



The Federal Republic of Somalia
Ministry of Environment and Climate Change

Somalia National Climate Change Policy

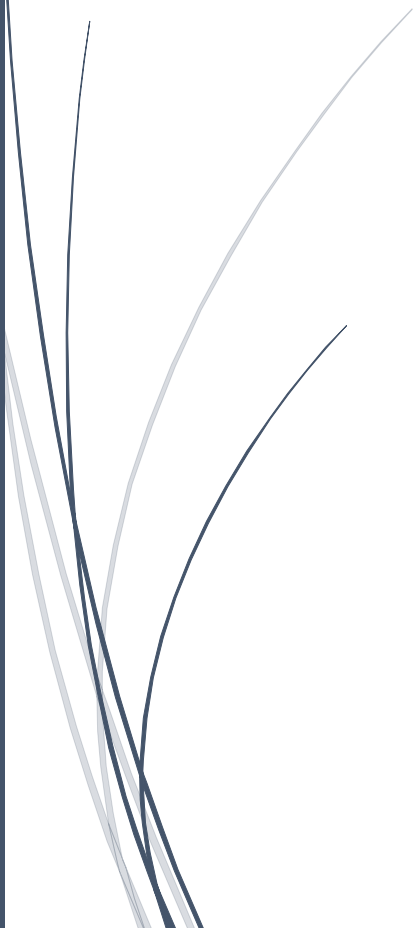


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ACKNOWLEDGEMENT

National Climate Change Policy (NCCP) for Somalia has been prepared with the active involvement and assistance of a wide range of stakeholders who have contributed immensely in ensuring its finalization. The Ministry of Environment and Climate Change led the formulation of the NCCP with the support of the United Nations Development Programme (UNDP) and Global Environment Facility (GEF).

NCCP has been prepared by holding consultations with officials of the relevant federal line ministries, federal member states, civil society organizations (CSOs), international and inter-governmental organizations. To all these contributors, we extend our gratitude and profound thanks for their vital contributions toward the development of this Policy.

Thank you.

LIST OF ABBREVIATIONS AND ACRONYMS

AF	Adaptation Fund
AFOLU	Forestry and Land Use
AR4	IPCC Fourth assessment report
ASAL	Arid and Semi-Arid Lands
CC	Climate Change
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CSCCC	Cross-Sectoral Climate Change Committee
CSOs	Civil Society Organizations
DNA	Designated National Authority
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organization
FGS	Federal Government of Somalia
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Green House Gasses
GIS	Geographic Information System
GCF	Green Climate Fund
IDP	Internally Displaced Person
IDMC	Internal Displacement Monitoring Centre
INC	Initial National Communication for Somalia
INDCs	Intended Nationally Determined Contributions
IPCC	Intergovernmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
LDCF	Least Developed Countries Climate Fund
LUCF	Land-Use Change and Forestry
MoLFR	Ministry Of Livestock Forestry And Range
MRV	Monitoring, Reporting and Verification
N ₂ O	Nitrous Oxide
NCCC	National Climate Change Committee
NCCP	National Climate Change Policy
NAPA	National Adaptation Programme of Action

NDP	National Development Plan
NEVA	National Employment Vulnerability Assessment
NCCP	National Climate Change Policy
NGOs	Non-Governmental Organizations
NO ₂	Nitrogen Dioxide
NOX	Nitrogen Oxides
R&D	Research and Development
SCCF	Special Climate Change Fund
SDGs	Sustainable Development Goals
SO ₂	Sulphur Dioxide
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	The United Nations Industrial Development Organization
UNOCHA	United Nations Office for Coordination of Humanitarian Affairs
UNFCCC	United Nations Framework Convention on Climate Change
REDD+	Reduce Emissions from Deforestation and Forest Degradation
TMEC	Technical Monitoring Committee
WHO	World Health Organization

GLOSSARY

Adaptation is defined by the UNFCCC as “an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”.

Anthropogenic is an effect resulting from or produced by human activities. These activities include the burning of fossil fuels, deforestation, waste management and industrial processes.

Carbon sink is any process, activity or mechanism whether natural or artificial, that removes carbon containing chemical compounds such as greenhouse gases, aerosols or precursors of greenhouse gases from the atmosphere and stores them for an indefinite period.

Climate change according to the UNFCCC means “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”.

Climate is a composite measure of the average pattern of variation in temperature, humidity, precipitation, wind, atmospheric particle count and other meteorological variables in a region over a long period of time (usually 30 years).

Climatic hazard is an extreme climatic/weather event causing harm and damage to people, property, infrastructure and land-uses.

Climate-smart agriculture (CSA) is defined by the IPCC as “an approach that helps to guide actions needed to transform and re-orient agricultural systems to effectively support development and ensure food security in a changing climate. CSA aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes, adapting and building resilience to climate change, and reducing and/or removing greenhouse gas emissions, where possible.

Disaster preparedness is according to the International Federation of Red Cross and Red Crescent Societies (IFRC) “measures taken to prepare for and reduce the effects of disasters. That is, to predict and, where possible, prevent disasters, mitigate their impact on vulnerable populations, and respond to and effectively cope with their consequences”.

Early warning systems are according to the IPCC “the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Greenhouse gases are according to the UNFCCC “The atmospheric gases responsible for causing global warming and climate change. The major GHGs are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Less prevalent --but very powerful -- greenhouse gases are hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆).

Mitigation according to UNFCCC is “a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other "sinks" to remove greater amounts of carbon dioxide from the atmosphere.

Resilience according to IPCC is “the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization and the capacity to adapt to stress and change”. It is the ability to survive, recover from and even thrive in changing climatic conditions. It includes the ability to understand the potential impacts and to take appropriate action before, during and after a particular event, such as major flooding or prolonged drought, to minimize negative effects and maintain the ability to respond to changing conditions including unpredictable conditions.

Vulnerability according to IPCC is “the degree to which a system is susceptible to and unable to cope with, adverse effects of climate change including climate variability and extremes”.

EXECUTIVE SUMMARY

Climate change has become one of the major global challenges of this century with its adverse impact mostly affecting developing nations including Somalia. The danger of climate change is not only multi-dimensional, but its effects also transcend national borders affecting the ecology that sustains livelihoods. For Somalia to experience sustainable and robust socio-economic development, there is a need for adequate and sustainable resources. However, the availability of such resources is being threatened by a dramatic shift in weather patterns, which has adversely affected food production, water resources, human health, and coastal zones. Somalia's susceptibility to climate change and the threat to achieving development goals have thus been documented. There is already evidence of the direct manifestations of climate change in Somalia, i.e., increasing temperatures; rainfall variability, including unpredictable extreme events (droughts and floods).

With an economy closely linked to natural resources and climate sensitive sectors such as agriculture, livestock, water and forestry, Somalia may face a major threat because of the projected changes in climate. A policy response to climate change in Somalia is vital for adapting and mitigating the country's susceptibility. The Government of Somalia recognizes that climate change must be mainstreamed into policies and sectoral activities to achieve sustainable growth.

As such, the vision outlined in the National Climate Change Policy (NCCP) is:

To attain a prosperous and climate resilient economy through the adoption and successful implementation of appropriate and effective climate change adaptation and mitigation measures.

Somalia's policy response to climate change will:

- (i) Promote a harmonized, articulate and effective response to challenges and opportunities that accompany climate change.
- (ii) Deliver a framework that will guide the establishment and operationalization of interventions and action plans.
- (iii) Safeguard the safety and health of citizens, their prosperity and states development in the advent of climate change through enhancement of resilience and implementation of adaptive ability to climate variability.

The policy is founded on the following objectives:

- (i) Adaptation (including Disaster Preparedness and Response)
- (ii) Mitigation

The guiding principles of the policy are: the right to sustainable development, integrated approach and prioritization of the most common good, prioritization of vulnerable groups, regions, and sectors and promotion of community ownership and participation, international partnership, and country-driven and cooperative government. Other vital principles are scientific information, decentralized implementation, mainstreaming approach, equity, fairness and social inclusion, prioritization of adaptation over mitigation and cost-effectiveness.

The objectives of the policy can only be reached when cross-cutting issues that have strong impact across all sectors and receive special attention. The cross-sectorial themes identified as critical in this policy document are: capacity building, research, technology and innovation, international cooperation, information and communication, education and public awareness and mainstreaming climate change.

The strategic priorities areas of the NCCP are structured in a manner consistent with the outlined objectives. In terms of adaptation, sectors that need particular attention are agriculture, livestock, water, marine resources, forestry and biodiversity, infrastructure and urban settlements. Resilience to climate change-related extreme weather events will be the basis for Somalia's approach to disaster management. As such the policy is to establish an effective disaster management in order to prepare, respond and protect vulnerable communities and improve their resilience to losses associated with the direct impacts of climate change.

Green House Gas emissions of Somalia are insignificant. The country's focus is mainly on adaptation to climate change. However, this does not make mitigation irrelevant. The country's approach to mitigation, balances the country's contribution as a responsible global citizen to the international efforts to curb global emissions with the economic and social opportunities presented by the transition to a lower-carbon economy (green economy).

The policy also address social aspects of climate change such as health, human rights, gender issues, employment and migration.

There are national institutions, member state institutions and private organizations whose activities touch on climate change issues. The policy describes the climate governance structure of Somalia and

identifies the relevant institutions and establishes appropriate committees at national and sub-national levels.

To address Climate Change, Somalia will require financial support from domestic resources and the international Community. Domestic resources will be obtained from government budget, private sector and contributions from companies, organizations and individuals. The international support comprises of bilateral, multilateral sources and international climate funds.

Finally, to ensure their effective implementation, monitoring and evaluation of climate change responses and impact are critical. The policy proposes the monitoring and evaluation system that are needed to track climate change (policy interventions and impacts of climate change).

CHAPTER 1

OVERVIEW, VISION, GUIDING PRINCIPLES & OBJECTIVES TO ADDRESS CLIMATE CHANGE

1.1. Overview

Climate change is one of the biggest challenges of this century, and as a global challenge, it requires imminent and effective global solutions. The threat of climate change is multi-dimensional, and its impacts surpass national borders. According to the Intergovernmental Panel on Climate Change (IPCC) projections, the world will be faced with a disastrous future in the form of biodiversity loss, sea-level rise, erratic weather patterns and extreme weather events such as storms, floods and droughts if the Green House Gases (GHGs) continue to rise at their current rates. Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

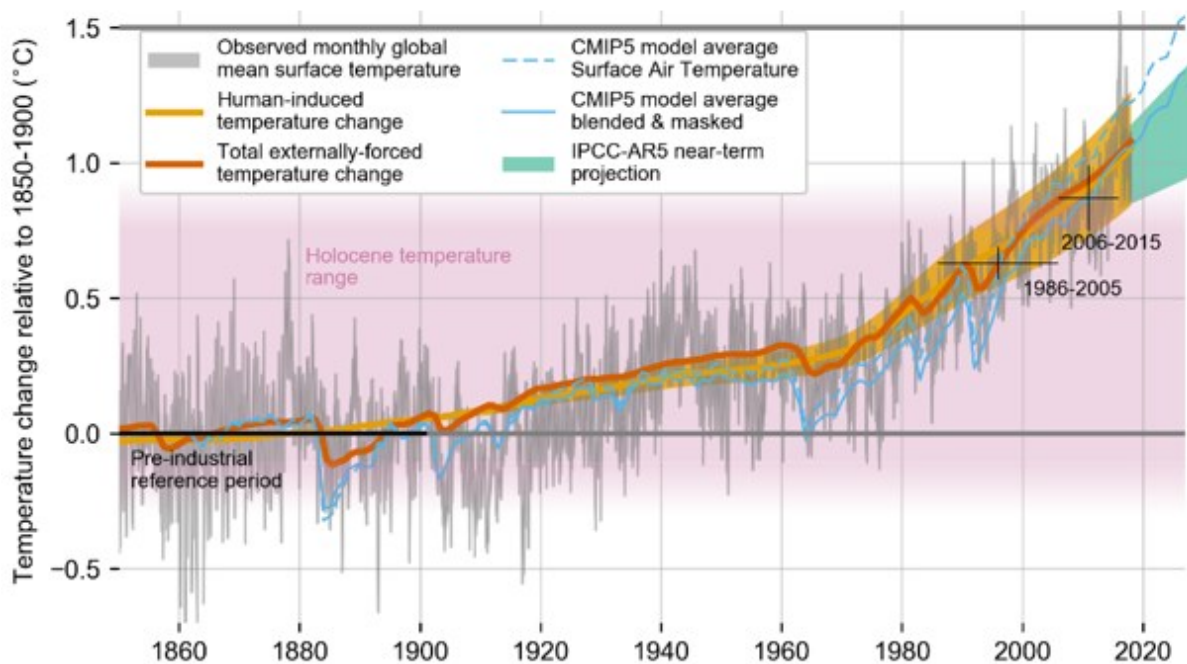


Fig 1. Global Mean Surface Temperature (GMST)

Source: IPCC

Thus, climate change presents the biggest threat facing mankind today. Major adverse impacts of climate change include declining water resources; reduced agricultural productivity; spread of vector-borne diseases to new areas; changes in populations and distribution of biodiversity; and turbulent weather and climatic disasters.

Even though the largest share of historical and current global emissions of GHGs originated in developed countries, developing countries will be the most affected. Somalia is highly vulnerable to the

impacts of climate change as the economy depends on subsistence agriculture, livestock rearing and other natural resources. The country developed National Adaptation Programme of Action (NAPA) with the goal of making Somalia more resilient to the negative impacts of climate.

Somalia needs adequate resources for it to experience sustainable and robust socio-economic development. Nevertheless, such economic progress is threatened by the effects of climate change. Over the years, Somalia has experienced increasing evidence of climate change such as variation in climatic patterns, the rise in sea levels, land degradation, varying precipitation patterns, and occurrence of extreme weather. Such a trajectory constitutes a severe threat to Somali's socio-economic development. The NCCP aims to address the threats posed by climate change and attain climate resilient economy. The next section explains the rationale for the NCCP.

1.2.Rationale for the National Climate Change Policy

Somalia faces the impact of climate change coupled with instability and many socio-economic problems like poverty, poor infrastructure, lack of technology and finance, and weak institutions, among others challenges. Several anthropogenic impacts have also worsened the climate change impact in the country such as deforestation.

The impact of climate change in Somali is evident. Several climate disasters have already taken place in the country; the latest being the flash floods in Hiiraan, Middle/Lower Shabelle and Bari (Qardho) regions, which have resulted the loss of lives and displacement of people. Because of erratic rainfall, many local people, particularly the farming communities, have witnessed the shift in rainy seasons, affecting agricultural practice and livelihood. The country has also experienced frequent and protracted droughts which have devastated livestock and crop production. The consequences of these effects are food insecurity, hunger, malnutrition, displaced, loss of lives etc.



Fig.2 Beledweyne Flooding, 2020

Xigasho: www.hiiraan.com

In order to tackle the impact of climate change, it has become vital that a climate change policy, which address key sectorial and cross-sectorial issues, be put in place. Climate change needs to be integrated in key sectorial and cross-sectorial policies and interventions. The commitment made by the government of Somalia through the INDC (2015) and INC (2018) are landmark documents which express the importance of developing a Climate Change Policy that aims to adapt and mitigate the diverse and complex impacts of climate change. The National Climate Change Policy is a vehicle to move the country's efforts in a climate resilient and sustainable path. Similarly, this Policy is instrumental to the implementation and achievement of the Sustainable Development Goals (SDGs, 2015) and the National Development Plan 2020 -2024. Climate change and natural disasters are major threats to Somalia. The NCCP aims to combat climate change, foster sustainability and contribute to achieving the development goals of the country, thereby creating a prosperous and climate change resilient economy/nation.

1.3.The Process

The National Climate Change Policy (NCCP) for Somalia has been prepared with the active involvement and assistance of a wide range of stakeholders who have contributed immensely in ensuring its finalization. Consultations were held with officials of federal ministries, federal member states, civil society organizations (CSOs), non-governmental organizations, international and inter-governmental organizations, and the Somalia Parliamentary Select Committee on Environment.

The Ministry of Environment and Climate Change led the formulation of the NCCP with the assistance of the United Nations Development Programme (UNDP) and Global Environment Facility (GEF).

1.4.Goal

The goal of this framework policy is to enhance resilience and improve the adaptive capacity of vulnerable Somali communities, the ecosystems on which they depend, to the adverse impacts of climate change in Somalia.

1.5.Vision

To attain a prosperous and climate resilient economy/nation through the adoption and successful implementation of appropriate and effective climate change adaptation and mitigation measures.

- Somalia is significantly vulnerable to negative impacts of climate change as over 80% of the population relies on natural resources and the environment for food and income;
- The predicted impacts for Somalia are likely to be severe on the natural and human environments. The events will include extreme droughts, increased variability in rainfall, flash floods, increased temperature, tropical cyclones etc;
- To adequately address climate change as a challenge and respond in a timely, effective and appropriate manner, Somalia needs to explore adaptation and mitigation approaches relevant to the different key sectors and the situation on the ground. Therefore, the policy vision is to attain a prosperous and climate resilient economy/nation.

1.6.Guiding Principles

The guiding principles offer a foundation for policy direction for the national responses to issues of climate change in Somalia and ensure that they are in conformity to the prevailing national policies, development agenda and are in line with the laws and statutes of the Federal Republic of Somalia. The following principles will guide the implementation of this policy:

- i. **Right to Sustainable Development:** programmes and initiatives should deliver long-term, positive, economic, social and ecological, impacts. The right to development will hence be appreciated taking into consideration the social, environmental, and economic needs. A Somalia aim at attaining a people-centred approach to development that enhances human abilities, promote well-being and improves wellbeing.
- ii. **Integrated Approach and Prioritisation of The Most Common Good:** Ensure multi-sectorial, multi-level and inter-disciplinary approaches to achieve national development goals. Similarly, ensure actions that have the most positive impact on the population are prioritized.
- iii. **Prioritization of Vulnerable Groups, Regions, and Sectors and Promotion of Community Ownership and Participation:** Ensure that actions target the most vulnerable locations, population groups, and sectors and enabling local community involvement and participatory decision-making and put in place effective feedback mechanisms.

- iv. **International Partnership:** to foster collaborations in addressing climate change on a regional and worldwide arena while appreciating the national duties
- v. **Country-Driven and Cooperative Government:** National aspirations drove NCCP and predicated on national development priorities while being aligned with federal laws, international obligations, and commitments. The process will embrace a system of negotiation, consensus, and consultations between national and other levels of government.
- vi. **Scientific Information:** Use of scientifically sound data while appreciating the importance of traditional knowledge. Adaptation options and technologies are locally suitable and affordable and ensure systematic reporting and feedback on policy implementation.
- vii. **Decentralised Implementation and Mainstreaming Approach:** Ensure that actions are taken at the regional and local government levels. In recognising different genders face different challenges, gender issues should be integrated into planning and implementation practices.
- viii. **Equity, Fairness and Social Inclusion:** Initiatives and projects should promote equitable accessibility and distribution of benefits, information and support to marginal and disadvantaged persons, identifying their vulnerabilities to climate change.
- ix. **Prioritization of Adaptation over Mitigation:**

1.7. Policy Objectives

The NCCP will guide national response measures in addressing the impacts of climate change. The objectives of the policy is to promote and strengthen the implementation of adaptation and disaster risk reduction measures to reduce vulnerability to climate change. The policy also aims to promote investments in climate resilient and low-carbon development pathways in all economic activities.

1.7.1. Adaptation and Disaster Risk Reduction Measures

- i. Guide the implementing agency in the selection of prioritized climate change adaptation options and fund mobilization to upscale adaptation interventions and find parallel financing for mitigation in the future.
- ii. Recommend actions for capacity development, technology transfer and mobilize global funding to meet various policy recommendations
- iii. Minimize susceptibility to the impacts of climate change by establishing adaptive capacity, strengthen capacities for disaster risk reduction and promote resilience of populations to climate change.
- iv. Increase public participation, awareness, oversight, ownership of Somalia climate change response plans
- v. Augment research and the utilization of science and technology in policy decision and sustainability of resource management.

- vi. Establish a framework to harness resources for Somalia's climate change response and guarantee transparent deployment of the resources.
- vii. Establish a policy framework to enhance the effective and efficient implementation of evidence-based climate change action plans.
- viii. Implement gender mainstreaming, intergenerational and unique needs methods across all facets of Somalia's climate change response

1.7.2. Mitigation

- i. Initiate Somalia transition to cleaner, lower emission, and less carbon-intensive economic development.

1.8.Application

This policy shall help in guiding the work of governmental, non-governmental, and civic entities that participate or seek to engage in managing climate change issues.

CHAPTER 2

POLICY CONTEXT

2.1. International and Regional Context

The earth's climate system has changed at both global and regional scales since the pre-industrial era. Some of the changes are attributable to human activities which have increased the atmospheric concentrations of greenhouse gases. Ever since the industrial revolution, the atmospheric concentrations of key anthropogenic greenhouse gases [i.e., carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O)] have been increasing over the years, primarily due to the use of fossil fuels, agriculture, and land use changes. The increase in GHGs is a process that continues today.

The Inter-governmental Panel on Climate Change (IPCC) has published five assessment reports that progressively identify human activities as the driving force behind present and future global climate change. The IPCC indicates that the rise in GHGs will result in extreme weather events such as droughts and floods, biodiversity loss, shifts in seasons, and rise in natural disasters. The World Bank estimates that extreme weather events will force approximately 140 million people will be displaced within their countries by 2050.

The IPCC notes that Africa remains as one of the most sensitive regions to climate change impacts. The most significant implications relate to food production, water resources, human health, coastal zones, desertification. In East Africa, glaciers are retreating, droughts, floods, landslide, and heatwaves are increasing. According to IPCC, Mount Kilimanjaro has lost approximately 83% of its ice cap, which is an indispensable source of water for the communities living around the mountains. Somalia is already experiencing the adverse effects of climate change as evidenced by the dramatic shift in weather patterns and the increase in disasters, which have had a negative effect on vulnerable populations.

Climate change and related environmental degradation is one of the growing push factors for both internal and cross-border migration. IDMC reports that there were more internal displacements created by disasters than conflict in 2018 (IDMC, 2019).

The countries of Eastern Africa are prone to extreme climatic events such as droughts and floods. There is evidence that future climate change may lead to a change in the frequency or severity of such extreme weather events, potentially worsening these impacts. These will have potentially important effects across all economic and social sectors in the region, possibly affecting agricultural production, health status, water availability, energy use, biodiversity and ecosystem services. Drought diminished water supplies reduce crop productivity and have resulted in widespread famine in East Africa. El Niño is the most important factor in interannual variability of precipitation in East Africa. El Niño is commonly linked to extreme rainfall in eastern Africa (Grantham Research Institute, 2016).

2.2.National Context

In 2012, Somalia marked a milestone with the establishment of a federal government that received strong support and recognition from the international community. Somalia was without a formal parliament for more than two decades after the overthrow of President Siad Barre in 1991. A provisional national constitution was passed in June 2012, bestowing the country with a federal parliamentary system.

With the endorsement of the provisional constitution by Somalia's National Constituent Assembly, the country formally embarked on the implementation of a federal formula. Articles 25 & 45 of the Provisional Constitution of Somalia specifically deals with matters related to the environment and the management of natural resources. Moreover, under the NDP 2020-2024, the economic development goal is "to transform the economy by improving the resilience of traditional livestock and crop production industries to better meet the growing challenges from climate change, while at the same time inducing growth elsewhere in the private sector to broaden and sustain the growth base and provide greater employment opportunities." Similarly, the NDP strongly promotes the protection of the environment in general.

Somalia's continued vulnerability to climate change and the threat this poses to achieving long-term development goals has thus been recognized. The country is most vulnerable to climate variability and changes due to, among others, its high dependence on rainfed agro-pastoral practices and natural resources. Due to its low adaptive capacity, Somalia is among the most vulnerable nations to climate change. The country has frequently experienced extreme events like droughts and floods, and other climate-related hazards. The country experiences high levels of temperature and rainfall variability, which result in frequent droughts and famine. Since the early 1980s, the country has suffered seven major droughts, five of which led to famines. Major floods have also occurred in different parts of the country.



Fig.3 Floods, 2019

Source: BBC, 2019

Somalia has prepared its Intended Nationally Determined Contributions (INDCs) in line with UN Framework Convention on Climate Change (UNFCCC) and the decision of the "Lima Call for Action" to formulate its policy, plans and mitigation and adaptation projects intended to achieve the objectives of the INDCs (INDC, 2015). The INDC (2015), INC (2018) and NAPA (2013) identify critical areas of focus in implementing adaptation and mitigation mechanisms to address the impacts of climate change. Many approaches and strategies have been implemented by government institutions and other entities such as UNDP, FAO and WHO to address the effects of climate change in Somalia. Nevertheless, the initiatives have occurred without the guidance of a policy framework. The NCCP shows the commitment of the Federal Government of Somalia (FGS) to the formulate a coherent, proactive and integrated climate change responses that will reduce vulnerabilities and build the resilience of the Somalia nation. This policy will also enable Somalia to capture the economic, environmental and social benefits of transitioning to low carbon climate resilient economy.

Additionally, the policy will:

- i. Promote a harmonized, articulate and effective response to the challenges of climate change.
- ii. Provide a framework that will guide the establishment and implementation of interventions and action plans. By adopting this policy, Somalia aims at safeguarding the safety and health of its citizens, their prosperity and development through enhancement of resilience and implementation of adaptive and mitigation measures to climate change.

CHAPTER 3

SITUATION ANALYSIS AND IMPACTS OF CLIMATE CHANGE IN SOMALIA

3.1. Evidence of Climate Change and Projections in Somalia

Climate change has manifested itself in various ways in Somalia based on the following statistical analysis of trends in historical records of temperature, rainfall, humidity, sea level rise, and climate extremes.

3.1.1. Surface Temperature

Changes in extreme temperatures across Somalia have been observed over the last 50 years; temperatures have increased by 1.0°C in a century. The mean air temperatures remain high throughout the year with the mean daily temperatures for the period 1953-1976 were 25.2°C to 28.8°C with an annual mean of 27°C. Diurnal temperature fluctuations are high and can range from 20°C to 35°C.

Temperature is the highest inland while temperatures along the southern coast are lower than that inland, due to the influence of cold ocean currents. The relative thermal uniformity prevailing in the south is distorted by the effects of altitude in the north, where temperature decreases with altitude giving a larger mean daily lapse rate of about 6°C per 1000m. However, the lapse rate varies with seasonal changes throughout the year, being more substantial in the dry season than in the wet season.

The recent CMIP5 regional models also project a steady increase between northern, central and southern regions of Somalia, and between seasons with temperatures expected to increase at a steady rate of 0.3-0.5°C per decade until 2050. In summary, mean temperature is expected to increase in Somalia between 3°C and 4°C by 2080.

3.1.2. Precipitation

Rainfall precipitation in whole of the country is low and unpredictable because of the climate change. Overall, the climate conditions in Somalia is hot, arid to semi-arid, which is affected by the Inter Tropical Convergence Zone (IUCN, 2006). Two rainy seasons prevail over much of the country, the "Gu" rains (April to June) and the "Deyr" rains (October to November). "Jilaal" (winter) and "Xagaa" (summer) are dry, although in the latter period the country experiences rain in the coastal areas.

Climate change could result in a slight increase in the amount of rain received each year. However, the variability of rainfall patterns is also set to increase from an existing very high variable range. Because of this high variability in rainfall patterns, it is not clear how seasonal rainfall (both wet and dry seasons alike) will change (INDC, 2015). Mean annual rainfall in Somalia is expected to increase by 1%, 3% and 4% by 2030, 2050 and 2080, respectively (using the 1981-2000 reference period). However, seasonal changes is expected with less precipitation for central and southern Somalia during March,

April, and May (MAM) season by 2080. In summary, a gradual increase in total rainfall is expected in Somalia though with increasing seasonal variability. Extreme rainfall events can be expected to increase across the different periods.

3.1.3. Extreme Weather Events

Somalia has experienced a number of extreme weather events including droughts, floods, storms (includes dust storms & winds), cyclones and tsunamis. Of these, droughts and floods are the most frequent disasters. Drought is the most important, devastating and recurrent natural disaster affecting the country with more frequency and greater intensity in the recent decades. Records show that droughts alone have affected over 70% of the Somali populations in the last few decades (INDC, 2015). Some 14 major drought events have been recorded in the last 50 years adversely affecting over 6 million people (INDC, 2015). Flooding of Jubba and Shabelle rivers frequently occur during the Gu rainy season in the Hiran and Middle Shabelle regions. Coastal areas of Somalia are prone to tsunamis. In the 2004 Indian Ocean tsunami, the country suffered damage and the loss of lives. Powerful and destructive tropical cyclones pose a risk to Somalia. With the current global warming, the country is at risk of suffering from tropical cyclones and storms.



Fig 4. Drought, 2017

Source: Finnish Red Cross (via Google images)

Somalia lacks the capacity to deal with major disasters such as the tsunami, storms, protracted droughts and El Nino floods. Climate change is an acknowledged fact. Unless early action is taken to adapt to climate change, the country may not be in a position to achieve the UN SDGs and National Development Plan 2020 -2024.

3.1.4. Sea temperature and rising sea level

The sea surface temperature over the coast of Somalia bounded by 20S to 130N and 520E to 550E depicts a gradual rising trend in temperature of 0.4oC over 26 years (1981-2007). There is currently no available tide gauge data along the Somalia coast that can be used to support the expected sea level rise. A 15-year (1995-2010) record on observations of monthly mean sea level from a tide gauge in Lamu, Kenya within the East African coast and a rising trend of about 1.3 mm per year, which is aligned to the global pattern.

The Mombasa tide gauge, about 500km away from Lamu, with a 25-year (1986-2010) indicates the same rising trend even though there are data gaps in this record. Somalia coast, which is a few kilometres away from Lamu and along the same East African coast, is very likely to exhibit the same trend. This is supported by the fact that the ocean dynamics of the two Kenya stations are closely intertwined. Somalia can expect a mean sea-level rise of about 50cm by the end of 2099 along the Indian Ocean coastline.

3.2. Impact of Climate Change in Somalia

Climate change has had a significant adverse impact on Somalia Natural ecosystem, and most evidently in the Arid and Semi-arid land (ASAL). ASAL, which comprise more than 80% of the Somalia landmass, are typically delicate ecosystems and the deficiency in investment in public services and goods in such areas significantly increases the country's susceptibility to climate change. The impact of climate change traverses a wide range of societal aspects, economy, and environment. The adverse effects of climate change can affect the economic, social, political advancement of Somalia's key precedence areas. The effects are evident as follows:

3.2.1. Impact on Food Security and Nutrition

Food security and nutrition in Somalia has been negatively affected by climate change, mainly due to land degradation and droughts. Climate calamities such as storms, floods, and droughts have the potential to destroy crops, key community assets and critical infrastructures such as dams, road and communication networks that are critical in food production and distribution. Somalia has one of the longest coastlines in Africa. Climate change has led to a rise in sea level with the potential to affect negatively livelihoods in the coastal areas and river deltas. Changes in climatic conditions have already affected food production. The rise in temperature will affect the quality and quantity of crop yields.

Across Somalia, food access is increasingly becoming a significant issue of concern. Climate change has already led to a rise in prices of major crops and staple foods. For the most susceptible population, lower agricultural production means lower income. Under such circumstances, the poor who have used

their income on basic needs, expense their income to address their nutritional requirement. Shifting climatic situations may lead to a vicious cycle of hunger and disease. Climatic changes influence nutrition because of its impact on dietary diversity, food security, and health and care practices. Additionally, climatic variability is increasingly producing frequent and intense weather events that upset food security strategies and result in a fluctuation in food availability, accessibility, and utilization. Hence, an all-inclusive developmental methodology with a medium to longer-term focus needs to be made to establish food security.

3.2.2. Impact on Livestock, Fisheries, and Agriculture

Crop production and livestock are the primary sources of livelihood for agro-pastoral communities in Somalia, with more than 70% of Somali depending on climate-sensitive pastoralism and agriculture. There is the need to find methodologies that can lessen the sensitivity of farmers to snowballing rainfall variability and unexpected increases in the global temperatures. Climate variations will negatively affect the fragile natural resources that support livestock, which is the backbone of the people and the economy of Somalia.

Rangeland degradation and progressive reduction of vegetation and other land degradation, compounded by frequent and recurrent droughts, adversely affect livestock production in the regions. Small-Scale farming practices depict the low economic base and the high vulnerability of Somalia populations to socio-economic and climatic shocks. Rising ocean acidification and temperatures are altering the aquatic ecosystems. Climate Change (CC) is transforming Somali's fish supply and yield of marine and freshwater species, hence adversely affecting the sustainability of aquaculture and fisheries. Therefore, the long-term adaptation planning of Somalia will integrate an approach to both drought and floods. The investment will be made to ensure that the country has early warning systems for daily monthly and seasonal prediction.

3.2.3. Impact on Environment, Water and Forestry

Climate change has had a significant adverse impact on Somalia's natural ecosystem. The decline in environmental quality has led to adverse economic and social impact leading to compromising of quality of life to the people who depend on the ecosystem. One of the most hard-hit areas is the Arid and Semi-arid areas due to their higher vulnerability index exacerbated by inadequate investment to build resilience and increase adaptation capacity.

Water is a scarce and critical resource that is under-developed in Somalia. The country is dominated by surface water resources (INC, 2018). The south of Somalia hosts the country's only two permanent rivers, the Juba and Shabelle. Groundwater resources (aquifers) are believed to exist though deep water

aquifers are not currently accessed. Shallow water aquifers and wells are accessed ad-hoc with little understanding of downstream hydrological impacts (INDC, 2015). There is currently no coordinated oversight and understanding of Somalia's water resources, access and supply. Hence, there is a need for a comprehensive assessment and understanding of the water resources (surface and underground) of the country and the impact of climate change on water. This policy intends to address those issues.

The vegetation in Somalia is predominantly dry deciduous bush land and thicket dominated by species of Acacia and Camiphora, with semi-desert grasslands and deciduous shrub land in the north and along much of the coast. In general, the vegetation becomes denser towards the south – much of the north-eastern part of the country is devoid of trees. The total forest coverage is around 14 per cent (90,000 km²) of the land (INC, 2018). Forest growth in general is limited due to poor soils and low rainfall, which are the effects of climate change.

3.2.4. Land Degradation and Desertification

Somalia is expected to experience a steady rise in temperature in the future. Generally, most of the challenges that the country faces arise from land degradation. Unfortunately, the adverse impact of climate change has exacerbated the rate of environmental degradation; hence, the need for the establishment of effective enforcement measures to implement laws and regulation that control the use of natural resources.

Land degradation in Somalia is caused by human activity such as overgrazing, tree cutting, and poor agronomic practices. Rangelands and other valuable resources are subjected to unsustainable use such as charcoal burning and illegal logging. Unsustainable deforestation contributes significantly to the increase in the greenhouse effect by reducing the carbon stock and destroying habitats that are essential in supporting biodiversity.

In addition, the hydrological cycle is negatively affected. Increase in floods and winds result in soil erosion, runoff and landslide, hence destroying livelihoods. Since a majority of socio-economic activities in Somalia depend on rainfall water availability, the country will face increased threats of climate extremes unless effective adaptation systems are initiated.

3.2.5. Impact on Health

Population health has been adversely impacted by climate change in Somalia. Somalia has a heightened risk of climate-sensitive infectious illnesses such as foodborne, waterborne, vector-borne disease. Vector-borne diseases such as RVF and dengue fever are common.

Generally, there is an increase in mortality of animals and humans, shortages of food lead to malnutrition particularly among children, mothers and youths, the rise in psychological disorders because of stress. Also, there are high cases of asthma, pneumonia and other respiratory diseases. High incidences of sunburn, dehydration, heat stroke, sunstroke, and heat exhaustion have also been reported. Floods and fires that may accompany climate change may lead to the destruction of health services, disease epidemics and overburdening of existing health facilities.

Therefore, the country will endeavour to improve health status through establishing and upgrading health facilities, expanding community level nutritional program, institute early warning systems for drought and food insecurity, and improve water quality. In addition, doctors and nurses may need more training on how to deal with climate-related health problems, establish waste management systems, and promote public health awareness campaigns.

3.2.6. Impact on Coastal Areas

Somali local communities depend on marine and coastal ecosystems, with a significant number of them practicing fishing or fishery-related activities. The increase in GHG and associated climate change will affect the chemistry and physical composition of Somalia coastal waters through a change in salinity, ocean temperatures, upwelling, chemical reactions, general cycles of various gases, the concentration of gases and solid suspension, and effects of UV and other solar rays due to ozone depletion. The rise in temperatures and sea levels, ocean acidification, and irregular precipitation pose significant challenges to the structure, health and functioning of the marine and coastal marine ecosystems such as mangroves, wetlands, coral reefs, and estuaries, which are highly susceptible to climate change.

Degradation of coastal environment leads to a decline in vegetative cover, the death of wildlife and the reduction in soil fertility. The many competing demands on coastal resources have led to depletion of forest cover, and the destruction of mangroves. The implementation of Somalia National Vision 2030 requires harnessing of increasing quantities of the already scarce natural resources due to urbanization, competition for resources, an increase in demand for healthcare, infrastructure, and energy. Therefore, Somalia will incorporate climate proofing planning, accounting, and execution systems to guarantee that the implementation of the 2030 strategy and any other development strategy does not exacerbate vulnerability to climate change.

3.2.7. Impact on Infrastructure

A well-developed and expanded infrastructure is an indispensable enabler of socio-economic development. Somalia's vision 2020 and 2030 aspires to achieve significant poverty reduction in the country by addressing economic and social marginalization, poor health and lack of access to education.

The principal natural resources for Somalia are water, land and minerals, coastal and marine resources, forests and woodland and biodiversity and wildlife. The main aim of vision 2030 is to increase investment in environmental protection, transport and communication, and energy supply. There is a need to identify the influence of climate change on the attainment of Somali's vision. One approach is to integrate climate change opportunities and threats in the design and management of the Somalis infrastructure. A different approach is to promote investment in infrastructure that enhances the makeover of a low carbon economy while at the same time creating employment opportunities. Reinforcing the sustainability of services and infrastructure means that in times of catastrophe, societies can continue to access sanitation and water services and that there are mechanisms in place to direct local governments.

3.2.8. Impact on Economic Development

Somalia is a low-income developing country (World Bank). Climate change represents a serious threat to the country's economic growth. There is clear evidence to show the adverse effects of climate change on Somalia's national economy, most specifically in the agricultural sector. According to the Somalia Drought Impact and Needs Assessment (DINA) report the drought in 2016/17 alone caused economic losses estimated at US\$3.25 billion (NDP, 2020-2024). A majority of Somali's rely on agriculture to sustain their livelihoods. However, agricultural productivity is significantly affected by climatic extremes such as droughts, floods, and famine. Large stocks of animals put enormous pressure on foraging land, triggering land dilapidation and spawning clashes over land ownership rights. In situations where there is a lack of regulatory measures, land, and water is a significant source of conflicts. The outbreak of diseases primarily in livestock makes Somalia lose significant income from agricultural exports due to ban impositions. Droughts have adversely affected water resources, hydroelectricity production, and farming sectors.

3.2.9. Impact on Migration

The adverse effects of climate change are affecting the living conditions of the Somali population, resulting in increased forced and voluntary environmental migration. Frequent recurring drought and floods and limited adaptative capacity, have already impacted on population movements in Somalia, contributing to both internal- and cross-border displacement. Predicted sea level rise as a result of climate change, is likely to further impact on population movements in coastal areas.

If not mitigated, natural resource competition caused by depletion of the Somali natural resource base, may further exacerbate tensions between communities and result in conflict-induced displacement.

CHAPTER 4

CROSS-CUTTING THEMES

Somalia recognises that the economic stability and resilience of the natural environment is key to coping with climate change. Developing national human and institutional capacity in all aspects of climate change (research, response, and planning) are essential. The cross-cutting issues are those topics which, by their nature, have a strong impact across all specific sectors and need to receive special attention. The cross-sectorial themes identified as critical in this policy document are: capacity building, research, technology and innovation, international cooperation, information and communication, education and public awareness and mainstreaming climate change.

4.1.Capacity-building

Climate change poses entirely new challenges to Somalia's existing capacities, and it is clear that people and institutions need to respond in new ways. Somalia has taken steps to address national capacity gaps, but still faces challenges around institutional capacity and knowledge. Given the wider impact of climate change, capacity-building needs to be rolled out to include the wider society, that is, the private sector, the media, non-governmental organizations and, above all, communities. There is a need to ensure that women have equal access to training and capacity-building programmes to ensure their full participation in climate change initiatives.

In order to strengthen the institution and human resource capacity and effectively address all aspects of climate change at national, state, provincial, district and local levels the policy is:

Policy Statements

- 1) Promote stakeholder participation and integration of climate change in natural resources management.
- 2) Promote capacity building in climate change response actions.
- 3) Facilitate implementation of capacity development programs in modeling and systematic observation.
- 4) Enhance monitoring and review of effectiveness of capacity-building programs.
- 5) Build capacity in developing technologies and utilization of external technologies.
- 6) Strengthen the capacity of local technological innovation centers.

4.2.Research and Technology

Research will play a significant role in Somalia's mitigation strategies, climate change adaptation, and intervention. Somalia requires investing in continuous research and technological advancement to be able to address current issues. Having sound and progressive research and technology systems will help the country to understand, identify and predict climate-related changes and institute cost-effective and efficient strategies. Somalia will need to put more resources and efforts in research development to help

determine the holistic influence of climate change to support policy formulation, legislation and technological interventions.

Application of sustainable technology is necessary for attaining low carbon climate resilient development whilst utilization of locally appropriate tools can help in the promotion of adaptive capacity and help sustain competent function when faced with adverse climatic conditions. There is a need for promotion and funding of research and capacity enhancement. It is proposed that initiatives by universities, research and development institutes should be supported.

To develop and promote appropriate technologies and build national capacity to benefit from climate change technological transfer, the policy is:

Policy Statements

- 1) Promote research and development (R&D) to address climate change.
- 2) Identify technology development and knowledge transfer needs to address and deal with climate change.
- 3) Promote and support the development of technologies for mitigation and adaptation interventions.
- 4) Promote removal of barriers of technology transfer.
- 5) Promote identification and utilization of climate-friendly technologies for mitigation and adaptation that meet low-carbon and climate-resilient development needs
- 6) Support higher learning/research institutions on climate related applied research.
- 7) Promote use of indigenous knowledge/local innovation on climate change.
- 8) Heighten the ability of the various stakeholders in developing and utilizing technological advancements.
- 9) Encourage and incentivize different stakeholders to promote Research and Development to enhance adaptation and mitigation measures to climate change.

4.3.Regional and International Cooperation

Somalia is emerging from a prolonged conflict and needs critical support from the region and beyond. The nations' needs include developing a critical mass of trained experts to help ensure the successful implementation of environmental policies and international obligations. While there has been progress on raising public awareness of the challenges posed by climate change, there is still a long way ahead to expand awareness, build the capacity of the nation to adapt and respond to the negative effects of climate change.

There is a need to develop close collaboration with counterparts in Ethiopia, Kenya and Djibouti (particularly Ethiopia since it is the source of Juba and Shabelle rivers). Equally, Somalia welcomes the support from the international community to address the impacts of climate change.

The aim is to ensure that international support for climate finance, programmes and projects work in the same way, to preserve Somalia's strong relationship with donors and synergies with international institutions and programmes.

4.4. Information and Communication

Somalia faces major challenges with information and data flow on climate change, including the quality of data, access to data, gathering, sharing and translation of that data. The research needs on climate change are significant, starting with the pressing need for better projections on possible impacts, backed by effective knowledge systems to inform strategy, planning and practice. The fundamental factor in managing climate change relies upon the ability to collect, analyze, access and utilize of information on impacts and vulnerabilities to establish adaptation and mitigation strategies. The government is cognisant of the need to gather, manage and use existing information in decision making.

Effective communication strategies influence accessibility to information. Somalia requires climate change information and knowledge management to enhance public participation and awareness. Effective strategies should be set up to guide climate-related data collection, storage, analysis, utilization, and dissemination.

Information on how to prepare for extreme climate change and weather impacts, which include floods and droughts, is scarce. Knowledge and awareness are critical factors in the effectiveness of preparation, response and recovering from environmental shocks and stresses.

Policy Statements

- 1) Facilitate climate change advocacy, communication and awareness.
- 2) Develop and implement an information generation and sharing mechanism for climate change.
- 3) Establish a coherent and effective communication strategy to boost the dissemination of credible and reliable information and research findings, regarding climate change to the public and all relevant stakeholders in a timely manner.
- 4) Establish strategies to promote access to climate change information such as mode of communication. Use of internet, mainstream media and traditional means of communication should be effectively integrated.
- 5) Institute approaches to gathering, documenting and application of indigenous and contemporary knowledge on climate change management;

- 6) Establish national and regional climate change hub to help in the management of climate change information. The centres should draw members from all stakeholders and relevant expertise.

4.5. Education and Public Awareness

Public education and awareness of climate change issues is an important strategy for ensuring participation and collaboration. Through awareness creation, particularly on climate change interventions, Somalia can promote the effectiveness of its approaches to climate change. Civic education and public awareness will encourage awareness and establish avenues for exchange and distribution of information.

Education and public awareness will promote climate change education, raise awareness and help build capacities for a range of stakeholders hence contributing to the national development process at all the levels of the governance structure in Somalia.

Policy Statements

- 1) Ensure that all stakeholders understand the effects of climate change in Somalia, its underlying causes, responses, and available approaches.
- 2) Promote involvement of local authorities and traditional leaders in climate change education/public awareness including indigenous knowledge.
- 3) Mainstream climate change concerns in education curriculums and put in place mechanisms of ensuring the development of suitably skilled professionals to handle specific technical challenges associated with climate change.
- 4) Promote public awareness through formal, non-formal and informal education about environmental issues.
- 5) Raise understanding and awareness of climate change-related issues across all sectors and at all levels in Somalia.
- 6) Incorporate climate change and gender in training programs and education curriculum and improve environmental knowledge and empowerment of women groups.

4.6. Mainstreaming Climate Change

In Somalia, where the environment is the foundation for nation building and livelihood development, environmental aspects like climate change need to be mainstreamed across all sectors. Only then can the objectives of the policy be achieved.

Policy Statements

- 1) Outline mechanisms and tools for mainstreaming climate change responses into all Federal and State planning;
- 2) Mainstream climate change into the federal government, state, regions, and districts, and local level planning processes, including national development policies and plans and state development plans;
- 3) Establish the institutional framework and build capacity to coordinate and enhance mainstreaming at all the sectors of the economy.
- 4) Integrate climate change-related issues into economic policies and action plans that address the needs of vulnerable groups.

CHAPTER 5

SECTORS & POLICY INTERVENTIONS

Climate change will have profound effects on key sectors of Somalia's economy. It is expected that the projected changes in climate will impact on the performance of the following key sectors, among others: Agriculture, livestock, Water, Marine Resources, Forestry and Biodiversity, Infrastructure and Cities/towns (INC, 2018). In this regard, specific policies to develop and strengthen adaptive capacity in all these key sectors within the context of climate change are needed.

5.1. Adaptation

Climate change adaptation is of great importance to Somalia and other countries that are experiencing the effects of this phenomenon. Somalia's contribution to GHG emissions is very insignificant, yet the country has suffered the brunt of climate change in recent years especially through the increased frequency of droughts and floods. These make climate change adaptation a necessity for Somalis. Although Somalia has a low adaptive capacity to climate change, the following policy actions will be taken in the selected key sectors.

5.1.1. Climate-resilient Agriculture

Agriculture is one of Somalia's most climate sensitive sectors given the close relationship between levels of agricultural production and rainfall. There are no official statistics on the sector, but crop production is second after livestock (NDP, 2020-2024). Somali farmers are dependent on rainfed agriculture making them highly vulnerable to climate change induced weather extremes, variability and climate change impacts. For adaptation to be effective, it is important to understand the vulnerability of the agricultural sector to climate change and variability. In this regard, the Government shall:

Policy Statements

- 1) Launch and improve research activities in climate-smart agriculture
- 2) Promote capacity-building for farmers and build awareness on climate change issues
- 3) Develop climate-resilient cropping and strengthen the capacity to identify and promote adoption of improved seed and crop varieties that are tolerant to climate related stresses.
- 4) Promote diversified land use practices, including agro-forestry, dry-land farming, urban/backyard vegetable production, beekeeping, poultry production, to reduce risk and increase the capacity of farmers to cope with droughts and floods;
- 5) Promote appropriate technologies for small-scale irrigation, water re-use and water harvesting (e.g., waste/water recycling), rainwater harvesting, etc.
- 6) Develop drip irrigation that will reduce the amount of water needed for irrigation as well as other water conservation techniques;

- 7) Promote irrigation and water use efficiency in agriculture including adequate assessment of irrigation potential and irrigation demand under climate change.
- 8) Promote the use of organic fertilizers instead of chemical fertilizers.
- 9) Institute risk transfer schemes (e.g., insurance) against local supply changes, harvest failure or weather risk
- 10) Improve post-harvest capacity, e.g., storage and processing facilities and infrastructure
- 11) Build capacity for recycling and conversion of agricultural waste
- 12) Undertake comprehensive analyses to understand barriers to adaptation to climate change, including human, institutional and financial barriers.
- 13) Establish and strengthen early warning systems on cropping season quality, rangeland condition, droughts, floods, and disease/pest outbreaks in order to enhance farmer preparedness.

5.1.2. Livestock Sector

Livestock has been and remains the backbone of the Somali economy, in terms of GDP contribution, domestic consumption and foreign currency earnings. Indeed this has been the case for centuries and remains the traditional repository of household wealth and social prestige in Somalia. Livestock alone provides 75 percent of total exports by value and is an important source of livelihood for a large part of the country's population. The vast majority of Somalia's population also depend on livestock and its products (NDP, 2020-2024).

Policy Statements

- 1) Modernize traditional livestock rearing systems to build resilience to climate change.
- 2) Provide capacity building for livestock keepers. There is a need to improve the capacity of livestock producers and herders to understand and deal with climate change increasing their awareness of global changes.
- 3) Enhance livestock management systems. Efficient and affordable adaptation practices need to be developed for the rural poor who are unable to afford expensive adaptation technologies. These could include provision of shade and water to reduce heat stress from increased temperature
- 4) Identify and strengthen local breeds that have adapted to local climatic stress
- 5) Improve local genetics through cross-breeding with heat and disease-tolerant breeds
- 6) Work towards a better understanding of the impacts of climate change on livestock, developing new breeds and genetic types, improving animal health and enhancing water and soil management would support adaptation measures in the long term
- 7) Establish early warning systems and other forecasting and crisis-preparedness systems

- 8) Enhance disease control & animal health
- 9) Breed feed crops & forage resistance to drought and heat
- 10) Develop and strengthen the implementation of drought management framework for livestock sector.

5.1.3. Water Sector

Climate change is mainly evident by its effects on water resources availability patterns. Water is scarce in many parts of Somalia and climate change has exacerbated the situation. To adapt effectively, climate-resilient water sector policies and investments are needed. In this regard, the policy is:

Policy Statements

- 1) Support the protection of river catchments and other sources of freshwater to secure a steady supply of freshwater across all sectors and communities.
- 2) Facilitate and promote water recycling, reuse and efficiency to secure steady supply of freshwater.
- 3) Prioritize community level infrastructure including berkedes, shallow wells, and ponds.
- 4) Gather and monitor data related to the ground and surface water resources to ensure quality and access to clean water.
- 5) Undertake comprehensive hydrological analyses to understand vulnerability levels and identify potential adaptation actions for Somalia.
- 6) Periodically review existing national and water-related sectoral policies (such as agriculture, energy, environment) to ensure that they adequately address climate-related challenges.
- 7) Develop a National Water Resources Management Master Plan, which explicitly integrates climate change.
- 8) Ensure climate change is incorporated in water resources infrastructure design.
- 9) Ensure improved water supply for livestock, wildlife and environment in line with the changing climate.
- 10) Promote water harvesting for domestic, animal, agriculture and industrial use.
- 11) Establish and strengthen water diplomacy and support transboundary water management and collaborate with neighbouring countries.
- 12) Strengthen the use of Geoinformation Science (GIS) and Earth Observation Technologies in water resources assessment.
- 13) Develop and introduce flood and drought monitoring and control systems

5.1.4. Marine Resources

Somalia has the longest coastline of continental Africa, approximately 3,333 km extending from the western passage of the Gulf of Aden to the Indian ocean up to the border with Kenya. The country, therefore, has a very substantive Exclusive Economic Zone (EEZ), estimated at 825,052 square kilometres covering one of the richest fishing grounds in the region (NDP, 2020 – 2024).

Policy Statements

- 1) Improve early warning and forecasting systems for severe weather events.
- 2) Invest in safer harbours and landing measures to improve safety at sea due to increased storm severity
- 3) Provide capacity building to civil society, non-governmental organizations (NGOs), and government organizations in climate change planning. Partnerships between private, public, civil society and NGO sectors are vital for holistic climate change adaptation planning.
- 4) Design and implement programmes on fisheries management and disease control
- 5) Enhance community awareness on coastal disasters and necessary action; plantation and regeneration of mangroves for the purpose of buffering coastal communities from storm surge and coastal erosion.
- 6) Enhance plantation and regeneration of mangroves and coastal forests.
- 7) Develop of salinity-tolerant crop cultivars

5.1.5. Forestry and Biodiversity Sector

Prior to the civil war, Somalia's forestry sector contributes 2.5% of the national GDP and many people depended on forestry resources for their livelihoods. In 1985 Somalia was the world's largest source of incense, and produced over 2,000 tones. Likewise, Somalia has been the evolutionary center of fauna and flora adapted to the climate conditions of the country. There was an abundance and diversity of wildlife and the country had a reputation of being one of the best wildlife havens in Africa. Climate change, among other things, have had severe impact on forestry and biodiversity. The policy is:

Policy Statements

- 1) Conserve and enhance forestry resources which act as both sinks and reservoirs of greenhouse gases.
- 2) Strengthen afforestation programmes (re-plant forest lost) that promote drought and heat tolerant tree species.
- 3) Strengthen research capacity in forest ecosystem resilience to facilitate adaptation efforts to climate change.

- 4) Promote research to reduce the existing gaps in knowledge on forest ecosystems and climate change.
- 5) Conserve and rehabilitate species that are near extinction and sustain their adaptive capacity.
- 6) Strengthen framework for Reducing Emission from Deforestation and Forest Degradation (REDD+) and other financing mechanisms.
- 7) Strengthen enforcement and other measures to reduce deforestation and forest degradation.
- 8) Support research to enhance understanding of climate change impacts on wildlife and adaptive management planning for key wildlife species.
- 9) Monitor and reduce the prevalence of invasive plant species.
- 10) Strengthen the use of Geoinformation Science (GIS) and Earth Observation Technologies in forest and biodiversity assessment.

5.1.6. Infrastructure

Infrastructure plays a critical role in building resilience to climate change. Somalia's infrastructure has been destroyed in the conflict. The country is taking steps to rebuild infrastructure. Climate change has impacts on infrastructure such as roads, dams, power distribution lines, homes and settlements. Coastal infrastructure also requires interventions such as coastal and sea defence walls to decrease their vulnerability to sea level rise.

The direct impacts of floods, droughts, landslides, and other climate hazards may also affect infrastructure directly. Although investments required for infrastructure projects are initially high, those that are robust enough to withstand adverse climatic pressures can result in major financial benefits in the long term. It is imperative for infrastructural designs to take into consideration climate change. The policy is:

Policy Statements

- 1) Develop climate proofed and environmentally sustainable transport infrastructure.
- 2) Develop capacity among technical staff to adapt infrastructure plans to climate change.
- 3) Conduct research on appropriate infrastructure design standards that meet higher requirements against extreme weather-related natural hazard events.
- 4) Ensure climate resilience in the infrastructure sector, including improved use of weather and climate information in infrastructure planning and development, and research to identify and designs materials that enhance the resilience of infrastructure.

- 5) Major infrastructure projects such as roads, airports and sea ports should be subjected to climate risk screening as part of the planning process.

5.1.7. Urbanization: Settlements

Somalia has one of the highest urbanization rates in the world. For nearly three decades, the Somali urban landscape has been largely unregulated. Cities & towns are a bundle of casually and haphazardly laid-out buildings. Authorities have limited power to guide and control the settlement process (UN HABITAT, n.d).

On the other hand, the rural population continues to migrate to the cities, putting pressure on services and infrastructure. During the drought of 2017, over 680,000 people were displaced and most of them moved to urban areas (World Bank, 2017). The vulnerability of the urban population, particularly the urban poor escalated due to pressure from urbanization. There is increased competition for scarce resources. Urban areas need to be able to deal with stresses and shocks related to drought, floods and insecurity. a well-structured urban context is needed to help adapt to stresses caused by climate change.

Policy Statements

- 1) Ensure that local authorities adopt climate proofed settlement designs.
- 2) Provide enabling policy environment to ensure climate resilience in urban planning, construction and management.
- 3) Conduct assessment for hazard mapping, risk reduction and vulnerability of urban settlements in flood-prone areas.
- 4) Integrate adaptation into human development programmes for resilient building, with particular focus on the poor and vulnerable groups through upgrading informal settlements and improved living conditions for all.
- 5) Promote incentives for commercial and public buildings to use energy efficient lighting and appliances;
- 6) Develop and support for improved water supply and waste management systems for cities that include recycling facilities and landfills with methane recovery for electricity generation.
- 7) Make installations of wastewater treatment plants an integral part of all sewerage schemes. Ensure separate collection, disposal and re-use of recyclable, composite and biodegradable waste preferably at source.
- 8) Monitor rural-to-urban migration and develop infrastructure and support facilities in smaller agro-based towns and periphery urban areas in order to reverse rural-urban migration.
- 9) Develop and implement proper “spatial Land Use Planning” which considers existing and predictions of climate change.
- 10) Regulate industrial development in urban designated areas through land use planning.

5.2. Disaster Preparedness and Response

Somalia is experiencing an increasing number of extreme weather-related hazards such as floods, droughts, cyclones. Climate change intensifies the risk of climate-related disasters and leads to increased loss of lives, livelihoods and assets of the country. Disaster preparedness and response strategies increase the resilience of social systems by minimizing the risk of exposure to future hazards, and reducing the vulnerability of communities and their property. Effective disaster management measures protect vulnerable communities and improve their resilience to losses associated with the direct impacts of floods, droughts, storm surges; as well as to indirectly caused disasters such as loss of harvest, disease outbreaks, health epidemics and conflicts over natural resources.

Policy Statements

- 1) Establish National Metrological Authority to provide early warning on adverse weather conditions in order to lessen climate-related hazards such as floods.
- 2) Improve hydro-meteorological observation networks to provide better climate data and information, and communicate early warning of natural hazards.
- 3) Improve the disaster preparedness and response mechanism by enhancing the institutional capacity of agencies engaged in disaster risk response and management. Improve awareness and provide skills training to ensure preparedness in managing and responding to disasters;
- 4) Improve technical capacity and facilities for rapid response to disasters and disaster management.
- 5) Encourage partnership among government and non-governmental agencies and strengthen their capacity to respond in emergencies.
- 6) Construct proper drainage systems, floodways, dikes, dams, riverbank protection, buffer zones, and undertake afforestation along embankments and other measures to reduce flooding.
- 7) Construct channels, water collecting reservoirs and dams to contain floods and store water for the dry season.
- 8) Encourage relocation of settlements and economic activities from climate-related disaster-prone areas.

5.3. Mitigation

The country's focus is mainly on adaptation to climate change. However, this does not make mitigation irrelevant. Somalia's contribution (62.92 Mt CO₂ as at 2015) to the total global GHG emissions is marginal, representing less than 0.12 percent of total global emissions in 2015. Of the 62.92 Mt CO₂ in 2015, about 96 percent of GHG emissions came from the Agriculture, Forestry and Land Use (AFOLU)

while the Energy and Waste contribute 3 percent and 1 percent respectively and the Industrial Processes and Product Use (IPPU) sector is not considered significant (INC, 2018).

As Non-Annex I Party to the United Nations Framework Convention on Climate Change (UNFCCC), Somalia is not obliged under the Convention to reduce its greenhouse gas (GHG) emissions (Ibid). The three main gases (GHG emissions) are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). This section outlines the policy directions for reducing emissions and enhancing removals by sinks of GHG.

5.3.1. Energy

GHG emissions from energy sector activities in Somalia are primarily driven by the combustion of fossil fuels used for generating electricity and energy for transportation, manufacturing, construction, residential, and institutional energy users. Somalia's Energy sector emissions profile is similar to that of the least developed countries. Carbon dioxide (CO₂) and methane are the most significant contributors to Somalia's GHG emissions, accounting for 49% and 44% respectively in 2015. The majority of the CO₂ emissions result from the combustion of fuels for transport and manufacturing/construction while most of the methane is resulting from the utilization of biomass energy resources. Nitrous oxide (N₂O) emissions arise from activities such as transport and other combustion of fuel accounted for 7% of Somalia's emissions in 2015 (INC, 2018).

Somalia has very low energy efficiency. Therefore, the needs to enhance or promote energy efficiency and alternative energy sources that contribute less to GHG emissions. The policy is:

Policy Statements

- 1) Promote renewable energy and adoption of energy efficient technologies and practices across all socio economic sectors of the economy and the built environment.
- 2) Foster other sources of transportation that do not contribute or have less GHG emissions by introducing an improved public transportation system.
- 3) Improve road and rail infrastructure for efficient transportation of goods and people.
- 4) Promote research, development, adoption and deployment of robust, gender-sensitive, sustainable green technologies.
- 5) Promote cleaner fossil fuel technologies and access to clean and affordable energy.
- 6) Enhance monitoring reporting and verification systems based on appropriate methodologies to account for GHG emissions in the energy sector.
- 7) Establish and regularly update a national inventory of anthropogenic emissions by sources and removal by sinks of Greenhouse Gases (GHGs).

- 8) Establish a monitoring, reporting and verification (MRV) framework for monitoring GHG inventories towards compliance with NDCs requirements a year before global reporting.

5.3.2. Agriculture

Agriculture is wide and includes sub-sectors like crops, livestock and fishing. Agricultural activities include: cropland management, grazing land management/pasture improvement, management of agricultural organic soils, restoration of degraded lands, livestock management and manure/biosolid management. All these activities are potential emitter or sequester of greenhouse gasses. The major GHGs emitted is Methane (CH₄), mostly from manure. Most of the emissions in Somalia in agriculture comes from the livestock sub-sector. The main sources of the emissions are from: enteric fermentation; animal wastes (INC, 2018).

The agricultural sector supports households and national food self-sufficiency. The Somali economy heavily relies on this sector. To reduce negative pressure on the environment and mitigate GHG emissions, the policy is:

Policy Statements

- 1) Enhance and properly coordinate the management of agricultural wastes.
- 2) Improve animal feeding management
- 3) Adopt proper manure management (collection, storage, spreading).
- 4) Regulate grazing intensity to enhance carbon sequestration.
- 5) Support and encourage farmers by providing tools, training on soil fertility management, pest management and production of organic fertilizer.
- 6) Use solar and wind water pumps for irrigation and watering of livestock to replace the use of diesel and petrol generators
- 7) Develop measures and policies for use of degraded land for agriculture in order to reduce impacts and pressure on forest lands, which in turns will increase the country's carbon sink potential and reduce emission level.
- 8) Reduce the contribution of agriculture to GHG emission while improving its role as a carbon sink.
- 9) Maintain fishing boats and use efficient engines and clean fuels in engines.

5.3.3. Land Use and Forestry Sector

The main land-use categories in Somalia are agricultural land (cropland), rangelands, forests and settlements (rural and urban areas). The forestry sector is very important in GHG emission reduction through emission removals (carbon sink) as well through land management. The land under forest provides a wide range of ecosystem services including mitigation of climate change. Deforestation and

conversion of forest land to other uses increase emission. Demand for land for agriculture and expansion of cities/towns are on the rise. The government should halt or reduce conversion of forests to other land uses. The Policy is:

Policy Statements.

- 1) Reduce greenhouse gases emission from forestry burning and land use changes.
- 2) Develop and facilitate the adequate management of forests by strengthening forest governance and institutions, including wildlife, to ensure better stewardship
- 3) Strengthen national capacity to control charcoal and implement the National Charcoal Policy in order to reduce GHG emission, deforestation and land degradation as well as wildlife degradation.
- 4) Promote the establishment of rangelands and plantations in order to mitigate and improve carbon sinks.
- 5) Provide incentives for activities relating to emission reduction from deforestation, land use changes and forest degradation
- 6) Promote the development of REDD+ activities across Somalia's forest landscapes.
- 7) Build a national carbon registry and accounting system as well as clarify the issues of carbon rights, ownerships, and tenure.
- 8) Promote activities which enhance carbon density, such as reforestation, afforestation and agroforestry initiatives across the country, which also brings benefits to reduce the stress and pressure on natural forest and ecosystems.
- 9) Ensure the sustainable use of forest and wildlife resources to contribute to the livelihoods of the rural communities as they adapt to climate change, and to contribute also to mitigation.

5.3.4. Industry

After the collapse of the central government (post-1991), Somalia's factories were looted and destroyed. The current manufacturing sector comprises of light industries. Hence, emissions from the Industrial Processes and Product Use (IPPU) sector is considered insignificant (INC, 2018). However, as the country stabilizes and develops, emissions will rise. Thus, the best approach now is to adopt a forward-thinking policy and choose low carbon development path. The Policy is:

Policy Statements

- 1) Promote reduction of GHG emissions from industries (e.g. major construction, mining, manufacturing).
- 2) Ensure that the future industrial base of Somalia will not be locked into carbon emitting technologies but rather develop on environment-friendly, economically viable and socially acceptable basis, so that it will be competitive in domestic and world markets.

- 3) Explore, adopt and enhance cleaner and efficient production practices and technologies.
- 4) Promoting diversification of energy sources and fuel switching technologies.
- 5) Promote low carbon mix of power generation for local and national grid.
- 6) Establish a system for promoting green industry in private sector investment.

5.3.5. Waste

The GHG emissions from the waste sector result from the anthropogenic activities which include treatment and disposal of wastes. Waste sector emissions are: methane, carbon dioxide and nitrous oxide emissions resulting from the decay and treatment processes. The majority of the Methane emissions result from solid waste management and wastewater treatment and discharge. The Nitrous oxide (N₂O) emissions arise from activities related to wastewater treatment and discharge in 2015. Carbon dioxide forms only less than 1% of the emissions from the waste sector resulting from open burning of waste.

Policy Statements

- 1) Improve waste management and control harmful emissions following the Polluter Pays Principle.
- 2) Promote waste reduction, reuse and recycling as a top priority across all sectors, to reduce overall resource use and increase resource efficiency.
- 3) Promote fuel or energy generation from waste.
- 4) Improve the management of existing waste disposal facilities to control GHG emissions.
- 5) Improve monitoring systems based on appropriate methodologies to account for GHG emissions in the waste sector.
- 6) Reduce methane from landfills through waste reduction and recycling
- 7) Improve the status of environmental sanitation through strengthening of institutions and enforcement of laws.
- 8) Promote private public partnership and other ventures that attract financing for infrastructure investments in the waste sector.
- 9) Expand equitable access to environmentally-friendly and sustainable waste management and sewerage systems – including for the poorest and most vulnerable communities.

5.4.Social Dimension of Climate Change

The capability of social groups to adapt to and mitigate climate change depends on physical, socio-economic, gender, health and other social factors. Climate change increases the vulnerability of the poor in the areas of water supply, exposure to disease and increasing sensitivity of livelihood activities. Marginalised groups such as poor women, the aged, the physically challenged and children are at risk of being most affected by climate change and variability due to insufficient access to basic resources.

The social dimension, which influences physical and economic dimensions, propels vulnerability to climate change.

5.4.1. Health

Good health is a pillar of Somalia's development. Climate change will have direct and indirect impacts on human health. Diarrhoeal diseases such as cholera are driven by poor sanitation in areas burdened by inadequate sanitation; these drivers could be exacerbated by climate change. Increases in frequency of cholera outbreaks have been observed during rainy seasons as a result of runoff into surface water sources, and during dry periods as a result of limited water supplies leading to use of unsafe sources. Floods also affect access to safe water by contaminating and/or limiting access to safe sources.

Indirect impacts on health include potential increases in injuries, hunger and malnutrition as a result of droughts and other extreme weather events. Systems need to be put in place to minimize the direct as well as the indirect impacts of climate change on human health and livelihoods, as well as improve resilience in the face of unavoidable change.

For adaptation to be effective, it is important to understand the vulnerability of the health sector to climate change and variability. The policy:

Policy Statements

- 1) Strengthen surveillance programmes for monitoring human health under a changing climate, particularly operational knowledge on climate-disease relationships.
- 2) Understand the impacts of climate change on women, children, youth and people living with disabilities in Somalia and create an enabling environment that prevents harm to these vulnerable groups emanating from pressures of these impacts.
- 3) Enhance provision of Geographic Information Science and Earth Observation based early warning systems on droughts, floods and disease outbreaks to vulnerable groups and ensure coordinated approaches in providing emergency services.
- 4) Establish community health groups and development of capacity to identify health risks and facilitate access to services and decision makers
- 5) Strengthen technical capacity to manage climate-change-related health risks
- 6) Improve data sharing and develop health information management systems for diseases including climate-sensitive diseases at all levels of the health delivery system
- 7) Map disease incidence and identification of vulnerable groups for climate-sensitive diseases
- 8) Strengthen existing units within the health delivery system to manage climate-related epidemics
- 9) Mainstream climate change health risks into decision-making at local and national health policy levels

- 10) Identify, document and incorporate climate-relevant traditional knowledge into health delivery systems and practices
- 11) Develop structures to effectively manage and disseminate information on climate change health risks.

5.4.2. Human Rights

The NCCP recognises the fundamental rights of mankind. It also recognises the prediction that the most severe effects of climate change will be felt by the poor in general (rural and urban poor), women, people living with disability, the elderly, children and marginalised groups/ individuals. Therefore, the policy is:

Policy Statements

- 1) Advocate and practice human rights-based development in accordance with national and international law at all times during implementation of climate change response activities.
- 2) Ensure the vulnerable groups (stated earlier) are empowered to effectively and adequately adapt to the impacts of climate change.

5.4.3. Gender Issues in Climate Change

Gender equality is an important precondition for successful climate change adaptation and mitigation responses and equitable social development. Policies that support gender equality in access, use and control over science and technology, formal and informal education and training will enhance the nation's capability in disaster reduction, mitigation and adaptation to climate change.

There is a need to take into account social and economic conditions and other relevant factors. Gender equality, including equal participation of women and men as well as allowing for the differentiated impacts on women and men from climate change and its response measures, should be taken into account in line with various national policies on women's rights and gender equality. Gender equality is essential to the successful initiation, implementation, monitoring and evaluation of climate change policies. There is a need, therefore, to ensure that climate change and disaster risk reduction measures are gender responsive, sensitive to local knowledge systems and respect human rights. Women's right to participate at all levels of decision-making must also be guaranteed in climate change policies and programmes.

Policy Statements

- 1) Ensure the integration of gender equality principles in all social policies such as education, health, water and sanitation

- 2) Generate gender-specific information including sex-disaggregated data for determining the gender impacts of climate change
- 3) Develop effective gender and climate change goals and gender-sensitive indicators
- 4) Collaborate with CSOs, especially women's rights organisations and coalitions, in climate change discussions and processes
- 5) Build the capacity of the relevant institutions to mainstream gender issues into climate change policy formulation, planning, monitoring and evaluation
- 6) Identify and analyse gender-specific needs, impacts, protection and support measures related to climate change and variability such as floods, droughts and diseases
- 7) Promote gender equitable financing as a means of responding to the differential impacts of climate change by gender. This will require establishing clear mechanisms for integrating a gender dimension into the design, implementation and monitoring of all climate funds
- 8) Increase the resilience of vulnerable groups, including women and children, through the development of community-led adaptation, livelihood diversification, better access to basic services and social protection (safety nets, insurance)
- 9) Promote effective and equal participation of men and women in climate change policy and decision-making processes
- 10) Strengthen the implementation of gender responsiveness in disaster risk management.

5.4.4. Employment and Climate Change

Somalia has a predominantly young population, with over 80 percent estimated to be under the age of 35. The country has one of the highest rates of youth unemployment in the world; approximately 70 percent (NDP, 2020-2024). The unemployment situation could severely be worsened by climate change. Climate change can also feed conflict in Somalia by creating disputes over already-scarce resources. Similarly, there is a relationship between the proliferation of armed groups (mainly al-Shabaab) and the severe droughts in Somalia. The group has been successful in attracting young people who are affected by famine and food insecurity and who face no job prospects.

On the other hand, the rise in global temperatures caused by climate change will also make the phenomenon of “heat stress” more common. Heat stress endangers the safety of workers and reduces their productivity, especially for workers in agriculture and construction sectors and laborers. The negative effect of rising temperature on labour productivity is very pronounced in Somalia. Somalia is projected to lose more than 5 per cent of total working hours due to heat stress by 2030, a productivity loss equivalent to more than 172.000 full-time jobs (Borino & Saget, 2019).

Therefore, urgent steps are needed to be taken to reduce Somalia's vulnerability to climate and economic shocks. Climate change responses that improve resilience could positively impact employment in Somalia. For example, adaptation could create new jobs to which workers can migrate from sectors affected by mitigation interventions. The policy is:

Policy Statements

- 1) Conduct National Employment Vulnerability Assessment (NEVA). The NEVA will assess the impact on jobs of climate change and climate change responses by sector and location to understand which jobs will be lost, jobs created/will be created in new sectors and what job-related interventions may be required to ensure net job creation or at least reduce negative impact.
- 2) Adopt a pro-jobs approach in the climate change response measures (adaptation & mitigation). This is to limit employment contraction to those areas of the economy where excessive carbon intensity is considered unsustainable, whilst promoting and expanding the green economy sectors.
- 3) Build a skilled and capable workforce by developing and funding mentorship (including internships) and skills development programmes.
- 4) Promote job creation incentives in new, green industries, especially targeting the youth.
- 5) To cope with shocks and vulnerabilities, develop a social protection system and build institutional capacity to implement such a program.
- 6) In alignment with the National Employment Policy and relevant labor regulations, cover employees by employment insurance scheme.
- 7) Launch and expand poverty alleviation job creation programmes (e.g. National Youth Service).

5.4.5. Climate Change and Migration

The drivers of migration, among other things, are: economic, social, insecurity and environmental challenges. Climate change is expected to exacerbate these drivers of migration with the potential to increase the volume of out-migration in particular from rural to urban areas.

According to the UN (2020), an estimated 2.6 million people have been displaced in Somalia. While conflict and insecurity have been the main drivers of internal displacement, climate change is contributing to the displacement of people as the country have faced recurrent droughts and floods that have destroyed livelihoods. The majority of people have self-settled in IDP sites in urban and peri-urban areas across the country. People displaced to these sites are living in harsh conditions. These IDPs put pressure on the scarce resources, basic services and limited opportunities in urban areas which in turn fuels international migration.

Policy Statements

- 1) Promote vocational training, especially for youth, in places with high likelihood of receiving in-migration
- 2) Invest in agriculture in vulnerable areas, such as developing crops and livestock that are pest and drought resistant, early yielding and promote irrigation, to help curb rural-urban migration
- 3) Facilitate movement between source and destination areas through improved transport systems
- 4) Promote alternative livelihood programmes to develop skills among rural dwellers
- 5) Mainstream migration into national development frameworks.

CHAPTER 6 CLIMATE CHANGE GOVERNANCE

6.1. Institutional Arrangement

Climate change is an issue that has impacts at global, regional, national and local levels. Therefore, its governance should be considered and mainstreamed at national, state, provincial, district and community levels in both urban and rural settings. There are several institutions that have different mandates that may directly or indirectly impact on climate governance. This section deals with those institutions and their roles.

6.1.1. State Institutions & Committees

To address the impact of climate change, it is important to have a functioning institutional structure to coordinate and implement climate change initiatives across all sectors at the national and sub-national levels. An effective institutional arrangement seeks to establish the political basis and technical knowledge through which climate related risks are addressed. This is done by considering the appropriate institutional arrangements that might be effectively developed to meet the challenge associated with climate change. Therefore, this policy identifies relevant institutions and establishes appropriate committees at national and sub-national levels.

At the Federal level, the following national ministries, their departments and agencies are identified to have a critical role in implementation of the policy;

Designated National Authority (DNA)

1. Ministry of Environment and Climate Change

Sectoral Ministries

2. Ministry of Energy and Water Resources;
3. Ministry of Agriculture;
4. Ministry of Fisheries and Marine Resources;
5. Ministry of Livestock, Forestry and Range;
6. Ministry of Natural Resources and Petroleum;
7. Ministry of Public Works, Housing and Reconstruction (incl. roads authority)
8. Ministry of Ports & Marine Transport
9. Ministry of Transport & Civil Aviation
10. Ministry of Post & Telecommunication
11. Ministry of Health
12. Ministry of Education
13. Humanitarian Affairs & Disaster Management Authority

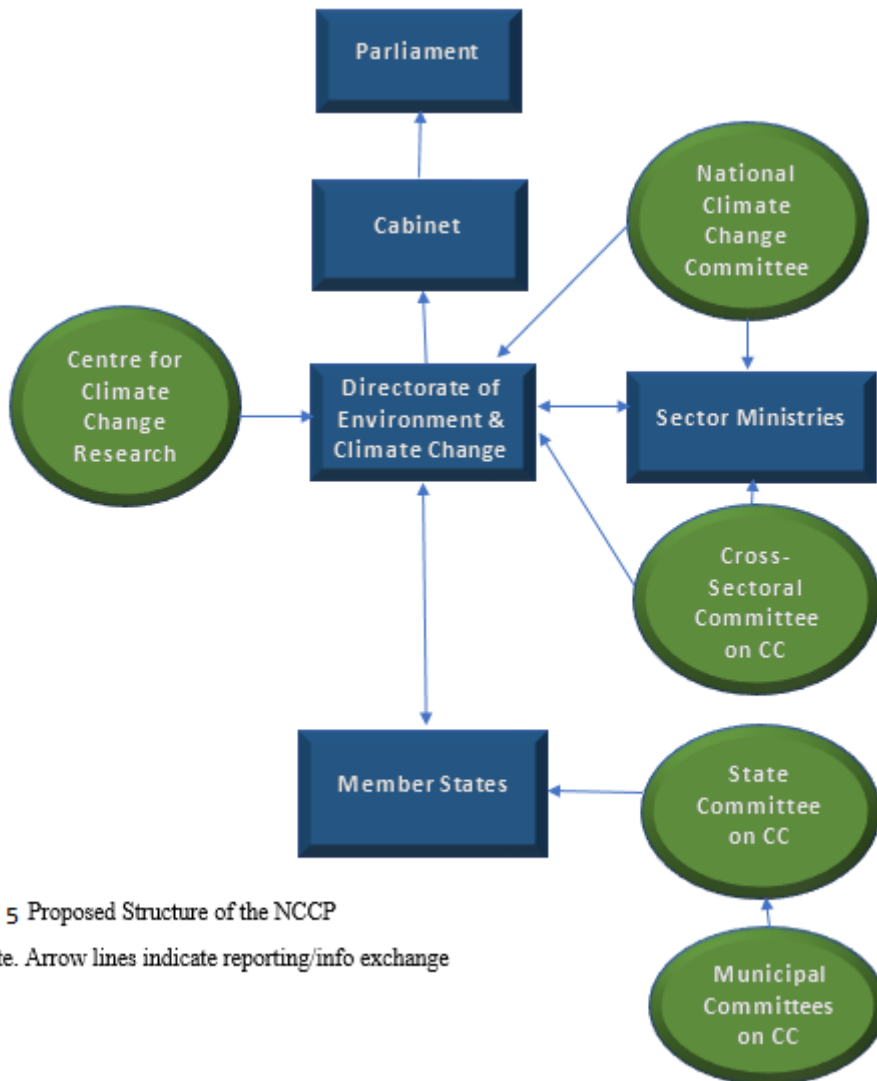


Fig 5 Proposed Structure of the NCCP

Note. Arrow lines indicate reporting/info exchange

The Ministry of Environment and Climate Change¹

The Ministry is the Designated National Authority for environmental management including climate change. The Ministry is charged with the responsibility to ensure the sustainable use, management and protection of the environment and its natural resources.

Based on its mandate, the Ministry will foster participatory partnerships and will coordinate, along with other ministries and agencies, the full implementation of the policy. It will chair the both the National Climate Change Committee and Cross-Sectorial Committee on Climate Change. The Ministry reports to the Cabinet, which in turn reports (annually) to the Parliament (House of the People).

The primary roles of the Ministry are as follows:

- Provide leadership and strengthen climate change governance in Somalia;

¹ Note: In figure 5, the Directorate has been replaced by the Ministry of Environment and Climate Change

- Partner and coordinate with other stakeholders to ensure that the policy objectives are achieved;
- As the Designated National Authority (DNA), take part in the negotiations of International Climate/Environmental conventions/agreements;
- Establish a Technical Monitoring & Evaluation Committee (TMEC) to follow up the implementation of the Policy;
- Establish a monitoring system for gathering information and reporting progress on the implementation of the policy interventions;
- Prepare periodic reports regarding the state of climate change in the country;
- Preparation and submission of reports to UNFCCC Secretariat.
- Promote formal & non-formal climate change education programs in cooperation with the Ministry of Education;
- Provide advice and support to federal member states regarding climate change;
- Provide advice to government organs (e.g. sectoral ministries) regarding the discharge of their obligations under the Policy.

National Climate Change Committee (NCCC)

The NCCC has the mandate for coordinating and supervising the implementation of the climate change policy. The NCCC is a multi-stakeholder, high level policy coordination committee and is responsible for the overall climate change activities in Somalia. It comprises the Prime Minister (or his designate), DG of the Ministry of Environment & Climate Change, Sectoral Ministries, Directors of Governmental Agencies, Member States' Ministers for Environment, the private sector and civil society organizations.

The primary roles of the NCCC are as follows:

- Supervise and provide overall coordination, at policy level, to accelerate the implementation of the policy.
- Validate and secure government support for the implementation of the climate change policy.
- Adopt measures and take appropriate actions necessary for achieving the objectives and goals of the policy.
- Report annually on progress made towards implementation of the climate change policy.

Cross-Sectoral Committee on Climate Change (CSCC)

Sectoral Ministries are responsible for sector-specific implementation of activities at national level. The CSCC encompasses all sectors (Sectoral Ministries listed above) which are said to have stake in the policy implementation. It will bring together the officials from across government working on climate

change; for information exchange, consultation, agreement and support among the spheres of government regarding climate change and government's response to climate change. It will be chaired by the DG of the Ministry of Environment & Climate Change. Representatives could be at DG levels.

The primary roles of the CSCCC are as follows:

- Serve as a cross-sector forum for the exchange of ideas, including the provision of updates on ongoing and planned climate change initiatives.
- Coordinate and advise sector-specific and cross-sector implementation of activities, and advise on monitoring and evaluation outcomes as well as future directions of the NCCP.
- Address the cross-cutting and social aspects of climate change.

State and Municipal Committees on Climate Change

The Federal Member States are the implementors of the policy in their respective regions. States have their own ministries of environment responsible for managing the environment, including Climate Change, in their respective states. At State level, two committees shall be established in each state: State Committee on Climate Change and Municipal Committees on Climate.

The role of the State Committee is to coordinate climate change response actions at state level, while the Municipal Committees will coordinate climate change response actions at the municipal levels.

Centre for Climate Change Research

Many stakeholders in Somalia do not understand climate change and its impacts. Climate change research needs to be properly coordinated and the benefits optimised to meet the needs of policy makers and implementors in Somalia. Research and information sharing are a key issue that must be addressed in the National Climate Change Policy. Research results shall form the basis for the development and implementation of programmes and action plans for adaptation and mitigation of climate change. The programmes and action plans for climate change adaptation and mitigation should be evidence-based and informed by research findings. The Centre for Climate Change Research will contribute to achieving the Cross-cutting themes (Chapter 4), particularly the Research Section.

The primary role of the Centre will be to:

- 1) Facilitate research on climate change
- 2) Coordinate interdisciplinary research around climate change, mitigation and adaptation and vulnerabilities and projections.

- 3) Disseminate research findings to all the stakeholders;
- 4) Provide technical and policy relevant guidance to the Ministry & Sector Ministries.

6.1.2. Non-governmental /Civil Society Organizations

It is important to include communities in decision making as they are most vulnerable to climate shocks and extreme weather events. They should be involved in monitoring and evaluation of both climate change and any interventions to mitigate or adapt to climate change. Climate change issues provide an opportunity for the Government, local authorities, UN agencies and development partners, civil society organizations and communities to work together.

Currently a wide range of Non-governmental Organizations/Civil Society Organizations (NGOs/CSOs) are involved directly and indirectly in environmental protection and climate change related issues in Somalia. Some of these NGOs/CSOs implement specific climate change initiatives at the community level, as well as engage in climate change policy advocacy at national and international levels. Other roles of CSOs in relation to climate change include: community education and delivery of environmental services, research and climate change vulnerability analysis, emergency/disaster response and relief programming, facilitating models for community-based adaptation to climate change, promoting community consultations and participation, facilitating CSO mobilisation, and coordinated engagement with the Government on climate change, policy monitoring, and social accountability for equitable and pro-poor response to climate change.

In recognition of the important role that civil society plays in natural resource and environmental governance in Somalia, the Government of Somalia supports mechanisms for enhancing their role and participation for effective natural resources and environmental governance in Somalia. Civil society activities on climate change should be considered as a key aspect of the national response to climate change. Measures to support the capacity-building of civil society, strengthening coordination, information sharing, and participation in the design, implementation and monitoring of policies and projects on climate change, should be part of the policy response for enhancing the role of civil society on climate change.

6.1.3. Private Sector

Despite decades of conflict, the private sector in Somalia flourished. The private sector should be engaged in climate change discussions and policy implementation. Somalia's private sector needs to know how climate change affects profits, for example, how energy efficiency reduces the cost of doing business and how best to engage with complex concepts for carbon markets. Also ways to leverage private sector investment to climate-change-proof social and physical infrastructure, such as low-

emission electricity generation, use of renewable energy as a means to promote energy access and enhancing energy efficiency, need to be enhanced.

6.2. Legal and Regulatory Framework

Somalia's constitution, National Development Plan 2020 - 2024 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 and also recognizes the need to promote low carbon development pathways and climate change resilience. The constitution provides a basis for developing the National Climate Change Policy (NCCP) and offers a general regulatory framework for policy implementation while the NCCP provides strategic direction and coordinates climate change issues in Somalia primarily effective adaptation and mitigation to climate change as well as social development.

An enabling legislative and institutional framework and implementation Strategy is fundamental in actualizing identified policy priorities into actions that would be of great value to climate change mitigation and adaptation as outlined in Articles 25 & 45 of the constitution of Somalia. Somalia's membership and its signatory to international and regional climate change treaties denotes its commitment to the adoption and implementation of the COP-agreed policies and measures designed to mitigate climate change and adapt to its impacts. Somalia is also keen to include climate resilience in its development agenda.

An overall effective review of the legislative and institutional arrangements that govern actions related to climate change is desired to ensure seamless implementation of climate change responses to provide high level coordination and political authority to guide the integration of climate change functions in sectoral mandates at all government levels.

6.2.1. Linkage with the National Development Plan 2020 to 2024

In Somalia, attention to climate change is gaining momentum both at the highest political level and across sectors. Practically every arm of government is affected by climate change either directly or indirectly. Therefore, climate change is being mainstreamed into national development frameworks, such as Somalia's National Development Plan 2020 - 2024. Pillar 3 of the National Development Plan 2020-2024 relates to Economic Development.

At the heart of Pillar 3 is the intent to transform the economy by improving the resilience of traditional livestock and crop production industries to better meet the growing challenges from climate change. There is a recognition among Somali leadership that dependency on livestock and agriculture poses considerable economic and social risks due to their vulnerability to climate change. According to the Somalia Drought Impact and Needs Assessment (DINA) report the drought in 2016/17 alone caused economic losses estimated at US\$3.25 billion (NDP, 2020-2024).

In addition, climate change is among various thematic areas receiving support from key development partners.

6.2.2. Existing Policies and Strategies Related to Environment & Climate Change

The preparation of the NCCP has been principally influenced by, among other factors, (1) Somalia's commitments to ensure that climate change issues are adequately considered in national development planning, (2) the extent of added vulnerability to the Somali economy attributed to the current and expected impacts of climate change on the entire society makes the preparation of the NCCP important. (3) Policies, strategies and plans that touch on climate change and the wider environment.

6.2.3. International Obligations

The nature of climate change calls for extensive cooperation, coordination and international response. Somalia has been a Party to the UNFCCC since December 2009, as a non-Annex I country. Somalia also ratified the Kyoto Protocol in July 2010. The National Adaptation Programme of Action (NAPA) was developed with the support of the United Nations Development Programme (UNDP) and Global Environment Facility (GEF). The overarching goal of the NAPA was to make the Somali people more resilient to climate change. NAPA was submitted to the UNFCCC in June 2013.

By ratifying the Paris Climate Agreement, United Nations Framework Convention on Climate Change (UNFCCC) and Kyoto Protocol, Somalia shows dedication and obligation to the implementation of strategies to mitigate the effects of climate change and adapt to its impact. Development of a national climate change policy will enable Somalia to meet its obligation under the UNFCCC, hence become an essential player in the fight against climate change. Somalia vision and strategies recognize the importance that climate change plays in enhancing social and economic development.

Somalia is a party to the following international environment-related agreements. To enforce domestically, the country develops and adopts policies and and domestic legislations.

1. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
2. Convention on the Conservation of Migratory Species of Wild Animals;
3. Regional Convention for the Conservation of the Red Sea and the Gulf of Aden Environment;
4. Protocol concerning Regional Co-operation in Combating Pollution by Oil and other Harmful Substance in Cases of Emergency;
5. UN Convention on the Law of the Sea;
6. UN Convention to combat desertification (UNCCD);
7. UN Framework Convention on Climate Change (UNFCCC);
8. Kyoto Protocol;
9. Convention on Biological Diversity;

10. Protocol on Bio-Safety (Cartagena Protocol);
11. Basel, Stockholm and Rotterdam Conventions;
12. Protocol concerning Protected Areas and Wild Fauna and Flora in the Eastern Africa region;
13. Protocol concerning Co-operation on Combating Marine Pollution in cases of Emergency in the Eastern African region; and
14. Convention for the protection, Management and Development of the Marine and Coastal Environment of the Eastern Africa Region (Nairobi Convention).
15. Protocol on Substances that Deplete the Ozone layer (Montreal Protocol)
16. Convention on the protection of the Ozone Layer (Vienna Convention);

CHAPTER 7 FINANCE & RESOURCE MOBILIZATION

To address Climate Change, Somalia will require financial support from domestic resources and the international Community. Domestic resources will be obtained from government budget, private sector and contributions from companies, organizations and individuals. The international support comprises of bilateral, multilateral sources and international climate funds. The international climate funds include: Special Climate Change Fund (SCCF), Green Climate Fund (GCF), Adaptation Fund (AF), The Global Environment Facility (GEF), General Budget Support and Least Developed Country Fund (LDCF). Bilateral supports can be obtained from donor countries. Usually, donor countries send their funds through specialized agencies such as UNDP, UNEP, UNIDO, etc.

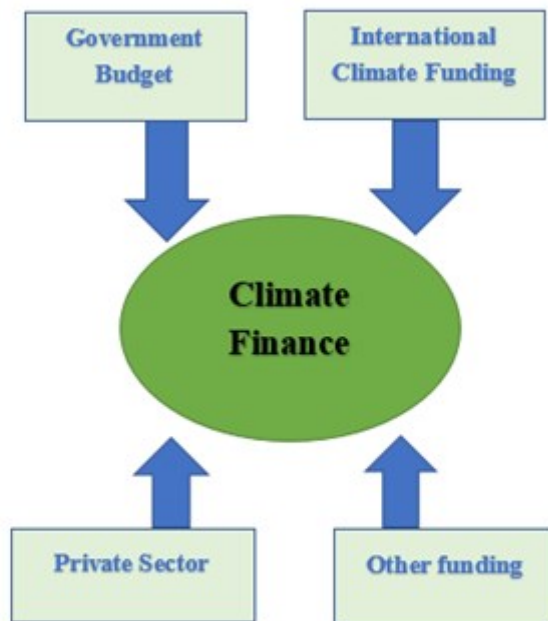


Fig 6 Funding Sources for the Implementation of the NCCP

Therefore, the funding for the policy priorities will come from domestic public and private sources as well as international support.

Policy Statements

- 1) Explore the available funding sources and ensure access and effective use of international funding available for adaptation and mitigation efforts;
- 2) Improve resource mobilization capacity to attract sufficient funds internally and externally for climate change interventions;
- 3) Establish public private partnership as a platform for resource mobilization and enhancing stakeholder engagement in low carbon climate resilient initiatives, offering of incentives and establishing a conducive investment climate.

- 4) Enable institutions to utilize external and domestic climate financial resources.
- 5) Seek Multilateral and bilateral development partners' support as well as support from international climate change funds, particularly concerning issues of capacity development, technical assistance, and awareness raising
- 6) Establish an effective fund mechanism and adopt a climate finance strategy that supports the implementation climate resilience, adaptive capacity and low carbon growth priority actions.
- 7) Market-based mechanisms for climate-related actions, such as Clean Development Mechanisms, benefit-sharing schemes under REDD+, emissions-trading revenues, tax incentive, and tariff schemes.
- 8) Private Sector investments, particularly concerning energy, waste management, rangeland and livestock, and agriculture, industrial developments and technology transfer.
- 9) Implement sector-specific transparency, anti-corruption, integrity and accountability mechanisms to protect judicious management of climate finance.
- 10) Establish a framework for the coordination, tracking and monitoring sources, impacts and application of climate finance.

CHAPTER 8

MONITORING AND EVALUATION

The NCCP will continue to evolve, based on new scientific and technical knowledge as they emerge and in response to the evolution of the multilateral climate change regime including arrangements for international cooperation. Monitoring and evaluation of climate change responses is critical to ensure the effective implementation of the Policy.

Monitoring and evaluation will need to be done through periodic reports (quarterly and annual) by the Ministry of Environment and Climate Change. The reporting mechanism shall follow the governance structure outlined in Chapter 6 (Section 6.1.1.). Similarly, each line Ministry (sectoral ministry) could also put in place a monitoring and evaluation system that tracks climate change programmes. The Ministry could establish a Technical Monitoring & Evaluation Committee (TMEC) to follow up the implementation of the Policy. The TMEC shall develop a comprehensive M&E framework that will emphasize regular monitoring and periodic evaluation to ensure expected outputs, outcomes and impacts will be established. Somalia's Climate Change Policy progress should be reviewed after every 5 years.

Policy Statements

- 1) Ensure that nation-wide climate change and atmospheric monitoring systems are established and enhanced to monitor, among other things, rainfall, temperature, extreme weather events and their impacts, sea levels and sea surface temperature.
- 2) Establish a monitoring system for gathering information and reporting progress on the implementation of adaptation actions.
- 3) Each Sectoral Ministry shall conduct on-going evaluation (mainly quarterly and annual) internally to track the implementation of the policy as undertaken by relevant sectors;
- 4) Evaluate/assess the impacts of implementing the Policy in the short, medium and long term and determine whether the interventions are contributing to the objectives of the Policy.
- 5) Ensure that all National Communications submitted as part of Somalia's UNFCCC commitments contain the most up to date data and impact assessments. National Communications will be in line with internationally agreed reporting requirements.
- 6) Timely share climate evaluation reports with; the public, stakeholders for their input and for parliamentary and state government debate and oversight.