

Support For Strengthening Climate Change Adaptation Planning For Somalia Project

Climate Change Knowledge On Understanding Climate Change And Its Impact On Somali Communities

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Introduction

Climate Change in the 20th century has been characterized by significant increases in mean global air and ocean temperatures, rising global sea levels, long-term sustained widespread reduction of snow and ice cover, and changes in atmospheric and ocean circulation as well as regional weather patterns, which influence seasonal rainfall conditions. These changes are due to the global warming due to ozone depletion due to increases in greenhouse gases and leading to an increased in atmospheric and surface temperatures.

These additional greenhouse gases are a direct result of human activities associated with industrialization such as the burning of fossil fuels (coal, oil, and natural gas), deforestation, agriculture, and land-use changes. These activities increase the amount of 'heat-trapping' greenhouse gases in the atmosphere. The pattern of observed changes in the climate system is consistent with an increased greenhouse effect.

What is climate change?

Climate refers to the long-term regional or global average of temperature, humidity and rainfall patterns over seasons, years or decades. Weather on the other hand refers to the shorter term daily, monthly and annual conditions of the earth. Changes in weather conditions across the year are more uniform from year to year and represent the common seasons of a particular geographical zone. While weather changes in a predictable frequency and over shorter periods / timeframes, the climate does not experience significant changes over time without observable disruptions in natural systems.

Climate change is the significant and observable variations of average weather conditions becoming, for example, warmer, wetter, or drier—over several decades or longer because of human activities. Climate change is thus the medium - longer-term observable changes in the trend of the average weather conditions and seasonal variations in weather patterns. Human induced climate change can be differentiated from the longer-term natural changes in climatic patterns; In Somalia, climate change is characterized by distortion of seasonal weather patterns with increasing unpredictability and frequency of extreme climate events such as floods, droughts, tsunamis, tropical storms, cyclones.

What are the drivers of climate change? (Local and global)

Global Drivers:

1. **Human activities are making the blanket:** Human activities have warmed earth's climate by more than 1c since the late 19th century, and the effects on our climate are unprecedented, the following are specific include: **(i)** the natural levels of these gases are being supplemented by emissions of carbon dioxide from the burning of coal, oil, and natural gas; **(ii)** by additional methane, nitrous oxide produced by intensification of farming activities and changes in land use; and **(iii)** by several long-lived industrial gases that do not occur naturally.
2. **Deforestation:** Due to deforestation, naturally absorption of CO₂, one of the main GHGs, is being hampered. And it increases GHG content in the atmosphere.
3. **Technologies:** Use of different new technologies such as different types of vehicle, tool, AC, refrigerators, use of chemical fertilisers etc. increase GHGs emissions.
4. **Industry and fossil fuels:** Fossil fuels and industry (textile, steel, cement, chemical, food industry, etc.) emit large amount of GHGs.

Local drivers of Climate Change



Figure I: Charcoal Burning in Somalia

As a result of frequent droughts, civil war and disrupted livelihoods, pastoralist communities in Somalia increasingly turn to charcoal production as an alternative source of income. Charcoal production in Somalia is an important source of deforestation, environmental degradation, and communal conflict resource.

Cutting down forests (deforestation)

Trees help to regulate the climate by absorbing CO₂ from the atmosphere. When they are cut down, that beneficial effect is lost and the carbon stored in the trees is released into the atmosphere, adding to the greenhouse effect. Furthermore, trees and vegetation cover also have a localized cooling effect, consequently, cutting down trees leads to increased localized surface temperatures. Localized surface temperatures in turn lead to high rates of water evaporation leading to soil and rangeland degradation and increased desertification. This ultimately leads to increased localized drought effects.

Finally, vegetation cover greatly contributes to increased evapotranspiration and the recirculation of water in the biosphere. Cutting trees leads to reduction in vegetation cover leading to disruptions in the water cycle as well as increased surface water runoff leading to increases in soil erosion which ultimately negatively affects the water retention capacity and ability to support life.



Figure II: Cutting Trees, Charcoal Burning in Somalia

Increasing livestock farming. *Cows and sheep produce large amounts of methane when they digest their food.*



Figure III: Somali Livestock

Improper Waste Management: *Landfills produce methane as waste breaks down. Wastewater treatment can also produce methane and nitrous oxide.*



Figure IV: Poor Waste Management at the Kismayo Landfill (Source: Wanderi, 2019)

Fertilizers containing nitrogen *produce nitrous oxide emissions.*



Figure V: Utilization of Nitrous Fertilizers in Commercial Farming (Source: Puntland MoECC)

Impacts of Climate Change on Somali communities.

Impacts of climate change in Somalia is highly apparent. Climate change in Somalia is characterized by an increasing frequency of extreme weather events such as recurrent drought and regular flooding which leads to failed crops, loss of livestock and further exacerbates Somalia's chronic food insecurity and humanitarian emergency.

01. Impact on the Ecosystem

Biomass Burning: Biomass burning is an important ecosystem process in Somalia as it is in most African Countries. Fire plays an important role- in maintaining ecological health. In addition to carbon dioxide, the burning of biomass results in the release of other GHGs or precursor of GHGs that originate from incomplete combustion of the fuel. The key greenhouse gases from burning of biomass are CO₂, CH₄ and N₂O, but also precursors such as NO_x, NH₃, NMVOC and CO. (National Development Plan -9 (2020-2024).

Marine and Coastal Resources

- Increasing coastal sand dunes cover land areas;
- Less plankton production;
- Increased salinity in coastal groundwater due to salt-water intrusion;
- Coral reef destruction (due to higher SST temperatures).

Biodiversity (*forests, freshwater aquatic, marine and invasive alien species*)

- Deforestation and cutting down of trees and other vegetation for charcoal;
- Wildlife hunting increases;
- Soil erosion due to deforestation;
- Bush fires;
- Wildlife migration;
- Reduction in biodiversity;
- Increases numbers of some species including pests, weeds & pathogens (due to higher temperatures).

02. Socio-Political and Economic Impacts

The increasing frequency of recurrent drought and irregular flooding leads to failed crops, loss of livestock and Somalia's chronic food insecurity. Climate crises threaten Somalia's socio-economic progress by increasing water and food scarcity, the need for humanitarian assistance, displacement and the degradation of traditional livelihoods. At the same time, degradation of rangelands negatively impact the availability of pasture for pastoralist communities and often results in increased inter-community conflict between pastoralists and agro-pastoralists over grazing resources.

Food shortages:

Due to changes in weather patterns, climate change is affecting agriculture. This is due to changes in precipitation patterns. Droughts and floods are more frequent and affect agricultural activities. This leads to food shortages.



Displacement:

In the last three decades, Somalia has faced famine, droughts, and floods with the intensity and frequency increasing recently. The 1992 famine in Somalia killed nearly 300,000 people and displaced millions.

Degradation:

Rangelands: Reduced rangeland production is one of the effects of climate change that Somalia is currently experienced.



Floods:

heavy rains are affecting most of Somalia States and territories since 20 April 2020, including South West, Jubaland, Banadir and Puntland, causing rivers to overflow and triggering floods that have resulted in casualties and damage infrastructure, Schools, roads and houses.

Cyclone:

Somalia frequently experienced cyclones, particularly in coastal areas. The cyclone totally or partially destroyed the livelihoods of scores of pastoralists, Infrastructure, fishermen, houses, businessmen and other rural dwellers.



Conflict:

The warming of the planet and the resulting changes to the natural environment pose numerous threats to humanity. Increased competition for resources like fertile land, pasture and fresh water is already disrupting societies and uprooting entire communities.

The need for humanitarian assistance:

Climate change and variability are increasingly understood as major drivers of conflict in Somalia as the struggle for dwindling resources exacerbate clan divisions and inter-clan conflict. Climate change disrupts rural livelihoods resulting in rapid urbanization which in turn contributes to high rates of forced evictions. These evictions are among the most severe and prevalent protection threats in Somalia and represent both a cause and a multiplier of the humanitarian crisis.



Key Climate Change Adaptation Messages for Somalia:

Climate Change is causing an increased frequency of extreme climatic events in Somalia and the horn of Africa characterized by more frequent and intense droughts couple with sudden onset and unpredictable floods. This has had the effect of undermine the agro-pastoral and pastoralist livelihoods systems and resulting in food and nutritional insecurity thus worsening livelihood conditions in Somalia, adversely affecting marginalized groups, fueling grievances, increasing competition over scarce resources, and exacerbating existing community tensions and vulnerabilities. As such, there are needs for concerted and collective efforts by communities and other stakeholders with a view to enhancing national, regional, community and household level resilience to climate change.

Key Messages to Policy Makers



Climate Change Risk Assessment (CCRA):

Climate change risk assessments are critical tools that enhance national, organizational and community level identification of their climate change related risks. These assessments also help them to test their existing climate change risk management strategies and therefore identify areas where new strategies are needed. A risk assessment is an integrated part of any adaptation planning process shown in following figure. Key steps in CCRA are: Step 1: Establish the context (scope of risk assessment); Step Two: Identify existing climate risks; Step three: Identify future climate change risks and opportunities; and, Step four: Analyze and evaluate risks.

Measurement, Reporting and Verification (MRV) of climate change in Somalia:

Currently, Somalia has no elaborate Climate Change Measurement, Reporting and Verification (MRV) System in place. The country is in the process of developing an adaptation action monitoring tool. The First Biennial Update Report includes proposal for development of an MRV system for climate change. The proposed web-based platform integrates adaptation, mitigation and support and will help tracking, analysis and enhancement of progress towards Somalia's transition to a low-carbon economy and climate-resilient pathway.

The Monitoring, Reporting, and Verification (MRV) system is critical for Somalia to meet its global commitment to combat climate change because it provides information on emission sources and trends, allows tracking progress toward climate change-related targets, and directs mitigation actions to meet the targets. It provides for the tracking of adaptation actions and assistance, including funding, capacity building, and technology. MRV systems are critical components in ensuring the transparency, quality, and comparability of climate change data in all applications.

Strengthen the Coordination aspects of Climate Change in Somalia:

There is need to improve "Environmental Governance and Coordination" in Somalia with a view to enhancing climate change mainstreaming in the country. The gaps in institutional framework are well documented in various assessment reports including the National Bio-diversity Action Plan. Somalia encounters challenges in environmental governance and coordination due to factors such as political instability, institutional weaknesses, and limited resources. These challenges hinder effective coordination among relevant stakeholders, enforcement of environmental regulations, and the implementation of sustainable environmental management practices. Insufficient capacity and coordination gaps between different government departments and agencies further complicate environmental governance in the country.

Strengthen the National Climate Change Committee (NCCC):

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

Climate Change and Weather Information:

There is a need for Somalia to invest in national climate change and weather information platforms that to provide updated information and data on specific and relevant climate change data. As such, Somalia will need to develop its capacity for the generations and dissemination of weather and climate information for planning and early warning system. Effective early warning and early action systems are highly reliant on data availability and using updated data to make predictions about future climatic and weather patterns.

Environmental Conservation:

Environmental conservation efforts in Somalia will have direct effects on localized adaptation and mitigation of climate change effects. Stakeholders in Somalia should invest in the mobilization of communities in localized conservation efforts while enhancing availability and awareness of environmental information, knowledge and awareness. This will also require the government at Federal and Member State levels and other duty bearers to develop effective urban and rural ecology restoration and waste management (policies and regulations) Ensure marine pollution control.

Key Messages for Somali Communities:



Identify and Strengthen Community Resilience Measures: by enhancing sustainable livelihoods through diversification of livelihoods and build capacities that support sustainable livelihoods.

Implement Community - based Piloting Studies: /projects in different climate vulnerable regions in the country to better understand climate-security nexus supported by the growing evidence from the ground.

Support the Integration of the Traditional Xeer Customary Land Management system into over-all environmental governance.

Address Youth Unemployment and Provide Opportunities to mitigate conflict, displacement, and migration.

Address Water Security which is one of the main causes of communal tensions/conflicts (also mentioned in the NDC)