



**REPUBLIC OF SOMALILAND
MINISTRY
OF
ENVIROMENT AND RURAL DEVELOPMENT
STRATEGIC PLAN
(2017-2021)**

July 1, 2017
Hargeisa,

ACRONYMS

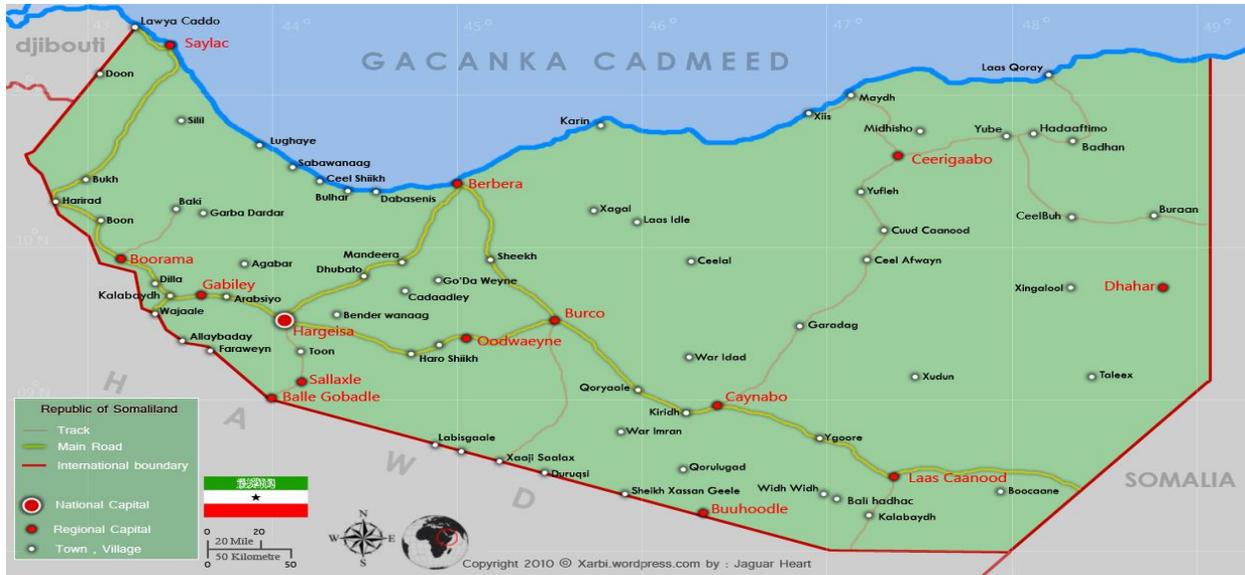
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|--------------------|---|
| ADO | Agriculture Development Organization |
| BVO | Barwaaqo Voluntary Organization |
| Candlelight | Candlelight for Health, Education and Environment |
| Deegaan | Net Deegaan Network |
| MoERD | Ministry of Environment and Rural I Development |
| DRC | Danish Refugee Council |
| FAO | Food and Agriculture Organization |
| WV | World Vision |
| Havayoca | Horn of Africa Voluntary Youth Committee |
| INGO | International Non-Governmental Organization |
| M & E | Monitoring and Evaluation |
| NDP II | National Development Plan II |
| NERAD | National Environment, Research and Disaster |
| NGO | Non- Governmental Organization |
| PENHA | Pastoral and Environmental Network in Horn of Africa |
| SOMGAS | Somaliland Gas Company |
| SWOT | Strength, Weakness, Opportunity, Threat |
| SWALIM | Somalia Water and land information management System |
| U.O.H | University of Hargeisa |
| UN | United Nations |
| UN | Habitat United Nations HABITAT |
| UNDP | United Nations Development Program |
| UNEP | United NationsEnvironment Program |
| USAID | United States Agency for International Development |
| VETAID | Vegetarian Aid |

Table of Contents

| | |
|---|----|
| EXECUTIVE SUMMARY | 6 |
| 1.INTRODUCTION..... | 10 |
| 1.1 Background: Somaliland National Development Vision 2030 | 10 |
| 1.2 Rationale for the Creation of the Ministry..... | 10 |
| 1.3 Somaliland National Development Plan II Goals (2030) | 11 |
| 1.3.1 Pillars of National Development Plan: | 11 |
| 1.4 Main Tenets of the Ministry..... | 12 |
| 1.4.1 Core values of the Ministry..... | 12 |
| 1.5 Organizational structure of ministry..... | 12 |
| 1.5.1 Mandate of the Ministry..... | 13 |
| 1.5.2 The Core functions of the Ministry | 13 |
| 1.6 Document structure..... | 14 |
| 2.STRATEGIC PLANNING PROCESS..... | 15 |
| 2.1 Preparation of The strategic plan (201-2021)..... | 15 |
| 2.2Methodology..... | 15 |
| 2.3 Review of the Previous Strategic Plan: 2011- 2015 | 15 |
| 2.3.1 Challenges Experienced | 15 |
| 2.3.2 Lessons Learnt..... | 16 |
| 3. SITUATIONAL ANALYSISOF THE SECTOR | 16 |
| 3.1 Summary of Internal SWOT Analysis | 16 |
| 3.2 SWOT Analysis: External Environment..... | 17 |
| 3.2.1 Stakeholders’ Analysis | 17 |
| 3.2.2 Main Topographical Characteristics of the Country | 18 |
| 3.3 Main Challenges..... | 19 |
| 3.3.1 Land Degradation..... | 20 |
| 3.3.2 Water Resource Degradation | 21 |
| 3.3.3 Loss of Biodiversity | 22 |
| 3.3.4 Pollution and Waste Management..... | 22 |
| 3.3.5 Floods..... | 22 |
| 3.3.6 Droughts | 23 |
| 3.3.7 Climate Change..... | 23 |
| 3.3.8 Disaster Preparedness and Management..... | 25 |

| | |
|---|-----------|
| 3.3.9 Environmental Impacts and Other Activities | 25 |
| 3.4 Policies, Reforms and Legal Frameworks | 27 |
| 3.5 Regional Overview | 29 |
| 3.6 Summary of External Environment Analysis | 30 |
| 3.7 Outcome of the Situational Analysis..... | 30 |
| 4. IMPLEMENTATION STRATEGY OF THE PLAN..... | 30 |
| 4.1 Capacity Development and training..... | 31 |
| 4.2 Resource Mobilization | 31 |
| 4.3 Monitoring, evaluation and information management..... | 31 |
| 4.4 Environment Sector RBM Matrix | 32 |
| 4.5 Risk Analysis | 34 |
| 4.6 Financial Analysis | 34 |
| 4.7 Data Requirements | 36 |
| | |
| Table 1: Somaliland Vision 2030 Pillars | 10 |
| Table 2: Extent of Land Degradation in Somaliland..... | 20 |
| Table 3: Loss of Vegetation Covers between 2000 and 2008 by Type of Land Use..... | 20 |
| Table 4: Observed Changes as Result of Climate Change | 24 |
| Table 5: Summary of Environmental Laws and Policies..... | 28 |
| Table 6:Environment Sector Financial Analysis..... | 35 |
| Table 7: Environment Sector’s Data Requirements..... | 36 |
| | |
| Figure 1: Institutional structure of MoERD..... | 13 |

SOMALILAND POLITICAL MAP



FOREWORD

Environment and Rural development Strategic Plan seeks to articulate the main priorities and strategies that will be undertaken over the period 2017-21 Somaliland's environment and natural resources are in danger of wide spread depletion and degradation, sometimes irreversible. This strategic plan identifies key strategic issues and assesses the Ministry's strengths, weaknesses, threats and opportunities, culminating into specific strategies which will be pursued during the Plan period.

The effective implementation of the strategic plan will require participation of the different stakeholders i.e. Government institutions, INGs, LNGOs, UN Agencies, private sector and Donors in order to reach the goals, outcomes and outputs of this strategy.

It is my sincere hope that this Strategic Plan will enable us, to effectively address the major challenges and prioritize the strategic issues in the national environment conservation and protection.

I am pleased to share with you this document which has been developed through a highly participatory process and therefore, is an expression of collective commitment to sustainable development from key stakeholders. The degree to which this strategic plan gets translated into results will depend on functional coordination between the stakeholders.

I would like to stretch my gratitude to World Vision who support us in the financing of this strategic plan.

Best regards

Hon. Madam Shukri Bandere
Minister of Environment and Rural Development

EXECUTIVE SUMMARY

Environment and pastoral communities' resources play a vital role in economic life of Somaliland, and the ongoing degradation and unsustainable use of the existing natural resources threaten vulnerable biodiversity as well as the livelihood and long-term food security for a large proportion of Somaliland population. The draft strategy plan 2030 for Somaliland government of the ministry of planning lists land degradation, land use conflicts, depletion of forests and water catchments as strategic issues. It is very important to note that land degradation poses one of the most compelling development challenges in Somaliland and it is high time to implement innovative measures to address land degradation and broader desertification issues through social mobilization in soil, water conservation and reforestation.

This document articulates the main priorities for the environment and rural development of the ministry of Environment and Rural Development. The planning process started with consultations with key management level, followed by internal technical workshops with all stakeholders to formulate the first draft. The draft was again discussed with internal technical staff and other stakeholders for validation. Throughout the process, there was a constant consultation between the external consultants and the staff of the ministry whose inputs have been valuable in providing policy and strategic guidance to the overall plan.

The core functions of the Ministry, therefore, include:

- ❖ Developing and proposing overall policies and short-term and long-term strategic plans for the protection and improvement of environment and pastoral development.
- ❖ Promoting coordination and collaboration between the Directorate, government, non-government organizations and international bodies as well as private sector to mobilize human and material resources for developing and enhancing environment and pastoral affairs.
- ❖ Management and conservation of forests and water catchment areas.
- ❖ Conduct research and disseminate findings in forestry resources, range resources, and sound environment.
- ❖ Monitor and coordinate research on environmental activities and enforce compliance of environmental regulations and guidelines.

Some of the identified challenges include:

- Low budgetary allocation
- Weak monitoring & evaluation mechanism
- Weak policy framework
- Weak information sharing & coordinating mechanism
- Inadequate facilities and equipment
- Weak environmental assessment mechanism
- Weak enforcement of strategies & policies if any.
- Inadequate environmental & pastoral education and awareness at all levels.
- Inadequate involvement of civil society and educational organizations and private sector.

Mandate of the Ministry of Environment and Rural Development

The mandate of the Ministry is to develop the rural sector, protect, conserve and manage environment through sustainable development aimed at eradication of poverty, improving living standards and ensuring that a protected and conserved environment is available.

The Vision Statement

To be a leading partner in the pastoral development, and promotion of sustainable environment for improved livelihood of the Somaliland people.

The Mission Statement

The mission of the ministry is to promote, develop rural economy, conserve, protect and sustainably manage the environment and natural resources for national development.

Core values of the MoERD:

- Transparency and Accountability
- Result oriented
- Excellence and professionalism
- Efficiency and effectiveness
- Teamwork and partnership
- Creativity and innovations

It has been established that Somaliland's environment is under varying degrees of stress depending on location and degree of exploitation. Some of the key factors affecting the environment and its resources include:

- Land degradation /desertification
- Drought, climate change and water scarcity
- Deforestation – charcoal and firewood
- Pollution (air and underground water)
- Overgrazing
- Degradation of water resources)
- Invasive species
- Land resources mismanagement
- Energy scarcity
- Improper dry and liquid waste disposal/management
- Natural disasters (flooding, wind erosion, water erosion)

It is also a known fact that the above conditions caused a number of impacts including among others:

- Forests are being depleted as a result of over-exploitation, e.g. acacia trees for medicine, cutting trees for fire wood and shelter, woods and charcoaling.)
- Wildlife resources are disappearing as a result of war, habitat destruction uncontrolled hunting (need for protection)
- Marine environment and fisheries resources are under serious threat because of over-exploitation as a result of illegal fishing, pollution, pirates and ocean security.

- Productivity of rangelands reduced because of recurrent drought, soil erosion and floods, cutting of nitrogen fixing trees
- Biodiversity loss
- Reduction of ecosystem services
- Water scarcity, pollution and reduction of wetlands

The above problems are exacerbated by high population pressure, climate change, lack of alternative livelihood sources for rural community, low literacy and awareness levels. The strategy plan for the MoERD (2017- 2021) calls for the following interventions:

- Sustainable management of trees and the development of alternative energy (charcoal production for energy sources and a clear policy on tree of protection of trees)
- Environmental sustainability of development policies and projects.
- Environmental mainstreaming and coordination across line ministries particularly agriculture, water, mineral resources and energy, Commerce & industry, Livestock, International and national NGOs and UN agencies.
- Institutional and human capacity for environmental and rural development governance.
- Environmental education, awareness and advocacy.
- Environmental and rural development information management system

Strategic Objectives and Expected Outcomes:

Following are the identified strategic objectives and their expected outcomes:

1. *Strategic Objective 15: To ensure sustainable consumption and production patterns*

Expected Outcomes:

- ✓ By 2021, allocate 10% of the country's land as protected areas (watershed area and biodiversity hotspots)
- ✓ By 2019, assess 45 potential major community-grazing reserves and by 2021 restore and conserve 15 of them.
- ✓ By 2021, increase by 50% the number of conserved and protected endangered flora and fauna species
- ✓ By 2021, improve existing environment legal framework to address the conservation of marine ecosystem and implement sustainable use of marine ecosystem specifically mangroves and other associated species and habitats

2. *Strategic Objective 12: To take urgent action to combat climate change and its impacts*

Expected Outcomes:

- ✓ By 2021, develop and apply legal framework to achieve environmentally sound management of chemicals and all wastes
- ✓ By 2021 decrease the release of point-source pollution particularly to air and surface/ ground water by 20%
- ✓ By 2021, ensure that communities have the relevant environmental information and awareness for lifestyles adaptation in harmony with nature
- ✓ By 2021, reduce charcoal consumption from indigenous species by 35% in urban areas through use of alternative energy sources

3. Strategic Objective 1 3: To protect, restore and promote sustainable use of terrestrial Ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Expected Outcomes:

- ✓ Integrate international climate change measures into national policies, strategies and planning and strengthen resilience and adaptive capacity to climate-related hazards and natural disaster.
- ✓ Improve education, awareness-raising and human and institutional capacity on climate change adaptation, mitigation and early warning
- ✓ By 2021, ensure that communities have the relevant environmental information and awareness for lifestyles adaptation in harmony with nature
- ✓ By 2021, reduce charcoal consumption from indigenous species by 35% in urban areas through use of alternative energy sources

Implementation Arrangements

In formulating this strategy, it has been assumed that the MoERD is the leading line ministry for implementation of the strategy in accordance with its mandate. However, the implementation of this strategic plan is more of cross cutting and requires strong participation from all stakeholders if the work is going to be implemented successfully. In order to strengthen coordination and build synergy in mobilizing and allocating funding, it is imperative that the MoERD bring together stakeholders and enhance effective planning and follow-up.

Financing and Financial Management

The strategic plan outlines the major strategic objectives to be implemented within the plan period and provides implementation strategies, activity implementation plans, monitoring and evaluation plan and financial requirement projections. The plan also envisages mobilization of resources beyond Central Government's budgetary allocations and outlines some of the potential sources of funds and how they will be identified.

Currently, the estimated total cost projection for achieving the outcomes chosen in this sector is between \$5.0 and \$11.3 million per year in 2017-2021.

1. INTRODUCTION

1.1 Background: Somaliland National Development Vision 2030

In 2011, after 20 years of remarkable progress as an independent country, Somaliland decided to embark on the formulation of a vision that could encapsulate its long-term aspirations. The Somaliland Vision 2030: A stable, democratic and prosperous country where people enjoy a high quality of life was developed taking into account Somaliland's past, present and envisioned future. Where is it coming from? Where is it currently? In which direction is it going? And more importantly, what does Somaliland want to have become by 2030?

Since its inception in 2011, the Somaliland Vision 2030 has provided commonly owned goals concerning Somaliland's future. It has been enabling the country to take ownership of its development agenda. It also inspires the nation and its leadership to mobilize resources, and overcome development challenges to attain higher standards of living. Moreover, the vision guides development partners to align their assistance with national priorities and aspirations. Lastly, importantly, it provides a framework upon which national strategies and implementation plans can be anchored.

Economic development, infrastructure development, good governance, social development and environment protection are the pillars upon which the Somaliland Vision 2030 rests. Table 1.1 below presents the vision's five pillars as well as their individual visions.

Table 1: Somaliland Vision 2030 Pillars

| Pillar | Vision |
|-----------------------------------|--|
| Economic Development | A nation whose citizens enjoy sustained economic growth and reduced poverty levels |
| Infrastructure Development | A nation with an advanced infrastructure network that facilitates economic and social development |
| Good Governance | A society where the rights of citizens are protected by democratic, transparent, accountable and efficient public institutions |
| Social Development | A caring society meeting the basic social needs of its members |
| Environment Protection | A state with a healthy and well managed environment that is productive and sustainable |

1.2 Rationale for the Creation of the Ministry

There has been growing awareness among poor nations that the environment in developing countries is under severe threat and that development needs to be managed taking into account of what is happening around us in terms of environment. Somaliland is located in arid and semi-arid regions and majority of its population depends entirely on precipitation and rain fed water for crop and livestock production. Small changes in rainfall patterns can have major implications in food security. Droughts that occur very frequent are mainly caused by climate change. It leads

to water shortage and starvation particularly for the rural communities, which are more dependent on rainwater and grass for their survival in livestock raising and cultivation traditions. Many parts of Somaliland are showing signs of environmental degradation as a result of overgrazing and the uncontrolled cutting of trees for charcoal making as there has been a rapid expansion of charcoal in recent years. The rights of the pastoral population to demand to have a say in how to use resources that are so critical to their livelihood were ignored in many aspects.

Recurrent droughts in Somaliland are symptoms of complex trends and inter-linkages that are related to dwindling capacity of a fragile ecological system, environmental degradation, climate change and the absence of pastoral development initiatives

The Environment Sector is a key element of The Somaliland Vision 2030, which points out that Somaliland should have a **State with a healthy and well-managed environment that is productive and sustainable**. In line with the Vision 2030, the NDPI sets out ambitious strategies to tackle the main challenges facing the sector. These strategies aimed at protecting the environment as well as at promoting sustainably rural development. Also, NDPI placed great importance in development the government's capacity to deal with environmental challenges. However, the government was able to achieve less than 50% of the outputs set by the NDPI in the environment sector.

1.3 Somaliland National Development Plan II Goals (2030)

- Reduce poverty and increase resilience, particularly Youth through increased economic opportunities and coordinated investment in services, production and infrastructure
- Maintain the human rights of every citizen through equal access to social services, social protection, political inclusion and provision of fair justice
- Mitigate against the effects of climate change through improved management of the environment, strategic water management, food security and diversification of the economy

1.3.1 Pillars of National Development Plan:

1. Economic Development:

A nation whose citizens enjoy sustained economic growth and reduced poverty levels

2. Infrastructure Development:

A nation with an advanced infrastructure network that facilitates economic and social development

3. Good Governance:

A caring society meeting the basic social needs of its members

4. Social Development

A state with a healthy and well managed environment that is productive and sustainable

5. Protection:

*A state with a healthy and well managed environment that is productive and **sustainable***

1.4 Main Tenets of the Ministry

The vision and the mission of the Ministry are in line with the National Development Plan (NDP) vision 2030 as Environment Protection is the fifth pillar.

Vision Statement

To be a leading partner in the pastoral development, and promotion of sustainable environment for improved livelihood of the Somaliland people.

Mission Statements

The mission of the directorate is to promote, develop pastoral economy, conserve, protect and sustainably manage the environment and rangeland resources for national development.

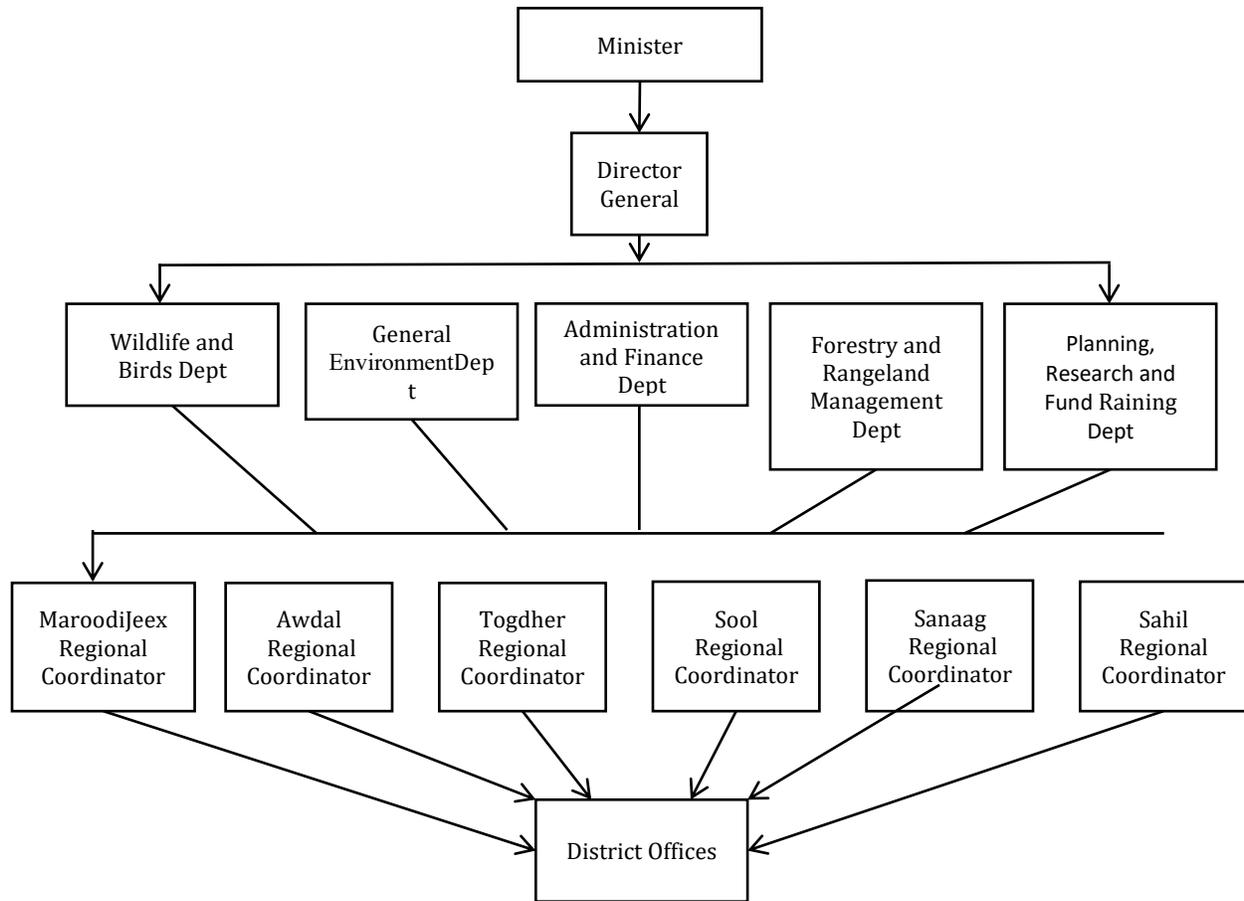
1.4.1 Core values of the Ministry

- Transparency and Accountability
- Result oriented
- Excellence and professionalism
- Efficiency and effectiveness
- Teamwork and partnership
- Creativity and innovations

1.5 Organizational structure of ministry

At present, *MoERD* is organized into different functional hierarchical departments as can be seen from the organizational chart below:

Figure 1: Institutional structure of MoERD



1.5.1 Mandate of the Ministry

The Ministry of *Environment and Rural Development (MoERD)* was established in 1997. The mandate of the Ministry is to protect and conserve the environment and natural resources of the country. Also, it is tasked with a responsibility to collaborate with the institutions and other stakeholders to create safeguard environment. The main responsibility of the ministry is to advocate, lobby and enforce environmentally safe processes.

1.5.2 The Core functions of the Ministry

The core functions of the Ministry include:

- Developing and proposing overall policies and short-term and long-term strategic plans for the protection and improvement of environment and pastoral development.
- Promoting coordination and collaboration between the Directorate, government, non-government organizations and international bodies as well as private sector to mobilize human and material resources for developing and enhancing environment and pastoral affairs.
- Management and conservation of forests and water catchment areas.

- Conduct research and disseminate findings in forestry resources, range resources, and sound environment.
- Monitor and coordinate research on environmental activities and enforce compliance of environmental regulations and guidelines.
- Strengthen the rangeland and forest development
- Protecting wildlife and conservation.
- Climate change adaptation

1.6 Document structure

This document is organized in 4 parts subdivided into chapters

Part One: Introduction

Chapter 1: Background: National Development Plan 2030.

Chapter 2: Rationale for the Creation of MoERD

Chapter 3: Somaliland National Development Goals.

Chapter 4: Main Tenets of the MoERD.

Chapter5: Organizational Structure of the MoERD

Part Two: Strategic Planning Process

Chapter 6: Preparation Process of the Plan

Chapter 7: Methodology

Chapter 8: Performance Review of the Previous Plan 2011-2015

Part Three: Situational Analysis of the Sector

Chapter9: Internal SWOT Analysis: Strengths & Weaknesses

Chapter 10: Policies, Reforms and Legal Framework

Chapter 11: Regional Overview

Chapter 12: Main Challenges

Chapter 13: Outcome of the Situational Analysis

Chapter 14: External SWOT Analysis: Opportunities &Threats

Part 4: Implementation Strategy of the Plan

Chapter 15: RBM Matrix

Chapter16: Risk Analysis

Chapter 17: Financial Analysis

Chapter 18: Data Requirements

2. STRATEGIC PLANNING PROCESS

2.1 Preparation of The strategic plan (201-2021)

The preparation of this strategic plan has followed a participatory process as it is an important foundation for mobilizing stakeholders and building synergies for successful implementation. The planning process started with consultations at the Ministerial level, followed by internal technical workshops with all stakeholders to formulate the first draft. The draft was again discussed with internal technical staff and other stakeholders for validation. Throughout the process, the consultants have consulted and briefed directorate staff whose inputs have been valuable in providing policy and strategic guidance to the overall plan.

2.2 Methodology

The Ministry undertook a review 2011 -2015 strategic plan in line with aspirations of NDP Vision 2030. The following steps were undertaken in the process:

- Review of previous strategic plan of the ministry 2011-2015
- Consultation with key management staff of the Ministry
- Situational Analysis – internal and external
- SWOT analysis workshop

2.3 Review of the Previous Strategic Plan: 2011- 2015

In review of the past performance, it is clear that the MoERD has been operating in an environment characterized by several challenges that hampered implantation of planned strategic interventions.

2.3.1 Challenges Experienced

Several challenges were experienced during the implementation of Strategic Plan 2011-2015. Some of these challenges include:

- Weak legal enforcement framework
- Lack of implementing operational plans.
- Lack of monitoring and evaluation system.
- Inadequate staffing levels.
- High staff turnover especially in the departments.
- Limited of skilled and experienced staff in departments and also at the regional level
- Inadequate budgetary allocation and insufficient budget resources.
- Lack of sufficient political commitment for reforms in the environment sector.
- Inadequate fundraising initiatives and skills

2.3.2 Lessons Learnt

The following key lessons have been learned in the implementation of the first Strategic Plan:

- Objectives need to be SMART – Specific, measurable, attainable, realistic and time bound
- Activities on the other hand need to be fewer and properly prioritized
- Both staff and stakeholders need to own the plan to ensure its success
- Success of the plan depend on each member of the staff discharging specific duties assigned to the effectively
- The support of other arms of government and stakeholders are critical to the success of the plan
- The Ministry needs to aggressively improve its image rating among the public
- Departmental responsibility for implementation of the plan were not clearly delineated as
- Departments did not have their own Strategic Plans
- Monitoring and evaluation should be an integral part of the Strategic Plan
- Leadership is essential for any success of strategic planning

These lessons learnt have informed the current Strategic Plan formulation and re-orientation of the Ministry's strategic objectives as discussed in this Strategy.

3. SITUATIONAL ANALYSIS OF THE SECTOR

SWOT Analysis is a framework for generating strategic alternatives from a situation analysis.

SWOT is an acronym for Strengths, Weaknesses, Opportunities and Threats. The SWOT analysis classifies the internal aspects of the directorate as strengths or weaknesses and the external situational factors as opportunities or threats.

3.1 Summary of Internal SWOT Analysis

The internal environment explores the strengths and weaknesses of the Ministry. It shows the capabilities and competencies the Ministry has accumulated over time and therefore at the Ministry's disposal to apply for the betterment of implementation of subsequent Strategic Plans.

| Strengths | Weaknesses |
|--|--|
| <ul style="list-style-type: none"> • MoERD is present in all six major regions of Somaliland • MoERD has specialized departments. • Existence of legal framework(national environment policy, environmental conservation and laws) • Availability of limited budget allocation • Existence of coordination mechanism between government ministries and INGOs, Local NOGs and UN agencies | <ul style="list-style-type: none"> • Weak monitoring & evaluation mechanism • Weak policy framework and laws implementation • Weak information sharing & coordinating mechanism • Lack of environmental assessment mechanism. • Lack of adequate environmental education and awareness at all levels. • Inadequate national budget allocation • Inadequate involvement of civil society, institutions of higher learning and private sector in environmental management decision making process; • Weak data collection methodologies, storage and access in the entire area of environment and natural resources; |

3.2 SWOT Analysis: External Environment

The stakeholder’s analysis assists in identifying those organizations the Ministry depends or interacts with for the successful delivery of its mandate. This is because the Ministry must design strategies that ensure that key stakeholders’ interests are addressed for effective and efficient collaboration. It is on this basis that situational analysis on strategic issues and strategic activities are analyzed and determined.

3.2.1 Stakeholders’ Analysis

The stakeholder’s analysis assists in identifying those organizations the Ministry depends or interacts with for the successful delivery of its mandate. This is because the Ministry must design strategies that ensure that key stakeholders’ interests are addressed for effective and efficient collaboration. It is on this basis that situational analysis on strategic issues and strategic activities are analyzed and determined.

The two main government institutions directly focused on environment are the Ministry of Environment and Rural Development (MoERD) and the National Environment Research and Disaster Preparedness Authority (NERAD). The mandate of the MoERD is to protect and conserve the environment and natural resources of the country through advocacy, lobbying and enforcing environmentally safe processes. NERAD main responsibility is to coordinate among other partners the implementation of national policies and strategies on disaster mitigation and emergency preparedness.

In Somaliland, the presence of NGOs, local and international represents an organized response in areas where the state in all levels has either neglected to reach or done so inadequately. In the past two decades, NGOs have been taking a number of steps to promote discussions and debate about environmental issues. Advocacy and awareness interventions of these organizations have been especially crucial in promoting concepts such as sustainable development, natural resource conservation and the restoration of ecosystems.

Recognizing the need to coordinate efforts regarding management, strategies, regulations and plans in the environment sector, sector coordination has been institutionalized within the Government of Somaliland. MoERD has taken the lead of the body that consists of management level officials from different agencies including, among others, MoNPD, NERAD, UNDP, UNOCHA, UN-RCO, SCI, OXFAM GB, FAO, ILO, PENHA, ADO, Partner-Aid, Candlelight, and HAVOYOCO. Efforts have been made to promote the role of the private sector in the environmental management system in Somaliland; however, progress so far has been marginal. There have also been attempts to improve the legal environmental framework with regards to private sector activities, but enforcement of environment regulations remains a challenge.

A better understanding and meaningful engagement of local communities in environment protection is critical for the success of any efforts in Somaliland. Community involvement in protecting the environment is generally supported for the potential to increased acceptance of and confidence in government environmental decisions, empowered community members on issues that affect them and advancement of democratic ideals. Moreover, community involvement can result in the collective transition from victims to agents of change. In spite of this, however, local community participation in environmental management is very low.

3.2.2 Main Topographical Characteristics of the Country

Somaliland's topography is characterized by three main landforms:

- Piedmonts and the coastal plain (*Guban*) situated southward from the Red Sea with elevations ranging from sea level to 600m;
- Hills and dissected mountains (*Oogo*) of rugged features and rising to more than 1,500m;
- The plateau (*Hawd*) with large areas of undulating plains.

There are three main climate zones in the country: desert, arid and semiarid. Temperatures are generally high throughout the year, with the maximum being 36°C to 38°C in the coastal areas.

Somaliland has a bimodal rainfall distribution. The first main rainy season, *Gu*, occurs between April and June while the second, *Deyr*, is from August to November. The two dry seasons are *Jilaal* and *Hagga* and occur between December and March and July and August respectively.

Areas around Sheikh, Hargeisa, Borama and Erigavo towns receive the higher volumes of rainfall, an average of 400 mm per year. The Northern coastline is characterized by low rainfall amounting less than 100 mm per year. The rest of Somaliland receives an annual rainfall ranging from 200 to 300 mm.

Somaliland Topographic Map by regions



Vegetation is characterised mostly by grass, shrubs and woodland. Perennial grasses such as *Lasiurus scindicus* and *Panicum turgidum* and scattered trees such as *Balanites orbicularis*, *Acacia tortilis* and *Bosciaminiflora* are the most predominant vegetation in the coastal zone of Somaliland, particularly in the Western part. *Juniperus procera* woodland is more present in the mountainous areas.

In the plateaus, *Acacia etbaica* bushes and woodland as well as open grasslands or *bans* are common. In these areas livestock has overgrazed much of the grassland. The *Haudis* characterized by *Commiphora* woodland and bushes. The *Nugaal* valley largely supports sparse trees such as *Acacia tortilis* and shrubs.

Soils have poor structure with high permeability, low moisture retention capability and inadequate internal drainage. This is generally the result of land clearing for farming purposes, cutting trees for charcoal production and overgrazing. The progressive decline in soil quality (fertility) has impacted on the productivity of both farming and grazing lands in the country.

3.3 Main Challenges

Environmental challenges in Somaliland are many and complex in nature. Over the years, degradations in land, water resources as well as biodiversity have been significantly impacted by human activity and climate change. Pollution and waste management are becoming major concerns in urban areas and environment hazards such as floods and especially droughts are becoming more frequent and disastrous.

3.3.1 Land Degradation

Land degradation is rampant and in nearly 30% of Somaliland's land degradation status is already considered to be strong according to the most recent studies.

Table 2: Extent of Land Degradation in Somaliland

| Land Degradation Status | Area Affected (Sq. Km) | Area Affected (%) |
|-------------------------|------------------------|-------------------|
| None | | |
| Slight | 10235.75 | 6.04 |
| Moderate | 26186.15 | 15.44 |
| Strong | 83819.81 | 49.43 |
| Urban | 49270.17 | 29.06 |
| Tot al | | 0.03 |
| | 47.44 | 100.00 |
| | 169559.32 | |

Source: SWALIM 2009

The most common types of land degradation in Somaliland are loss of vegetation cover, soil erosion and deforestation. These issues are intertwined and many times provoked by same factors. The dominant vegetation types highly exposed to land degradation include grass, forbs, sparse shrubs, and short trees. These vegetation types are prime sources of feed for livestock. The major contributions to loss of these vegetation types are attributed to livestock overgrazing and unregulated agricultural activities in the rangelands. Increase in agricultural activities coupled with ever growing land enclosures have affected the traditional livestock grazing patterns in some areas and led to the concentration of livestock in certain places.

The proliferation of *Berkheds* also increases livestock and population concentration in certain areas where the surrounding vegetation is exposed for deterioration. As the regeneration capacity of the original overgrazed vegetation is generally low, there is an increasing chance for invasive plant species to dominate the areas – including *Prosopisjuliflora* (*Garanwe*), *Partheniumhysterophorus* (*Keliginoole*), and *Opuntiaficusindica* (Cactus).

Loss of Vegetation

According to SWALIM's analysis, the loss of vegetation is visible throughout the country. Land used for wood collection has reached the most critical levels of loss of vegetation cover. From 2000 to 2008 more than 25% of vegetation cover in those lands was lost.

Table 3: Loss of Vegetation Covers between 2000 and 2008 by Type of Land Use

| | |
|---|------|
| Pastoralism (medium density) wood collection | 25.4 |
| Pastoralism (high density) wood collection and scattered irrigated fields | 21.5 |

| | |
|--|------|
| Pastoralists (low density) in coastal plains | 17.7 |
| Agro-Pastoralism (low density) with irrigated field around togas | 13.7 |
| Pastoralism (low density) | 7.6 |
| Agro-Pastoralism (medium density) with wood collection | 7.3 |
| Pastoralism (low density) scattered irrigated field around togas | 5.3 |
| Agro-Pastoralism (high density fields) | 3.4 |
| Agro-Pastoralism (medium density of fields) | 2.6 |

Source: SWALIM, 2009

Soil Erosion

Soil erosion can be attributed to natural conditions and to land mismanagement, especially overgrazing, heavy wind storms, sloppy terrain, increases in numbers of water points – hand wells, boreholes and underground water reservoirs –, deforestation and some water harvesting techniques applied in agricultural areas.

Somaliland's forests have declined in area, stocking and biomass. Deforestation has also led to the decline of ecological functions, including prevention of erosion, water yield and the conservation of wildlife habitats and genetic resources. This has further led to sedimentation and siltation of water resources and compounded land degradation in the arid and semiarid areas.

Deforestation

Deforestation has mainly been attributed to charcoal production. The rapid process of population growth as well as urbanization in the country has significantly increased the demand for charcoal over the years. Various markets throughout the country offer charcoal for sale, as it constitutes a major source of household energy. Charcoal production has been an important source of income and part of the coping strategies for many subsistence farmers and pastoralists. Moreover, the inability to enforce the country's environment legal framework has exacerbated the deforestation trend.

Water resources, while renewable in the long term, have finite withdrawal limits. According to SWALIM, the per capita availability of water has decreased from 5,300 m³ per person per year in 1951 to less than 1,100 m³ per person per year in 2007.

3.3.2 Water Resource Degradation

The water resources degradation processes include acidification, change in quantity of surface water, change in ground water level and decline in surface/ground water quality and quantity. Ground water is an important water resource in the country and heavy reliance on this presents several challenges. These include the protection of aquifers from pollution, the high cost of provision due to the depth at which water is available, high levels of salinity in some locations and the absence of precise knowledge with regards to the exact rate of recharge, which makes estimation of future availability difficult. The degradation of water resources in Somaliland is generally characterized by:

- Frequent flooding and their effects on health, infrastructures, economy, land and aquatic ecosystems;
- Erosion of drainage basins and sedimentation of water courses;
- Periods of decrease in rainfall and droughts leading to the disturbance of the whole hydrologic cycle.

3.3.3 Loss of Biodiversity

Although it is difficult to quantify due to lack of sound data and analysis, the loss of biodiversity is increasing and alarming in Somaliland. The degradation of wildlife habitats is visible and can be easily assumed that follow patters of land and water sources degradations.

3.3.4 Pollution and Waste Management

Pollution and waste management is increasingly becoming a main environment concern in urban areas. The per capita production of domestic waste is estimated at 0.45 kg per person per day in Hargeisa.¹³⁴ The amount of domestic waste removed daily from the city is estimated at 38 loads of 6 tons each (i.e., 38 x 6 = 228 tons). This may indicate that 87 tons are left abandoned in the city every day. Similar situations are believed to exist in other towns in the country.

According to WHO, Environmental Health Situation Analysis in Somalia 2010, Waste paper, plastic, metal, glass, rubber, rags and so on are thrown on the streets along with domestic, trade and institutional wastes. Since there is no separation of recyclable waste, plastic bags and bottles are particularly littered everywhere and have recently become serious environment nuisances. Plastic wastes are contributing to blockage of drains and gutters and can cause deaths when consumed by livestock. Open waste disposal sites and excavated pits are few in number and are mostly located in low laying grounds not far from farms, grazing lands and surface water sources. This improper waste disposal has resulted in ground water contamination, leachate and odor.

Wastewater also presents another environmental challenge in Somaliland. Analysis of wastewater practices shows that all liquid wastes are not treated for sanitary disposal. The chance that the untreated wastewater (leachate) ends up contaminating ground water through subsurface absorption or is washed down by rainstorms is significantly high.

Despite of not having large industries, air pollution has been gaining momentum in urban areas as the result of combustion of fuels in domestic cooking and the increasing number of vehicles. Analysis of rainfall data over the last 30 years by SWALIM has shown that events with an intensity of at least 50 mm/day have occurred every year. More extreme events of 100 mm/d happened on average once every three years, and events of 200 mm/d of rainfall occurred once every ten years. Low infiltration rates due to minimal vegetation, poorly developed soils, and steep slopes are reported to lead to run-off percentages as high as 80%.

3.3.5 Floods

Although accurate records of floods in terms of damage to crops, animals, infrastructure, human lives and overall monetary loss is lacking in Somaliland, flash floods have significantly contributed

to a high level of vulnerability among pastoral and agro-pastoral communities. Agro pastoralists in flood prone areas have suffered from livestock deaths, destruction of germinated crops and farmlands, increased soil erosion and in some other areas silting of croplands.

So far, flood control in Somaliland has focused on reactive measures and practices. Initial interventions have largely relied on control of floods through structural measures such as earth traces, stone bunds, and check dams. Structural measures have only shifted or disturbed ecological balance rather than mitigating flood risks and in large part these approaches have *ad-hoc* and mono disciplinary nature.

3.3.6 Droughts

In Somaliland, the impact of droughts on both the environment and livelihood of pastoral and agro-pastoral communities has been devastating. An impact assessment by *Drought Response Committee* in 2015 indicated for example that the water shortage and rapidly drying pasture has led to an estimated 35 to 40% loss of livestock including camels, goats, sheep and cattle (Action Aid, 2015). Towards the end of 2016 through beginning of 2017, another severe drought has hit Somaliland and according to government's estimates more than 200,000 families have been affected.

The impact of drought on the natural environment in the country can also easily be seen on water sources, land and plant communities. It is noted that drought has significantly lowered water levels in reservoirs or *berekeds* as well as reduced stream flows. This decrease in turn has led to progressive groundwater depletion and water quality reduction.

Inadequate water supply has reduced ability for soils to support crops, an increased amount of dust due to dryness and erosion. There is also stress placed on certain endangered species and loss of biodiversity in the most affected areas.

3.3.7 Climate Change

There has been limited assessment, analysis or projections regarding the potential climate change impacts on the physical and social environment. This is due to lack of long-term climate data to support the projections of future climate trends. Climate change models for countries in the Horn of Africa including Somaliland, however, predicted that there would likely be significant increases in temperature and changes in rainfall patterns, resulting in the potential for increased drought and flood events. Climate change is expected to exacerbate existing risks such as water stress and food insecurity. In Somaliland recent evidences indicate that rainfall has become less predictable and insufficient.

Climate change impact assessment reports further highlight that delay in the onset of rains accompanied by short and insufficient rains has caused significant crop failures causing widespread food insecurity among many pastoral and agro-pastoral households. Pasture deficit resulting in livestock mortality, susceptibility to diseases and poor body condition is also frequently reported. The reports further indicate that drought has resulted in widespread reduction on household incomes from livestock and livestock products. In addition, drought has

affected livestock diversification strategy of households, which in most cases prefer to have the combination of cattle, sheep and goats or camels, goats and sheep or all. Increased shortage of forage and water as the result of drought forced many agro-pastoral households to resort to camel production with shoats to sustain subsistent income.

The traditional migration patterns of pastoral communities are also reported to change as the result of drought and existing rain invariability. Coping strategies such as rotational grazing and reserving pasturelands are undermined. Concentration of livestock in few watering points has become commonplace sighting resulting in further soil and water degradation.

Table 4: Observed Changes as Result of Climate Change

| Observed Changes | Trend | Remark |
|--------------------------|-------|---|
| Rainfall duration | - | <i>Gu and Dayr</i> seasons become shorter |
| Rainfall intensity | +/- | Resulted in heavy rain and run off or at times becomes too low |
| Rainfall amount | - | <i>Gu and Dyar</i> rains becomes insufficient |
| Rainfall distribution | - | Uneven distribution of rain becomes frequent |
| Hot and dry months | + | Due to the shortening of <i>Gu</i> and <i>Dyar</i> seasons |
| Drought | + | Due to failure in <i>Gu</i> and <i>Dyar</i> rains |
| Flooding | + | Due to rangeland degradation and high rate of runoff |
| Soil moisture/ fertility | - | Due to rain failure and erosions |
| Vegetation | - | Due to shortage of rain and increased temperature |
| Crops | - | Due to shortage of rain |
| Diseases | + | Human, livestock and crop diseases become prevalent as a result of food and water shortage, crop infestation, lack of hygiene and sanitation as well as a lack of health facilities |
| ` | - | Over-population, overgrazing, and water runoff contribute to the degradation of the rangelands |

Source: NERAD, 2014

3.3.8 Disaster Preparedness and Management

Somaliland has continued to face a rising degree of vulnerability to disaster risk. Hydro-meteorological and environmental processes leading to hazards such as floods and drought are the most common disasters experienced in Somaliland.

The existing Early Warning System in Somaliland is inefficient owing mainly to lack of adequate data and delays in dissemination to end-user organization. However, end-user organizations also lack the capacity to analyze Early Warning System data. Although disaster preparedness is an important component of preventive development, its usefulness can only be determined if the people who are so often affected by natural hazards are sensitized about the potential danger and empowered to respond effectively to contribute to the development of their own communities.

3.3.9 Environmental Impacts and Other Activities

Somaliland's economy is linked to the environment in many important ways. Several economic activities in the country tend to affect and are affected by the environment. This is particularly the case when one considers the existing little economic diversification in the country and how productive sectors such as agriculture, fisheries and specially livestock are important for Somaliland. Ultimately, the state of the environment determines the level of prosperity now and in the future.

Agricultural performance and environment are highly interdependent. The impact of environmental degradation on the overall performance of the agriculture and vice versa is well noted in Somaliland. Over the years, the productivity of the agricultural sector has been declining due to erratic and low amounts of rainfall, land and water resources degradation.

The most potent form of land degradation in the country is the slow insidious process of soil erosion that resulted in deterioration of soil structure and fertility. It is obvious that the costs associated with replacing soil nutrients in the form of inorganic fertilizer would in the future place a heavy burden on the economy of the country.

The state of land degradation from 1990's to present has not improved. Similarly, unsustainable agricultural practices have contributed to the degradation of the environment and reduced productivity. Some of the environmental factors associated with the agriculture sector include:

- Policy failure to generate an optimum agricultural industry that has due regard to the supporting environment;
- Inadequate and uncoordinated agricultural extension services having inadequate concern for environmental issues;
- Farm expansions in response to low production on existing land; and
- Inadequate land use planning and suitability analyses.

With the very small portion of land under cultivation in the form of subsistence farming and the ever-increasing land degradation, achieving food security using the agriculture sector still remains a challenging proposition unless environment is taken in to consideration.

Somaliland has seen a total transformation of the forest landscape over the past decades. The combined forces of climate change, not environmental friendly human activities such as charcoal production and agricultural encroachment have reduced the forest cover of the country to the lowest level.

The most serious environmental threat to the forest cover comes from overuse of vegetation mainly for fuel wood, overgrazing and charcoal production. In Somaliland, an estimated 8 million trees are cut annually for charcoal production. Other factors that exacerbate the problem include lack of periodic assessments and implementation of forest laws to prevent over harvesting and unplanned clearance of woodlands. This widespread misuse is further complicated by the diminishing natural resilience of the vegetation covers occasioned by frequent and prolonged droughts. The economic benefits of planned use of forest resources such as frankincense have therefore shrunk over the years.

The livestock sector in Somaliland has also suffered the brunt of the degrading environment. The consequences of the recurrent and prolonged droughts are proved to be devastating for many pastoral and agro-pastoral communities in the country. More frequent and longer periods of low precipitation and loss of vegetation for overgrazing have led to a significant loss of livestock from starvation and water stress. Longer and more frequent dry spells that have reduced water and pasture supply triggered forced liquidation of livestock at depressed prices.

Marine resources are also facing challenges resulted from fishing, disposal of waste, degradation of the mangroves and polluted terrestrial water runoff. Existing marine degradation and its subsequent impact is also due to lack of proper marine environment policies and legal framework enforcements. In addition, the devastation of the marine environment is expected to affect the participation of the private sector to be engaged in large scale fishing practices. It is believed that these challenges are contributing to the declining income level of traditional fishers who largely lack any other means of income.

With regards to the Economic Development Sector, environment is particularly affected for manufactures. Although the level of industrial development in Somaliland is at the earliest stage, understanding the industry-environment nexus is considered important to identify priority areas for enhancing environmental performance of the sector as well as for setting and monitoring appropriate indicators.

Energy is a key sector for environmental mainstreaming from a number of perspectives. First of all it is a key element for private sector development, both in terms of supply as well as with regards to waste management, particularly for industrial development. Energy is also the driving force behind other sectors to a larger or lesser extent. The household energy production process relies greatly on biomass, mainly charcoal, which is responsible for the degradation of forest and air pollution. There have been efforts, particularly from the private sector, to develop the market for alternative sources of energy such as LPG.

Extractive large-scale activities such as mining and oil extraction are still non-existent in the country; however, prospection activities suggest that this sector will soon experienced fast-paced

development. An appropriate legal framework contemplating this new phase in the development of the country is needed.

Health-related pollutions – water and sanitation issues – have emerged as serious health threats for the majority of the population. Numerous households are reported to suffer from severe water shortages during the dry seasons. Furthermore, solid and liquid waste management and residential environmental sanitation remain at a very rudimentary. There is a critical need to initiate the development of environmental health strategies.

Environmental education and awareness can be mainstreamed at all levels of formal education. Subjects such as sciences and geography can be excellent entry points to foster discussions about environment in primary and secondary schools. Also, Environment-related academic programs at higher education will supply the demand for professionals with a sound background in this field.

3.4 Policies, Reforms and Legal Frameworks

The Constitution of the Republic of Somaliland has provisions that safeguard natural resources and the environment. These include the following:

Article 12: states that the government is responsible for the natural resources of the country, and shall take all possible steps to explore and exploit all these resources which are available in the nation's land or sea. The protection and the best means of the exploitation of these natural resources shall be determined by law.

Article 18: states that the government shall give a special priority to the protection and safeguarding of the environment, which is essential for the well being of the society, and to the care of the natural resources. Therefore, the care of and (the combating of) the damage to the environment shall be determined by law. The state shall also undertake relief in disasters such as famine, storms, epidemics, earthquakes, and war.

Furthermore, the Government of Somaliland has also developed and adopted various laws and policies addressing environment or that are relevant for environment. Most of these laws and policies only have a sectorial approach, limiting its capacity to generate long-term change. However, some of the policies such as the *Water Policy*, *Coastal and Marine Resource Policy* and the *Agriculture Policy* can be considered cross-sectorial, therefore, more promising. Table 5.22 below summarizes environmental laws and policies in Somaliland and other legal frameworks which address environment issues.

Table 5: Summary of Environmental Laws and Policies

| Laws and policies | Key content |
|---|---|
| <i>Law on the Prevention of Deforestation & Desertification</i> | - Set out to protect plants, forest reserves and wild life |
| <i>Law on Fauna (Hunting) and Forest Conservation Law</i> | Protect the wild life from poaching and vegetation from deforestation in Games Reserves |
| <i>NERAD Agency Law</i> | - Protect the national environment and natural disasters management and preparedness |
| <i>Wildlife and Forest Conservation Law</i> | Protect wildlife from poaching and forest from illegal encroachments and clearing |
| <i>National Water Policy</i> | - Improve availability and access to water in a sustainable and equitable way for all different types of uses, in a manner that is environmentally safe. |
| <i>Coastal and Marine Resource Policy</i> | Proper conservation, management and optimum utilization of living marine resources |
| <i>Policy on Disaster Risk Management</i> | Address the increasing incidences and emergencies of both slow and rapid on-set disasters such as flood and droughts |
| <i>Energy Policy</i> | Address energy needs of Somaliland for social and economic development in a cost effective way that promotes sustainable energy production and use while minimizing negative environmental impacts |
| <i>National Range Policy</i> | Deal with soil, range vegetation, the animals that use the range, forest, watershed, wildlife habitat and the landscape as a whole - Stop destructive land use practices (overgrazing and erosion, cultivation on marginal land, cultivation on steep slopes, bush-cutting for fuel) - Ensure stability of watersheds |
| <i>National Livestock Policy</i> | Promote livestock production activities that ensure sustainability and conservation of the environment |
| <i>Dry and solid waste management policy</i> | Sets duties and responsibilities of waste collection - Specifies violations and punishments related to waste management |
| <i>ˆ Somaliland’s Environment Management Bill</i> | Protection of emissions from vehicles and machineries - Protection of environment from release chemicals, oils and other harmful substance |

| | |
|--|--|
| <i>National Policy on Environment</i> ¹³⁸ | Protection of biodiversity and traditional knowledge - Strengthening participation in water and natural resources management - Protection of river catchments, watersheds, wetlands and static water bodies - Adoption of Sound production systems - Adoption of good land management and sound management |
|--|--|

Source: Prepared by MoERD

Many sector policies and laws in the country are not harmonized with each other and with the Constitution. These include policies and laws concerning agriculture, land, water, forests, trade and industry, which have significant implications on the environment. The sector rather than integrated and ecosystem approach to management of natural resources has proved inadequate in addressing environmental challenges.

Although the Government of Somaliland government has taken steps towards establishing and improving the environmental legal framework, implementation appears to be not within the capacity of government institutions. The financial and human resources needed for effective implementation of environmental policies are significantly lacking. Nor is there adequate awareness of environmental issues among policy makers. Consequently, serious environmental damage continues. Specific policies and regulations on such areas as charcoal production and waste management are not also in place and effectively enforced.

3.5 Regional Overview

The effects of climate change can be seen across the whole country; however, the impact of human activities is also very present. Deforestation, especially as a result of charcoal production, is increasing in all regions.

Land degradation is a combined result of failed rainfalls and overgrazing has been a prominent problem in Togdheer, Maroodijeex and Sanaag regions. Illegal enclosures are also an important challenge for the environment in Togdheer and Maroodijeex regions.

Some regions, Sahil in particular, have been trying to increase the production and use of clean and renewable energy, showing signs that there are potential for change. Sustainable energy can help reducing consumption and therefore production of charcoal, leading to a decrease in deforestation.

3.6 Summary of External Environment Analysis

| Opportunities | Threats |
|---|--|
| <ul style="list-style-type: none"> • Participation of international environmental and pastoral development conferences to mobilize resources • Highlight that Environment and pastoral development are the backbone of the SL economy and should be prioritized. • There are some well organized INGOs and NGOs that are supportive to environment program initiatives | <ul style="list-style-type: none"> • Climate change/droughts & floods • Resource/land based conflict. • Reduction of wildlife. • Poor Waste management • Increasing urbanization/ • Poor Environmental governance • Lack of protected areas (national parks). • Political interference and uncertain political will for environmental conservation • Encroachment into conservation areas • High staff turnover • Natural calamities- e.g. droughts, floods, etc; • Land use conflicts <p>Invasive species</p> |

3.7 Outcome of the Situational Analysis

After an extensive situation analysis and review of the internal and external environment of the sector, the following three environment strategic goals/objectives were identified:

Strategy Goal 15:

Ensure sustainable consumption and production patterns

Strategy Goal 12:

Take urgent action to combat climate change and its impacts

Strategy Goal 13:

Protect, restore and promote sustainable use of terrestrial Ecosystems sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

4. IMPLEMENTATION STRATEGY OF THE PLAN

Strategy implementation is the action stage of strategic management. The activities central to strategy implementation are establishing annual objectives; devising policies and allocating resources. The MoERD is the leading agency for implementation of the strategy in accordance with its mandate. However, the successful implementation of this strategic plan is far more complex and requires the commitment of all stakeholders.

4.1 Capacity Development and training

The technical staff of the directorate should get specialized trainings such as GIS, environmental engineering and proposal writing. In terms of higher education the Ministry needs to consider

4.2 Resource Mobilization

Budget allocation to the Ministry of environment and rural development has over the years been inadequate and the share of development expenditure has been going down or some year's nonexistent thus affecting service delivery. The successful implementation of this strategic plan, therefore, will depend not only on the quality and commitment of the directorate staff but also on the availability and efficient utilization of the resources.

The total estimated budget to finance the implementation of this plan for the five year period is huge. The directorate expects to finance this budget through the annual treasury allocations and other financial help from bilateral and multi-lateral sources. It is anticipated that the ministry will seek collaborative contributions from the international donors and other stakeholders.

The MoERD will also pursue the following strategies in its endeavor to diversify and Strengthen the Ministry revenue base:

- Lobby for retention and increase of charcoal revenue
- Enhance Public/INGO partnership in environment & rural development initiatives;
- Bilateral Development Partners/Donor support;
- Lobby for retention of Charcoal revenue.
- Enhance Public/INGO partnership in environment& rural development initiatives;
- Bilateral Development Partners/Donor support;
- Prudent management through activity-based budgeting.

4.3 Monitoring, evaluation and information management

Considerable efforts are needed on the part of the Ministry in formulating a set of key performance indicators and targets, as well as a robust M&E system that includes data collection, storage, analysis and reporting. To ensure that the results are clearly communicated among stakeholders, sector-specific strategies for communication and information management should be established. Mechanisms should also be put in place to mobilize sufficient technical and financial resources to facilitate data collection, analysis and reporting; as well as incentives for feed-back.

4.4 Environment Sector RBM Matrix

| STRATEGIC GOAL 1: <i>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</i> | | | |
|--|---|--|---|
| Expected Outcomes | Activities/interventions | Indicators | Responsibilities |
| 1. By 2021, 10% of the country's land allocated as protected areas (watershed area and biodiversity hotspots) | <ol style="list-style-type: none"> 1. Identification of watershed and biodiversity hotspots by surveying, demarcating and mapping 2. Carry out inventory and evaluation on the watershed and biodiversity hotspots, and select priority areas for intervention 3. Community awareness and mobilization by engaging key stakeholders 4. Legalization, approval and gazetted key stakeholders 5. Legalization, approval and gazetted | 1.1. Percentage of land gazetted 1.2 ? 1.3? 1.4? 1.5? | <ol style="list-style-type: none"> 1. MoERD, 2. INGOS , 3. LNGOs 4. UN Agencies |
| 2. By 2019, assess 45 potential major community-grazing reserves and by 2021 restore and conserve 15 of them. | <ol style="list-style-type: none"> 1. Select potential reserves, demarcate and make inventory, assessment and participatory management plans for 15 sites | 2.1. Number of potential grazing reserves assessed 2.2. Number of grazing reserves restored and conserved | <ol style="list-style-type: none"> 1. MoERD, 2. INGOS , 3. LNGOs 4. UN Agencies 5. Communities |
| 3. By 2021, increase by 50% the number of conserved and protected endangered flora and fauna species | <ol style="list-style-type: none"> 1. Assessment of endangered flora and fauna species 2. National strategy for practical conservation measures including in-situ and ex-situ conservation 3. Establish rescue and orphanage centers for wildlife | 3.1. Percentage of conserved and protected endangered species 3.2. Number of endangered species | <ol style="list-style-type: none"> 1. MoERD, 2. INGOS , 3. LNGOs 4. UN Agencies. |
| 4. By 2021, improve existing environment legal framework to address the conservation of marine ecosystem and implement sustainable use of marine ecosystem specifically mangroves and other associated species and habitats | <ol style="list-style-type: none"> 1. Assessment and inventory of the mangroves ecosystem and develop management plan 2. Review and improve the existing and enforce legal framework its implementation 3. Establish monitoring mechanisms for marine ecosystem | 4.1. Improved legal framework 4.2 Implementation of Sustainable Mangrove Management Plan 4.3? | <ol style="list-style-type: none"> 1. MoERD ,(specify 2. Ggovernment Institutions (specify} |

| STRATEGIC GOAL2: <i>Ensure sustainable consumption and production patterns</i> | | | |
|---|--|------------------------------|--|
| Expected Outcomes | Activities/interventions | Indicators | Responsibilities |
| 1. By 2021, develop and apply legal framework to achieve environmentally | <ol style="list-style-type: none"> 1. Assessment of the existing environmental legal framework to address gaps 2. Identify types of pollutions and source of polluters | 1.1. Legal framework applied | <ol style="list-style-type: none"> 1. MoERD , |

| | | | |
|--|--|--|---|
| sound management of chemicals and all wastes | 3. <i>Establish appropriate institutional framework for integrated management for all types of wastes</i> | | 2. <i>Government Institutions (specify)</i> |
| 2. By 2021 decrease the release of point-source pollution particularly to air and ground water by 20% | <ol style="list-style-type: none"> 1. <i>Develop environmental legal framework to address gaps related to point-source pollutions through participatory process.</i> 2. <i>Promote recycling schemes and collection points i.e. water bottles and plastic bags</i> 3. <i>Establish mechanisms of inspection for air, water and soil pollutions</i> 4. <i>Regular inspection for plants that use dangerous chemicals like tanneries and motor vehicles for air pollution`</i> 5. <i>Develop dump sites and landfills</i> 6. <i>Promote the role of private sectors in controlling point source pollutions</i> | <ol style="list-style-type: none"> 2.1. <i>Level of air pollution</i> 2.2. <i>Level of water ground pollution</i> | <ol style="list-style-type: none"> 1. <i>MoERD , (specify</i> 2. <i>INGO,</i> 3. <i>LNGOs</i> 4. <i>UN Agencies</i> |
| 3. By 2021, ensure that communities have the relevant environmental information and awarenessfor lifestyles adaptation in harmony with nature | <ol style="list-style-type: none"> 1. <i>Promotion of mass media programs delivering messages on environmental issue tailored for community consumption</i> 2. <i>Promotion of environment clubs (i.e. in schools, universities, philanthropic groups)</i> | <ol style="list-style-type: none"> 3.1. <i>Proportion of radio and TV programs mentioning environmental issues and climate change</i> 3.2. <i>Environmental information included in the educational system's curricula</i> | <ol style="list-style-type: none"> 1. <i>MoERD, (specify</i> 2. <i>INGOs</i> 3. <i>LNGOs</i> 4. <i>UN Agencies</i> |
| 4. By 2021, reduce charcoal consumption from indigenous species by 35% in urban areas through use of alternative energy sources | <ol style="list-style-type: none"> 1. <i>Educate and provide training to communities on conservation methods and use of clean energy</i> 2. <i>Provide incentives to private companies importing alternative energy and promote local innovations</i> 3. <i>Promote harvesting mesquites (garanwaa) for charcoal production</i> | <ol style="list-style-type: none"> 4.1 <i>Charcoal price</i> 4.2 <i>Gas consumption</i> 4.3 <i>Gas price</i> | <ol style="list-style-type: none"> 1. <i>MoERD, (specify</i> 2. <i>INGOs</i> 3. <i>LNGOs</i> 4. <i>UN Agencies</i> |

| STRATEGIC GOAL3: Take urgent action to combat climate change and its impacts | | | |
|---|--|--|--|
| Expected Outcomes | Activities/interventions | Indicators | Responsibilities |
| 1. Integrate international climate change measures into national policies, strategies and planning and strengthen resilience | <ol style="list-style-type: none"> 1. <i>Empower the existing institutional framework</i> 2. <i>Develop National Drought Management Strategy and long term programs to mitigate climate change effects</i> | <ol style="list-style-type: none"> 1.1. <i>Number of policies and strategies which have climate change measures</i> | <ol style="list-style-type: none"> 1. <i>MoERD (specify)</i> 2. <i>INGOs</i> 3. <i>LNGOs</i> 4. <i>UN Agencies</i> |

| | | | |
|---|---|--|---|
| <i>and adaptive capacity to climate-related hazards and natural disaster</i> | | | |
| <i>2. Improve education, awareness-raising and human and institutional capacity on climate change adaptation, mitigation and early warning</i> | <i>3. Empower the existing institutional framework</i> <i>4. Media programs on climate change education</i> <i>5. Establish an Institute for range, forestry and meteorology</i> | <i>2.1. Proportion of radio and TV programs broadcasting environmental issues and climate change</i> <i>2.2. Proportion of government staff working on environmental issues trained on climate change</i> | <i>1. MoERD,(specify)</i> <i>2.INGOs</i> <i>3. LNGOs</i> <i>4.UN Agencies</i> <i>5. communities</i> |

4.5 Risk Analysis

Accomplishing the priorities interventions for the Environment Sector will require adequate funds, technical expertise and coordination of efforts of all stakeholders involved. Strengthening of the existing coordination mechanisms will help to improve coordination among stakeholders.

Also, there is a potential for stakeholders’ conflict of interests to complete some of the interventions; therefore, education and awareness raising strategies are needed for their successful completion of them. In areas where community engagement is fundamental, religious and traditional leaders should be involved.

Droughts will continue to pose a challenge for any intervention in the Environment Sector. Thus, early awareness and preparedness mechanisms should be strengthened and better used among all stakeholders.

4.6 Financial Analysis

Table 9.8 below gives an estimate of the cost required to achieve each outcome. Costs have been calculated by estimating the cost of delivering each intervention and then summing these together to give the cost of achieving each outcome.

These are early indicative estimates received from the Sector Technical Team on the cost of delivering each intervention. The actual cost of delivering these interventions is likely to differ from the costs estimated below. The yearly profile of costs is also likely to differ from below depending on when interventions begin to be implemented and the time taken to complete each intervention, which may not be as indicated below.

A Cost estimates was not available for one outcome (reducing charcoal consumption) and this outcome was not included below.

The below figures should be seen as an early indicative cost estimate and serve as the basis for a full, detailed costing exercise to be completed in the future.

Currently, we estimate the total cost for achieving the outcomes chosen in this sector as between \$5.0 and \$11.3 million per year in 2017-21.

Table 6:Environment Sector Financial Analysis

| Strategic Goals and Expected Outcomes | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|--------------------|--------------------|---------------------|--------------------|---------------------|
| SDG15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss | | | | | |
| 1. By 2021, allocate 10% of the country's land as protected areas (watershed area and biodiversity hotspots) | \$250,000 | \$350,000 | | | |
| 2. By 2019, assess 45 potential major community-grazing reserves and by 2021 restore and conserve 15 of them. | \$650,000 | \$2,250,000 | \$2,360,000 | \$2,150,000 | \$3,000,000 |
| 3. By 2021, increase by 50% the number of conserved and protected endangered flora and fauna species | \$400,000 | \$840,000 | \$1,430,000 | \$1,000,000 | \$1,940,000 |
| 4. By 2021, improve existing environment legal framework to address the conservation of marine ecosystem and implement sustainable use of marine ecosystem specifically mangroves and other associated species and habitats | \$350,000 | \$350,000 | \$1,450,000 | \$1,200,000 | \$1,350,000 |
| SDG12: Ensure sustainable consumption and production patterns | | | | | |
| 1. By 2021, develop and apply legal framework to achieve environmentally sound management of chemicals and all wastes | \$350,000 | \$350,000 | \$960,000 | \$750,000 | \$750,000 |
| 2. Control the release of point-source pollution particularly to air and ground water | \$450,000 | \$450,000 | \$1,650,000 | \$940,000 | \$860,000 |
| 3. By 2021, ensure that communities have the relevant environmental information and awareness for lifestyles in harmony with nature | | | | | |
| 4. By 2021, reduce charcoal consumption from indigenous species by 35% in urban areas through use of alternative energy sources | NA | NA | NA | NA | NA |
| SDG13: Take urgent action to combat climate change and its impacts | | | | | |
| 1. Integrate climate change measures into national policies, strategies and planning and strengthen resilience and adaptive capacity to climate-related hazards and natural disaster | \$2,500,000 | \$3,200,000 | \$3,450,000 | \$2,500,000 | \$3,250,000 |
| 2. Improve education, awareness-raising and human and institutional capacity on climate change adaptation, mitigation and early warning | | | | | |
| Total Cost | \$4,950,000 | \$7,790,000 | \$11,300,000 | \$8,540,000 | \$11,150,000 |

| | | | | | |
|---------------------|--|--|--|--|---------------------|
| TOTAL BUDGET | | | | | \$39,275,000 |
|---------------------|--|--|--|--|---------------------|

4.7 Data Requirements

Timely, coordinated, quality and representative data is indispensable approach in formulating and designing national development plan. It also functions as a feedback mechanism by assessing and measuring what has been done so far at the end of the plan.

The current data available for the environment sector is very limited and mainly relies on the work of government institutions, development partners, NGOs and the private sector. Usually, government institutions in this sector collect limited administrative data on a regular basis. Development partners with this sector also collected some primary data. Despite that, there are huge data gaps that directly impact the work and plan of the sector. Many indicators in the sector RBM don't have baseline data. In some cases, although data is available the frequency that it is collected is not ideal. Moreover, dissemination and use of the existing data is another obstacle. Oftentimes stakeholders do not share the data they are collecting and valuable information is not used for planning and policymaking. The below table summarizes, environment sector required data, source, current status and the possible intervention.

Table 7: Environment Sector's Data Requirements

| No | Required Data | Source of data | Status | Required intervention |
|----|-------------------------------------|---|---|--|
| 1 | Area overgrazed | Administrative data/Environmental Surveys | Available with limited scale | Compilation data on overgrazed areas/ conduct environmental survey |
| 2 | Area under Environmental Protection | Administrative data/Environmental Surveys | Not available | Compilation data on environmental projection areas/ conduct environmental survey |
| 3 | Land Degradation | Administrative data/Environmental Surveys | Not available | Compilation data on land degradation are/ conduct environmental survey |
| 4 | Average Monthly Temperature | Administrative data | Not available | Compilation data on average monthly temperature |
| 5 | Climate change | Administrative data/Environmental Surveys | Administrative data/Environmental Surveys | Compilation data on climate change/ conduct survey |

| | | | | |
|-----------|--|---|---------------|--|
| | | | | environmental survey |
| 6 | Urban air emission | Administrative data/Environmental Surveys | Not available | Compilation data on urban air emission / conduct environmental survey |
| 7 | Intensity of forest measures use | Administrative data/Environmental Surveys | Not available | Compilation data on areas and distribution of forests/ conduct environmental survey |
| 8 | Areas and Distribution of forests | Administrative data/Environmental Surveys | Not available | Compilation data on areas and distribution of forests/ conduct environmental survey |
| 9 | Emissions of carbon dioxide and other greenhouse gases | Administrative data/Environmental Surveys | Not available | Compilation data on emission of carbon dioxide/ conduct environmental survey |
| 10 | Air quality index | Administrative data/Environmental Surveys | Not available | Compilation data on overgrazed areas/ conduct environmental survey |
| 11 | Number of environmental education programs for community | Administrative data/Environmental Surveys | Not available | Compilation data on environmental educational programs/ conduct environmental survey |

| | | | | |
|-----------|--|---|---------------|--|
| 12 | Compilation data on environmental educational programs/ conduct environmental survey | Administrative data/Environmental Surveys | Not available | Compilation data on environmental educational programs/ conduct environmental survey |
| 13 | Biodiversity of animals and plants | Administrative data/Environmental Surveys | Not available | Compilation data on biodiversity/ conduct environmental survey |
| 14 | Number of species at risk | Administrative data/Environmental Surveys | Not available | Compilation data on species at risk/ conduct environmental survey |
| 15 | Soil erosion per acre of cropland | Administrative data/Environmental Surveys | Not available | Compilation data on soil erosion/ conduct environmental survey |
| 16 | Area of land affected by soil erosion and salinity | Administrative data/Environmental Surveys | Not available | Compilation data on soil erosion and salinity areas/ conduct environmental survey |

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