

3.5.3.2 WEAKNESS

- The policy and legislative environment in Somalia are weak; While policies may have been developed and approved in Somaliland and Puntland, this has yet to be translated into legislation
- The Draft Environment Policy 2016 does not eliminate the problem of sectoral failure in policy implementation.
- Ministry of Environment (Office of the Prime Minister), mandated to undertake all pastoral and environmentally related issues, lacks institutional and technical capacity.
- The unwillingness of most International NGOs and UN-agencies to fund government institutions due to the unclear international legal status, and a more general declining of donor support.
- Somalia has no Environmental Impact Assessment (EIA) policy or legislation, procedures or guidelines, and these need to be established.
- Little environmental coordination at policy and regulatory level.
- The mandates of government ministries with regard to NADFOR are unclear, combined with overlapping government structures with regard to environmental management.
- Although the private sector has thrived, public sector institutions are generally weak, understaffed and without the capacity to carry out their mandates
- Other than Puntland and Somaliland, ministries in emerging states are not fully developed. They lack capacity to discharge their mandate.
- Lack of political will and commitment to protecting the environment. The Ministry of Environment and Climate Change, for example, is one of the poorly funded government institutions.
- Lack of implementation of natural resource management policies.
- The legislative framework for natural resources is inadequate and frequently overlapping, affecting coordination and planning activities by various government institutions.

3.5.3.3 Opportunities

- There are established global, regional or national Environmental Assessment networks such as the Eastern Africa Association for Impact Assessment (EAAIA) that could assist Somalia in the establishment of such systems.
- National Action Programmes (NAPs), which is aligned with UNCCD's Ten-Year Strategy, has already been formulated and aims to combat desertification and mitigate the effects of drought in Somalia.
- National Adaptation Plan of Action (NAPA) and National Biodiversity Strategy and Action Plan for Somalia have been documented and focus on sustainable land management, integrated water resource management, and disaster management.
- Opportunities to embed land degradation neutrality measures and strategies in policy to witness the associated benefits in a sustainable environment and growing economy.
- The evolving Draft Environment Policy 2016 provides an opportunity to address policy weaknesses and establish cross-sectoral uniformity, to reduce the risk of sectoral conflicts in policy interpretation.
- Numerous financing opportunities for LDN transformative projects and programmes such as Global Environment Facility (GEF), Adaptation Fund, Green Climate Fund (GCF), Climate Investment Funds (CIF), LDN Fund, National Budgets and Financing Mechanisms, International Development Association (IDA), Multilateral Development Banks (MDBs), International Development Finance Club

3.5.3.4 THREATS

- Corruption in government institutions and individuals
- Government regulation of INGOs. And formalization of IDP policy affect aid agencies
- Access of International staff shrink due to legal issues questioning their status and necessity
- Increasing effects of global warming and climate change

4.0 LDN TARGETS, MEASURES AND TRANSFORMATIVE IDEAS

4.1 Land Degradation Neutrality Targets

LDN targets are the desired action to achieve land degradation neutrality. Somalia has set LDN targets at a national scale with the ambition of becoming Land Degradation Neutral country by 2030. The LDN targets also align with the Sustainable Development Goals, particularly SDG 15, target 15.3. The national targets are the mainstay-desired action to attain land degradation neutrality. Sub-national LDN targets have also been set to help achieve a neutral or improved state, allowing Somalia to focus on areas that have been identified as major “hot spots” and prioritize areas in achieving LDN.

LDN as a government-led process should be consistent with the national development policy and strategic plan. The local stakeholders and administrators will not only give priority for land use, land productivity, land cover, and soil organic carbon in their region but also engage in priority hotspot areas within their regional boundaries. Through the LDN National Working Group, all stakeholders have been involved to inculcate a sense of ownership and ensure the early evaluation of trade-offs. Efforts have been made to ensure measurable targets according to the LDN indicator framework. The LDN Working Group will validate the targets on 26 August 2019.

4.1.1 LDN at the National Level

- LDN is achieved by 2030 as compared to baseline 2015 (no net loss), an additional 10% territory has improved by 2030 (net gain).
- National forest cover increased from 10.14% (2015) to 10.20% (2020) and maintained approximately at 30% by 2030 through agroforestry and SLM in existing forests.
- Level of land productivity and SOC at country level maintained and improved by 2030 compared to 2015 baseline.
- Traditional Biomass energy consumption reduced from 65.77% in 2015 to 32% in 2024.
- Increase land protected against soil erosion to 1,034,509 ha by 2024.
- Areas of stressed or declining land productivity reduced by 50% by 2030.

4.1.2 LDN at the Sub-National Level

LDN is achieved in land degradation hotspots: Afmadow, Ceelwaaq & Garbahaarey, Qansax, Dheere, Burdale, Wanlaweyn, Jowhar, Buuloburde, Tayeeglow, Baledeyne, Xudur, Xarardheere, Hobyo, Cadaado, Caluula, Qandala, Qardho, Eyl, Garoowe, Taleex, Laasqoray, Boosaaso, Ceerigaabo, Ceel-Afweyn, Caynabo, Shiikh, Berbera, Hargaysa, Gabiley, Boorame, Saylac and Jariiban by 2030 as compared to 2015. Also, additional 10% of the degraded Hotspot areas has improved (Net Gain).

4.1.3 Specific Targets to Avoid, Minimize and Reverse Land Degradation

- Reduce conversion of forests and wetlands into land cover classes by 2030 (no net loss).
- Ensure compliance with the national land use strategic plans.
- Minimize conversion of grassland and croplands into artificial surfaces by 2030 (no net loss)
- Rehabilitation of degraded forests from 6363 ha in 2015 to 2017, 988 ha by 2024
- Improve land productivity on 33342 ha of Tree-covered areas, 472,227 ha of grassland, 7709 ha of cropland currently showing stressed productivity through sustainable land management practices
- Stop the conversion of cropland to other land cover classes by 2030
- Improve carbon stocks of cultivated (61898 ha) areas by 2030
- Restore and increase the productivity of (448,527 km²) of agricultural land using modern agricultural techniques and SLM practice in all areas by 2030
- Rehabilitate and increase the productivity of (472,227 ha) grassland by 2030
- Stop the occurrence of soil erosion by rainwater, particularly in the northern ranges owing to steep topography by creating dams for water harvesting to be utilized for agricultural purposes by 2030

The measures to achieve LDN are primary means for Somalia to communicate internationally and nationally and implement steps to attain LDN in Somalia. For purposes of sustainability of LDN several transformational activities and strategies (short term and long term) have been identified as listed below:

- Institutional strengthening and capacity building
- Involvement of the private sector and international and civil organizations
- The utilization of sustainable agricultural approaches
- Agroforestry and integrated sustainable land management
- Afforestation and forest management
- Financial sustainability, capacity building, and institutional strengthening

4.2 LDN Hotspots

LDN Hotspots are geographically defined areas exposed to serious land degradation trends. Land Productivity Dynamics (LDPs) was used to map land degradation “Hot Spots” wherein Classes 1-3 (Declining, early signs of decline and stable but stressed) were taken as degradation hotspot. As such, approximately 147704 km², representing 26.7% of the total land area of Somalia, was found to be in classes 1-3 and thus mapped as degradation hotspots.

The pilot areas were selected based on land degradation maps produced with default data based on administrative boundaries, trends in land productivity, and critical transition in different ecological zones (See Figure 5 below). These hotspots were first validated by visual inspection of Earth Satellite images. Physical visitation of the hotspots will help in visual inspection to assess trends and drivers. Validation with locally available data shows that LDP derived degradation hotspots conformed with earlier and current degradation assessments in sampled areas.

The main hot spots identified are:

- i. Areas with early signs of declining land productivity are patches scattered in Gedo, Lower Jubba, Bakool, Middle Shebeele, Hiiraan, Togdheer, Sool, Sanaag, Waqooyi Galbeed, Awdal and Bari
- ii. Stable but stressed areas are patches scattered in Lower Jubba, Middle Jubba, Gedo, Bay, Bakool, Lower Shabeelle, Middle Shabeelle, Hiiraan, Galgaduud, Mudug, Nugaal, Sool, Bari, Sanaag, Togdheer, Waqooyi Galbeed and Awdal regions.
- iii. Declining areas are patches scattered in Mudug, Sanaag, Awdal, and Bari regions.

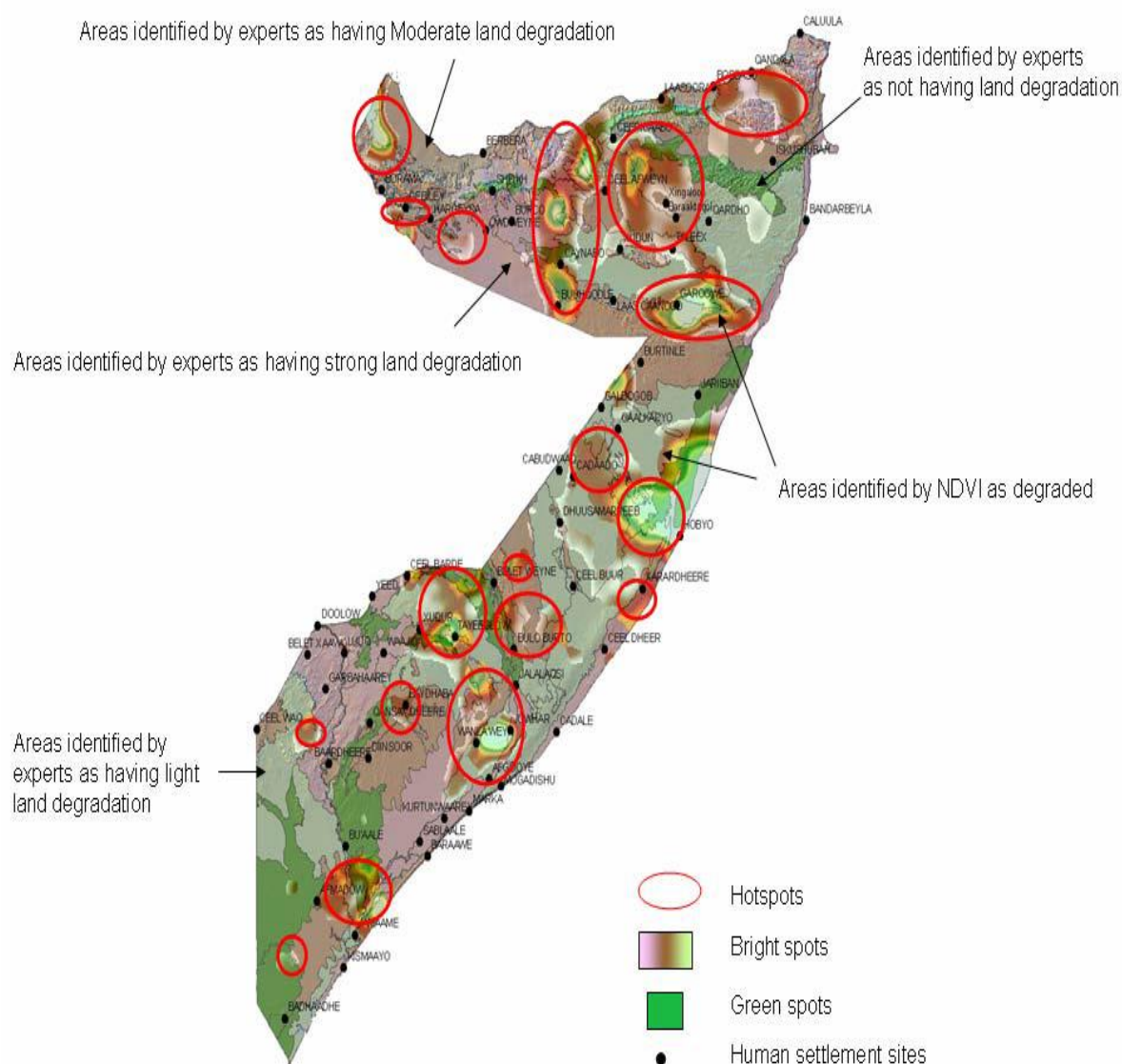


Figure 5: NDVI and Expert Assessment Map of land degradation Hotspots (2009) in Somalia

4.3 LDN Measures and Priorities

Achieving land degradation neutrality and attaining no net loss of land-based natural capital is a crucial effort that involves LDN preparation, planning, and governance. Interventions like identification of land and fostering changes in land management and practices require active interactions between decision-makers and stakeholders to promote an enabling environment to support the land-use decision. The framework for effective governance will enhance achievement as well as the protection of the rights of vulnerable communities in Somalia. It will require identification of existing initiatives and platforms that can benefit from the LDN approach including local and international policies that influence land use and the distribution of benefits, such as trade agreements and sustainability schemes.

4.3.1 LDN Needs and Priorities of Sustainable Land Management

- There is the need to conduct a soil survey and mapping throughout the country as the current inventories for land resources are only limited to high agricultural potential areas.
- There is a need to strengthen the capacity of national institutions (technical, institutional, and financial among others) to monitor and report on the status of the country's soil resources.
- Efforts to increase sustainable land management practices and technologies adoption including the integrated soil health management and extension services among others.
- Prioritization of the establishment of a soil research/agricultural institution that has been absent for a long period.
- Instituting a land degradation monitoring system that would provide continuous assessments, map the soil resources, and monitor the extent of land degradation.

4.3.2 Institutional and Policy Measures to achieve LDN

- Control developmental activities to ensure they adhere to environmental regulations and create an environmental police department to enforce environmental regulations.
- Control proliferation of urban settlements.
- Legislate and apply regulations to manage the current population movements, unrestricted traffic, and the new phenomenon of destructive-mechanized mobile nomadism.
- Encourage stocking for strategic consumptions and proper investments in fodder planting.
- There is the need for the Draft Environment Policy 2016 to incorporate strategies to deal with the management of customary, leasehold and State land. The decentralization of natural resource management should consider the clan systems.
- There is the need to build the capacities of the different relevant ministries.

4.3.3 Vegetative, Agronomic and Management Measures

4.3.3.1 Soil Erosion Control

- Greater emphasis must be given to improved land-use planning, the establishment of range resource management plans and the control of soil erosion.
- Community participation is fundamental in the control of soil erosion since grazing controls have to be established in certain areas to allow affected rangelands to recover from overgrazing.

4.3.3.2 Energy/Charcoal Production

- Charcoal production should be placed under the strict control of a single appropriate agency, with capacity built to control illegal production and enforce regulations.
- Efforts should be made to reduce losses during the charcoal production cycle, i.e. cutting of wood, kiln construction, and increasing overall recovery – from 15-30 percent.
- Promote alternative fuels & encourage the use of fuel-efficient stoves and improved cooking practices, focussing on urban centres where kerosene could provide a viable alternative.
- Existing solar stove pilot projects in rural areas should be expanded, with appropriate introduction and training programs.

4.3.3.3 Disaster Preparedness and Response

- There is a need to develop an early warning system or systems to help identify potential threats to the environment and people's livelihoods. The same opportunity should be used to raise awareness of the importance of wise management of natural resources as a means of reducing risk to disasters.
- An oil spill response contingency plan needs to be developed and implemented, in collaboration with other countries in the region.
- Capacity building, including institutional development and strengthening, for natural and anthropogenic, disaster management needs to be instituted.

4.3.3.4 Sustainable Land Management

The following measures using and rewarding the rural residents should be applied;

- Teach, equip and reward the rural population to protect the environment.
- Teach the rural families to collect stones from the nearby hills and level them at an appropriate position on the nearby ravines to slow down the water flow.
- Teach them to put heaps of dungs from the animal station into the ravine in order to serve as fertilizer and water moderator.

4.3.3.5 Developing Sedentary Pastoralism

- Encourage & develop settled pastoralism starting with a pilot program and then scale up
- Manage and encourage families to control their herds/number of animals they keep per family by supporting off-take programs
- Encourage adoption of a new form of composition of livestock species per family, depending on the features of the family's land while maintaining the traditional way of free movements by herders.
- Urge the herders' urban-based relative supporters to transform their assistance to contribution in forming sedentary pastoralism where supporters should assist the herders for adaption to the option.

4.3.3.6 Utilizing Sustainable Energy Sources

Somalia is a hot, sunny place. It is one of the countries that consume the most expensive electrical energy. The use of solar energy is seen today as one of the best ways to protect the environment. Somalia must work to prioritize the use of this invaluable resource. Since there is a problem with public finance, the private sector can initially be encouraged adapting to the initiative.

4.3.3.7 Addressing Deforestation and Charcoal Burning

- Offering Somalis alternate sources of energy
- Introducing solar energy
- Championing Biogas
- Monitoring Climate Data
- Mapping Somalia's Resources

4.3.3.8 Reclaim the Protected Area Network

- There is an urgent need to re-assess the nature and structure of the country's protected area network and provide training to develop national capability in conservation. There is the need to emphasize strengthening shared, clan or other traditional means of resource management.
- In critical areas, management plans should be drawn up with the local communities to enable them to participate in the management of protected areas in a more sustainable manner.

4.3.3.9 Sustainable Management of Forest and Woodland Resources

- There is a need to conduct an inventory of Somalia's timber resources. Community mobilization should be promoted to ensure acceptance and local responsibility for the management of forest and woodland resources.
- Forest conservation teams should be established under the appropriate ministry, especially for areas where charcoal production is threatening land productivity.
- At the regional level, existing laws governing the trade and export of charcoal should be respected. Stricter enforcement is needed on charcoal exports.

- Special protection should be accorded to the country's remaining mist forests due to their intrinsic value and uniqueness.
- Sustainable management of economic plant resources such as the Yicib or Yaheb nut bush should be encouraged and maintained through participatory community-based natural resources management techniques and approaches

4.3.3.10 Crop Production

- Rehabilitation of pre-war flood control and irrigation infrastructure along the two major rivers in southern and central Somalia and their expansion in both north-western and north-eastern regions;
- Rehabilitation of pre-war trunk and rural roads to improve transportation of inputs to farms and of produce to markets;
- Improved access to and adoption of productivity-enhancing and resilient technologies (Climate Smart Agriculture practices).

4.3.3.11 Livestock Production

- Short term - feed and water provision, veterinary services provision, and restocking/ redistribution in selected districts;
- Medium term-rehabilitation of livestock watering infrastructure on the rangelands, rehabilitation of the rangelands and enhancing management; improving laboratory facilities for confirmatory disease diagnosis and animal food residue testing;
- Long term – strengthening institutional capacity for clinical veterinary services; feed and water development, diversification into poultry production and beekeeping; genetic research and breeding; and strengthened regulatory capacity of veterinary services to supervise and regulate quarantine operations and certification for trade.

4.3.4 Environment and Natural Resource

- Scaling up evergreen agriculture (EGA) by integrating with trees-on-farm agroforestry systems for better resilience,
- Rehabilitation of important vegetative resources badly affected by drought by promoting the adoption of sustainable, low-cost land restoration techniques such as FMNR and ISFM.

4.3.5 Improving Livelihoods and Employment

- Support should be provided to women and youth enterprises by supporting women entrepreneurs across all sectors, including livestock.

4.3.6 Gender Mainstreaming

- As a cross-cutting issue, gender needs to be mainstreamed across all sectors included in the recovery plan. The collection and use of sex- and age disaggregated data and strengthening gender-responsive governance in the short, medium and long term will facilitate the design and implementation of gender-sensitive policies and interventions.
- Specific support to facilitate women's voices to be heard and to promote women's participation and leadership is required.

4.3.7 Biodiversity and Ecosystem Management

- Assessment of conservation threats to protected areas and natural ecosystems including climate change, uncontrolled land clearing for agriculture, deforestation and overgrazing and overfishing
- Enforcement of the ban on charcoal exports, intensification of reforestation pilot programs in different soils and climatic environments,
- An Investigation into the alleged toxic wastes sites on land and dumping of toxic waste at sea.
- Mainstreaming community-based conservation and management of village-based land, and development of EIA and SEA.
- The re-establishment of a community-managed conservation plan for the grazing areas of GACAN LIBBAX Mountain and Wildlife conservation in GARACAD was established in 2005 by the local community.

ACHIEVING LDN

4.4 Leverage Achieved

- Incorporating LDN and other SDGs into the National development plan
- The National Working Group formed to spearhead the LDN target setting process has promoted coordination and collaboration to effectively implement the LDN targets.
- The LDN leverage opportunities have been mapped out and are based on strong justification in pursuance of the LDN agenda to deliver on Sustainable Development Goals.
- The government is committed to promoting approaches and intervention on sustainable development in line with the regional and global frameworks including conventions.
- Initiatives related to LDN receive support from various local and international development partners securing coherence in the cooperation framework.
- Relevant and line ministries provide political support to LDN initiatives. The FGS is responsible for ensuring that LDN and SDGs are mainstreamed in the national development plan and sectoral programs and policies.
- Somalia is tapping financial opportunities both locally and internationally through the implementation of a national climate change plan, developing fundable transformative LDN projects proposals to access LDN funds (in progress) and including LDN in the national budget (in progress) (GCF, 2018).
- In 2019, Somalia committed to meet the three Rio Conventions on climate change, biodiversity, and desertification. Somalia has voluntarily committed to the LDN Target Setting Process to meet her long-term developmental objective of sustainable land management (UNDP, 2019).
- Somalia established a National Adaptation Program of Action (NAPA) in 2013
- Restoration of degraded lands can be achieved through the development of a program of complementary and compensatory measures of cleaning, recovery and/or ecological restoration of degraded soils.

4.5 LDN Transformative Projects and Programs Opportunities Identified

Innovative concepts that are socially, economically and environmentally sustainable are proposed. Such novel and Transformative LDN programs and projects are informed by past experiences and lessons learned to help shape the design and implementation of the interventions.

4.5.1 Short and Medium-Term Actions

- Significant areas under agriculture, aquaculture, and forestry are sustainably managed by diversifying the management regime through integrated watershed management, water harvesting, climate-smart agriculture, conserving the indigenous genome/agriculture varieties, community-based integrated aquaculture, diversify agricultural crops, encourage salt & drought-tolerant crops
- Mainstreaming land degradation neutrality in mapping agricultural communities vulnerable to the impact of climate and enhancing their livelihoods.
- Increase forest cover through afforestation and rehabilitation of degraded forests
- Introduce and promote appropriate agroforestry practices, diversification of agricultural crops and encourage salt and drought-tolerant crops
- Rehabilitating degraded wetlands and swamps

- Promote and sustain community mobilizations to address land degradation issues
- Increase land covered by terraces to reduce soil erosion and contamination of water bodies
- Rehabilitation of degraded landscapes and catchments through agroforestry, afforestation and use of SLM practices.
- Mainstreaming land degradation neutrality in Providing Water for Local Communities via Water Harvesting and Sustainable Management for Natural Resources
- Promote new models of irrigation scheme management
- Enhance mining standards compliance
- Implement and monitor land use plans
- Implement sustainable forest management approaches in collaboration with the private sector.
- Environmental education awareness and mainstreaming sustainability.
- Promote the use of ecologically sustainable cooking technology to reduce overreliance of charcoal and reduce biomass use

4.5.2 Long-Term Actions

(i) Integrated and Sustainable Land Management

- Updating Somali's National Land Use Master Plan to integrate future climate change and specific actions related to land degradation;
- The Master plans of secondary cities and other towns need to be updated to reflect their determination to become modern cities and towns.
- Mainstream LDN in regional land use plans and local urban development plans.

(ii) Afforestation and Sustainable Forest Management

Somalia targets to increase forest cover from 10.14% (2015) to 10.20% (2020) and maintained at 30% by 2030 through agroforestry and SLM in existing forests. Hence, there is a need to involve the private sector and integrate Sustainable Forest Management Plans into the regional plans.

(iii) Agroforestry and Soil Conservation

- Ever-greening options will be tailored to different landscape areas and different stakeholders considering the socio-ecological variations and level of resource degradation.
- Interventions will involve a mix of enclosures, tree protection, and management by farmers in fields and direct tree planting (World Agroforestry Center, 2017).
- Enhance research for diversified tree species and enhance the use of agroforestry techniques and tree species to increase the overall forest resource output and agriculture land productivity.
- Other interventions will be related to soil conservation through terracing and conservation agriculture practices all around the country.

(iv) Efficiency in the Use of Energy and Promotion of Renewable Energy

Somalia will promote the use of modern energy technology to reduce the traditional Biomass energy consumption from 65.77% in 2015 to 32% by 2024. Distribution of biogas, cooking gas and improved stoves will help reduce traditional biomass consumption.

(v) Increase Productivity, Sustainability, and Resilience of agricultural production

Agriculture is a vital economic activity for Somalia for generating income through crop sales and labour opportunities and meeting the food needs of the population. Crop production performance and its potential are determined by the bi-modal rainfall the four primary agricultural zones are:

- Northwest in parts of Awdal and Waqooyi Galbeed - rained maize and sorghum with some livestock herding
- Coastal Cowpea Belt Zone in Central and Southern Somalia Shebelle and Jubba Riverine Valleys – rain-fed and irrigated maize, with sesame cash crops
- Sorghum Belt in Bakool and Bay Regions – rain-fed sorghum with livestock production is practiced.

Hence, there is an urgent need to invest in soil and water conservation. Focusing on agricultural inputs distribution (include seeds/seedlings/planting materials, fertilizers, farm tools, metal silos), infrastructure rehabilitation (include irrigation schemes, water catchments, and feeder roads) using cash for work and machinery approach and improved access to good quality seeds and planting materials (FAO, 2019).

(vi) Enhanced Environmental Management and Resilience to Climate Change

Somalia's land degradation rates pose a significant challenge to the country's social-economic and security stability. The needs of the local communities need to be supported to cope and respond to climate-related emergencies and adopt sustainable solutions to climate change issues. Priorities relevant to LDN include:

- Strengthen environmental governance to ensure the sustainable management of the country's natural resource base.
- Carry out environmental assessments to guide the setting of priorities for environmental recovery, resource management, and development planning;
- Revitalize environmental co-operation with neighboring countries and within the region, the objective being to support peacebuilding, enhance important environmental initiatives and share information and knowledge;
- Strengthening execution of Environmental Impact Assessments (EIAs) for public and private projects
- Scaling up of support for resource efficiency and cleaner production in partnership with the private sector
- Greater emphasis must be given to improved land-use planning, the establishment of range resource management plans and the control of soil erosion.
- Community participation is fundamental in the control of soil erosion since grazing controls have to be established in certain areas to allow affected rangelands to recover from overgrazing;
- Charcoal production should be placed under the strict control of a single appropriate agency, with capacity built to control illegal production and enforce regulations;
- Efforts should be made to reduce losses during the charcoal production cycle, i.e. cutting of wood, kiln construction, and increasing overall recovery- from 15-30 percent.
- Promote alternative fuels and encourage the use of fuel-efficient stoves and improved cooking practices.
- Existing solar stove pilot projects in rural areas should be expanded, with appropriate introduction and training programs.

- To create viable alternatives to the charcoal consumption in town and urban centers and to lead an awareness campaign throughout Somalia.

Role of Private Sector Participation

Other potentially contributing sectors such as the private sector, civil society/NGOs and grass-root communities should be engaged in the biodiversity management scene. Encouraging entrepreneurship in community-based management towards sustained value-added use of products and services stemming from biological resources; this will be attained through a tripartite partnership between public & private sectors, and civil society. The Somalia government will need to continuously involve the private sector to contribute to achieving LDN by 2030.

Community Participation

LDN is sustainably achieved through community-led processes. Hence, the community will be actively involved in not only identifying challenges but also coming up with solutions related to land use. Emphasis will be placed on training and awareness initiatives and the production of gender-sensitive awareness materials.

(vii) Institutional Capacity Building and Strengthening of LDN National Working Group

Capacity development and institutional strengthening for stakeholders in matters related to adaptation to climate change and climate variability. To enhance technical capacity, improve data/information collection, analysis and support the country to meet an obligation to meet her obligations.

- Continuous conduction of environmental assessments to guide priority setting for resource management, development planning, and environmental recovery.
- Development of adequate policy and legal framework for environmental management.
- Conducting environmental assessments, field-based, to inform decision-making in the future.
- For example, include capacity development in all areas of programming.
- The LDN National Working Group will adopt financially sustainable approaches. There is a growing potential to mobilize additional funding for UNCCD implementation through non-traditional sources using innovative financial strategies.

(viii) Strengthening of the LDN National Working Group

Strengthening the LDN National Working Group includes promoting financial sustainability to facilitate transformational change and use of innovative approaches and technologies by farmers will ensure financial sustainability. This will help minimize the dependency of communities to the government and international partners' budgetary support.

5.0 CONCLUSIONS

Land degradation is a significant challenge for all sectors of development in Somalia and across the globe. It has led to a wide range of development and environmental impacts related to the decline in resilience and functional integrity of soil and agro-ecosystem. The land-use changes after the protracted Somalia conflicts in the 1990s exacerbated land degradation mainly due to the use of unsustainable land practices such as charcoal burning, deforestation, overgrazing, and change of land tenure systems. Hence, a significant transformation is needed to address LDN. The Government of Somalia has set ambitious national voluntary LDN targets (to be achieved by 2030), established a baseline, and formulated associated measures to achieve LDN.

The LDN TSP process occurs within the sustainable land management process in a multi-stakeholder environment to establish the targets. The approach relied on ecosystem services and ecological functions as a vital and integral part of avoiding, reducing and reversing land degradation. The involvement of the communities in the LDN process will help in promoting sustainability and attainment of LDN targets and allow synergistic on the improvement of ecosystem functions and services. The LDN approach will hence strengthen the multi-stakeholder approach at local, national and regional levels. Governmental leadership and stakeholder engagement were identified as one of the challenges in LDN mainstreaming and adoption. Hence, assuring multi-stakeholder representation of the National LDN working group established a synergetic framework for LDN implementation. The institutions responsible for LDN information exchange understand the importance of collaboration and data exchange. Promoting a multi-sectoral approach will strengthen the land use planning process in Somalia, where the mandate to prepare and implement the land use plan and land administration department.

Somalia's national land inventory approach should be based on a remote sensed approach to improving the accessibility of land management information for decision making. There is a need to increase awareness on a partnership with key stakeholders in developing the land sector products based on real-time information. The LDN target setting process includes a compilation of global and local datasets and storing them in a database. Setting up and updated SLM related databases during LDN TSP has led to the compilation, cleaning, and identification of global datasets to achieve LDN monitoring through the use of neutrality indicators and analysis of the indicators.

Land and soil degradation is primarily conditioned by loss Soil Organic Carbon (SOC), mainly due to using unsustainable land practices and changing land ownership and tenure system. While in forests, the respective decreasing SOC was stabilized and even converted to positive dynamics, the Cropland category has experienced a catastrophic loss in soil carbon. Somalia aims to improve land/soil conservation and Ecological restoration of degraded lands and farmland to achieve by 2030 no net loss of productive land/soils and increase drought resiliency, adaptation capacity, and biodiversity services of agricultural ecosystems. The country aims to put relevant and effective policies to manage land that ensure efficient implementation and monitoring of land use and urban development plans to achieve SLM. Sustainable farming methods such as integrated forest management, agroforestry, and land husbandry and crop production will help the country become resilient to climate change.

One of the significant challenges to achieving LDN targets in Somalia is financial constraints. The inadequacy in political support and perception that environmental conservation is a liability is a significant barrier to the implementation of the LDN concept. Somalia has made significant steps toward the protection of the environment and the improvement of biodiversity services. Nonetheless, limited financial resources make the country government and dependent on foreign aid and donor priorities. To ensure the sustainability of the LDN target achievement process, the country should ensure that the planning efforts are appropriately integrated into the budgetary process.

5.1 Recommendations

- Even though the LDN Target setting process helped identify various hotspots, there is a need to carry out further assessment of the selected hotspot areas to understand their historical and current drivers behind land degradation dynamics using additional data sources, indicators, consultation visits, and field assessments.
- Successful implementation of SLM practices requires arrangements where existing land administration systems integrate land use planning and the management of land resources as encouraged under the LDN approach. Thus, LDN can be used to leverage the national efforts to manage land resources through the integration of land administration and use planning for sustainable land resource management.
- The LDN approach utilizes a sectorial approach to implementation of SLM to ensure synergy and collaboration that promote proper reporting for the UNCCD and SDG 15.3. Furthermore, the sectorial approach ensures proper governance of land to equitable benefits for all stakeholders.
- Since LDN hotspots are priorities for action to achieve LDN, there is needed to make available funds for assessment of the hotspots and implementation of LDN transformative projects. Obtaining funds through national ministerial budgets and other new mechanisms such as taxes, penalties, payment for ecosystem services.
- Strengthening of the LDN National Working Group will ensure strong participation of stakeholders for sustainable implementation of the LDN. Reviewing current legislation and developing new legislation, especially those addressing the LDN concept. The government of Somalia should increase forest land cover through agroforestry and afforestation practices across LDN hotspots and the entire country. Use of modern farming techniques and land husbandry will help improve food security and community livelihoods

- There is a need to review or replace policies that exacerbate land degradation and encourage those that promote land productivity, secure tenure rights and strengthen governance and stakeholder participation in integrated land use planning. There is an urgent need to sustain public awareness programs that promote sustainable land use and management and conservation agriculture to mitigate land degradation.
- Furthermore, it is recommended to understand better and harness the interactions between local, national, and international governance levels. As such, setting up of a comprehensive land monitoring system is indispensable and will not only support the implementation of LDN but also allow land degradation assessment, resilience assessment, potential land assessment, and socioeconomic assessments.

Leveraging these efforts will ensure more comprehensive tracking and minimize duplication of efforts.

6.0 References

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7.0 ANNEXES

7.1 The National LDN Working Group Members

The Somalia Land Degradation Neutrality Target Setting Process Report has adopted most of its recommendations from the Somalia National Action Programme (NAP) for the UNCCD and other recent studies and assessments on land degradation and desertification done by different institutions including; UN bodies, NGOs and government agencies. The Somalia NAP captured recommendations from the consultative process and proposes activities towards reversing desertification and land degradation and mitigating the effects of drought. Hence the LDN working group will maintain the members, institutions and organizations that worked on the NAP.

The consultations involved; Ministry of Environment that arranged meetings with other ministries, Food and Agriculture Organization/Somalia Water and Land Information Management that provided maps on land degradation, agro-ecological zones, Rule of Law (UNDP Somalia) that conducted internal meeting with UNDP colleagues to explore link between land resources and rights and arranged meeting with Ministry of Justice. Similarly, Traditional and Religious elders, Pastoralist Associations, and women's groups will be engaged in Focus Group Discussions (FGDs) surrounding their connection to land and their experience of its degradation. The main objective of holding consultation meetings and discussions was understanding the Somali connection to land in Somaliland and the linkage between environmental degradation of land resources and the socio-economic implications.

Furthermore, consultative workshop was held and brought together representatives from central ministries, members of parliament, representatives from specialized agencies, civil society representatives, regional representatives, and selected district representatives. The workshop consisted of four sessions; Background to UN Convention on Climate Change and Desertification NAP Technical Expert Somali NAP Process and Introduction to Economics of Land Degradation, Consultations and Priority Identification, Overview of Priority areas Technical Expert and Preliminary Endorsements.

Consultations for the Somalia NAP were conducted in Hargeisa, Garowe, and Mogadishu. FGDs and consultative workshops were held in April–July 2015 in Somaliland (Hargeisa) and Puntland (Garowe), while the consultations at the federal government level (Mogadishu) were conducted in February 2016. In Somaliland, the consultations brought together traditional elders, ministers, and representatives from each of the environment line ministries, as well as non-governmental organizations and land users. The Puntland consultations were focused on government officials and district representatives. The consultations at the federal level brought together stakeholders from 12 different federal ministries.

There was a unanimous and strong affirmation that immediate action needs to be undertaken to reverse desertification and land degradation and mitigate the effects of drought. This was echoed by stakeholders consulted throughout Somalia. The key stakeholder messages and concerns that influenced the direction of NAP were; increasing Food insecurity and dependence of the national economy on land and Escalating land conflicts as evidence of the immediate need for action.

Table 7: National Action Programme Consultation Workshops and Meetings

Place	Date	Regional Representation	# of Participants
Hargeisa	5–6 May 2015	Awdal, Maroodi-Jeex, Saaxil, Sanaag, Sool, and Togdheer	77
Garowe	12–13 May 2015	Bari, Nugaal, North Mudug, Sanaag, Sool, Ayn, Haylaan, Karkaar regions	20
	17 June 2015		13
Mogadishu	8 February 2016	Federal-level ministries	40
Interview/questionnaire respondents			150
Total number of participants consulted and interviewed			150

Table 8: List of LDN Working Group Members

Roles and Responsibilities	Name of Institution/Organization
Designing of inter-ministerial Communications strategy, awareness campaigns and fundraising	Central Ministry of environment and natural Resource, Universities, NGOs, and Private Sector
Provision of technical and financial support	International Community
Facilitation of consultations, policy design and enforcement, Collecting seasonally disaggregated data on vegetation cover	Parliamentary Committees, Specialized ministries and agencies, Elders and Village Development Committees
Facilitate LDN consultations, policy design and enforcement	Central Ministry of environment and natural resource ministries, Disaster management agencies – SODMA, NEDFOR, HADMA
Standardization of tools (Incorporation of tools for traditional knowledge management and Harmonization of tools for coordination at national or subnational levels	Disaster Risk Coordination Committee – UN-Habitat
Lead NAP formulation and validation	Central Ministries of Environment/Directorate of Environment
National capacity needs self-assessment	UNDP
Link between centre and communities Formulate decentralized laws	Parliamentary Committees
Preparing a macroeconomic framework for resource mobilization Utilizing ELD for the macroeconomic framework for resource mobilization Endorsing Somali NAP to Global Environment Facility and UNCCD Secretariat Mobilizing funds through private sector investments in sustainable land management Supporting local authorities in preparing project proposals for village natural resource management Providing disaster management funds for DLDD-related emergencies	Central Ministries of Environment, Finance/Commerce ELD Initiative, UNDP, and World Bank Federal Government of Somalia and UNCCD Focal Points