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SOMALIA

World Bank Group

COUNTRY CLIMATE AND DEVELOPMENT REPORT

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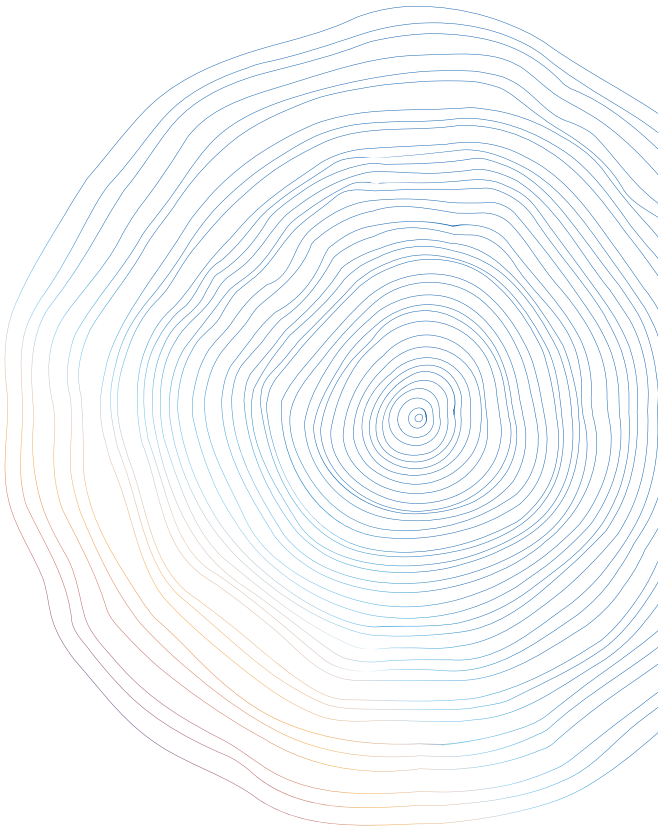

SOMALIA

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TABLE OF Contents

Appendixes

List of Tables

List of Figures

List of Box

Acknowledgments

The Somalia Country Climate and Development Report (CCDR) was prepared by a multisectoral World Bank Group team led by Stephen Ling, Stella Ilieva, Juan Jose Miranda Montero, and Tigran Parvanyan, with support from Khyati Rathore and under the supervision of Paul Jonathan Martin.

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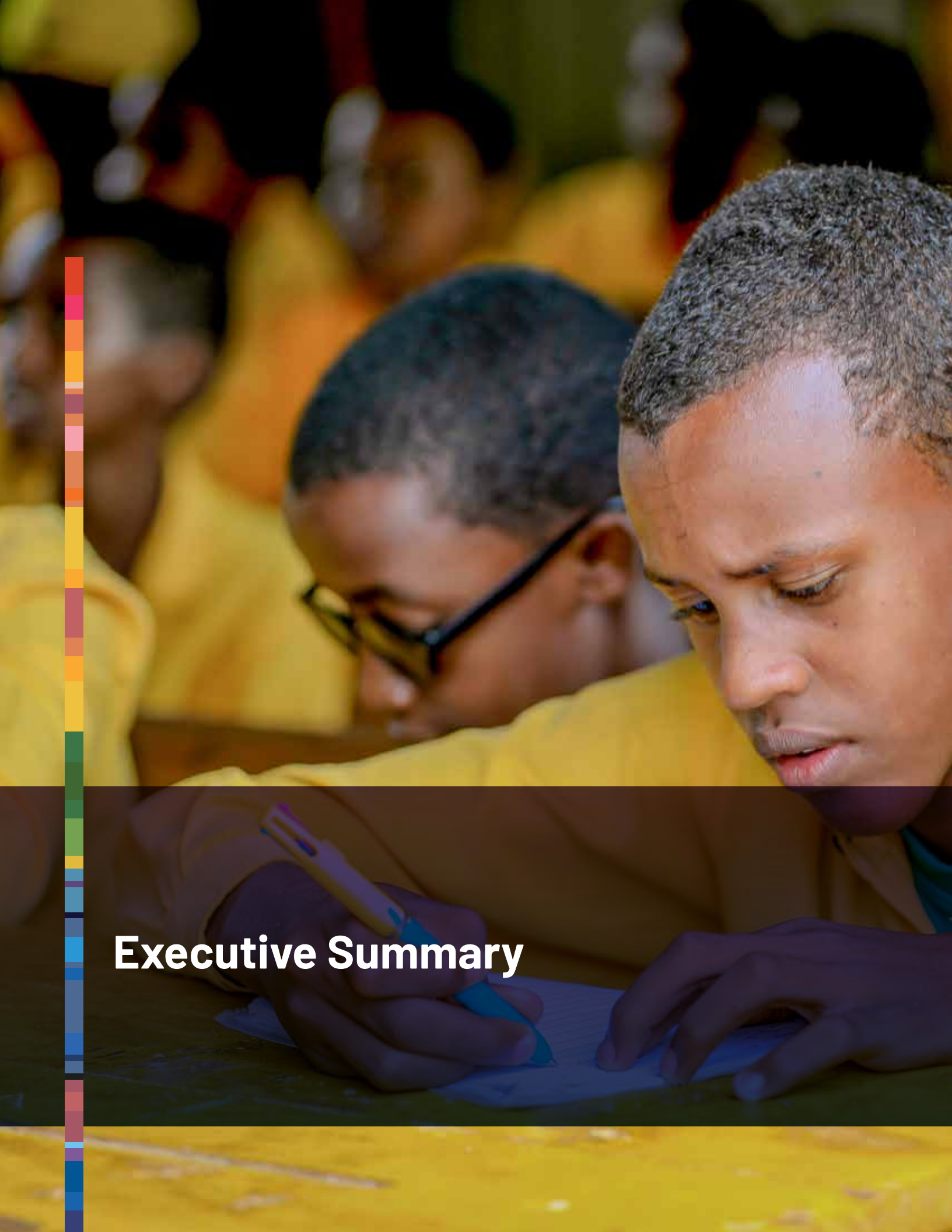
Abbreviations and Acronyms

CBS	Central Bank of Somalia
CC-MFMod	World Bank macroeconomic and fiscal model (climate change)
CCVI	Climate-Conflict Vulnerability Index
CF	continuing fragility (scenario)
CS	climate-smart (scenario)
CSA	climate-smart agriculture
DRE	decentralized renewable energy
DRF	disaster risk financing
DRM	disaster risk management
DRR	disaster risk reduction
EAC	East African Community
EEZ	Exclusive Economic Zone
ESPs	electricity service providers
EWS	early warning system
FAO	Food and Agriculture Organization of the United Nations
FCV	fragility, conflict, and violence
FGS	Federal Government of Somalia
FMS	Federal Member States
FSCPP	Somalia Food Security Crisis Preparedness Plan
GCF	Green Climate Fund
GCM	general circulation model
GDP	gross domestic product
GEF	Global Environment Facility
GgCO$_2$e	gigagrams of carbon dioxide equivalent
GHG	greenhouse gas
HIPC	heavily indebted poor countries
hydromet	hydrological and meteorological
IPPU	industrial processes and product use
LPG	liquefied petroleum gas
LULUCF	land use, land-use change and forestry
MDAs	ministries, departments, and agencies
MoAI	Ministry of Agriculture and Irrigation
MoCI	Ministry of Commerce and Industry
MoECC	Ministry of Environment and Climate Change

MoEWR	Ministry of Energy and Water Resources
MoF	Ministry of Finance
MoFBE	Ministry of Fisheries and Blue Economy
MoIFAR	Ministry of Interior, Federal Affairs, and Reconciliation
MoLFR	Ministry of Livestock, Forestry, and Range
MoLSA	Ministry of Labour and Social Affairs
MoPIED	Ministry of Planning, Investment, and Economic Development
MoPW	Ministry of Public Works
MoTCA	Ministry of Transport and Civil Aviation
$MtCO_2e$	million tonnes of carbon dioxide equivalent
NAP	National Adaptation Plan
NCCP	National Climate Change Policy
NDC	nationally determined contribution
NDMP	National Disaster Management Policy
NECROP	National Emergency Cash Response Operation Plan
NEOC	National Emergency Operations Centre
NGO	Nongovernmental Organization
NTP	National Transformation Plan
ODA	official development assistance
OPM	Office of the Prime Minister
PFM	public financial management
PIM	public investment management
PPP	public-private partnership
RCP	Representative Concentration Pathway
REDD	Reducing Emissions from Deforestation and Forest Degradation
SARIS	Somali Agricultural Regulatory and Inspection Services
SLR	sea level rise
SMEs	small and medium enterprises
SoDMA	Somalia Disaster Management Agency
SG	stability and growth (scenario)
SLM	sustainable land management
SSP	Shared Socioeconomic Pathway
SWALIM	Shared Water Resources Information Management System
UNFCCC	United Nations Framework Convention on Climate Change
USR	Unified Social Registry



Executive Summary

Executive Summary

Key messages

Despite facing a complex fragility crisis, Somalia has made important progress in state-building and economic recovery, including macroeconomic stabilization, completing the Heavily Indebted Poor Countries (HIPC) process, joining the East African Community (EAC), and elaborating ambitious development objectives to become a middle-income country by 2060.

But growth has been constrained by repeated devastating climate disasters, and future climate impacts will intensify and multiply. Mutually reinforcing climate and security crises in rural areas drive unplanned migration to urban areas, displacing vulnerability and driving further social fragility.

The challenges are daunting, but not insurmountable. Quality growth could roughly halve the macroeconomic impacts of climate change impacts, and targeted, cost-effective adaptation measures could halve them again. Governance, development, and climate challenges must be addressed in unison. Breaking linkages in the vicious cycle of climate vulnerability and social fragility, and shifting from recurrent expenditure on aid and recovery to sustainable investment, can establish a virtuous cycle of resilience and development.

Somalia faces twin climate adaptation challenges: moderating the most severe climate impacts while also supporting growth and diversification into more resilient sectors. To reduce rural vulnerability, which drives displacement, economic dislocation, and social fracturing, it needs to improve disaster risk management (DRM) and resilient rural livelihood systems, and invest in climate-smart cities that capture the growth and diversification potentials of urbanization.

In the short term, the government of Somalia will remain highly dependent on external funding and needs to improve the efficiency of its expenditure for resilient development outcomes. To escape dependency on uncertain foreign assistance in the longer term, it will need to extend government climate leadership from coordination to direct implementation and financing, and leverage private sector action.

Somalia's development and growth context

Somalia faces significant challenges in its development and growth—including climate vulnerability, ongoing conflict, and fragile institutions—making it one of the world's poorest countries. Its economy relies heavily on agriculture and livestock, which are vulnerable to climatic shocks, downsizing growth and leading to chronic food insecurity. Frequent droughts and floods, and an ongoing security crisis have constrained growth to levels that are insufficient to deliver significant poverty reduction. Aggravated by fragile governance and combined with ongoing conflict, these shocks have caused displacement of large numbers of people, deterring growth and poverty reduction. Prolonged conflict has led to significant infrastructure loss and economic instability, diverting sizable public and donor resources to security and leading to limited provision of basic public services. Nascent institutions with limited resources and capacity and an incomplete and contested fiscal federalism process have limited the creation of a stable environment for investment, innovation, and entrepreneurship. The private sector is dynamic, providing essential services to the population; but it operates within a fragmented and informal economy. Fifty-four percent of the population lives below the national poverty line, including 65 percent of the rural population and 45 percent in urban areas. Human development indicators are poor: only 25 percent of children are enrolled in primary school and 15 percent in secondary school (FRS 2023), and Somalia has the world's highest morbidity and mortality rates (Warsame 2020).

Despite these obstacles, the country has made important strides in state building and economic recovery. Somalia has been rebuilding its institutions since 2012, when the Federal Government of Somalia (FGS) was established. Macroeconomic stabilization and structural reforms culminated in the completion of the HIPC Initiative process in 2023, which eliminated most of Somalia's external public debt, leaving room for more development spending. In 2024, Somalia became the eighth member of the EAC, committing to harmonize its legislative framework and institutions with the rest of the EAC and thus diversify its economy, enhance trade and investment, and take advantage of regional integration. Its National Transformation Plan (NTP) 2025–29 charted an ambitious economic reform program to help the country transition out of fragility and deliver its Vision 2060 goal of becoming a middle-income economy by 2060. To achieve this, Somalia has significant potential development assets to draw on, including: Africa's longest coastline, which could support enhanced trade, tourism, fisheries, and other forms of the blue economy; agricultural potential that could improve under wetter climate scenarios; and a young, increasingly urbanized population, vibrant private sector, and skilled international diaspora.

Recognizing its high vulnerability to ongoing climate change, Somalia has prioritized climate action, focusing on adaptation and resilience, although implementation remains limited and dependent on external support. "Environment and climate resilience" is one of the four pillars of its NTP, and the country recently established the Ministry of Environment and Climate Change (MoECC). It has also identified broad climate priorities in its National Climate Change Policy 2020, Third Nationally Determined Contribution (NDC 3.0), National Adaptation Plan (NAP) 2024), National Disaster Risk Management Policy 2020, and Somalia Preparedness Plan for Food and Nutrition Security Crises 2024. But the effectiveness of these climate policy documents is hampered by weak implementation capacity and a lack of coordination between ministries and agencies. Somalia is dependent on projectized development aid and humanitarian support, most of which bypasses government.

Climate vulnerability and fragility

Although Somalia's climate and fragility challenges are complex, mutually reinforcing climate and security crises in rural areas tend to drive unplanned migration to urban areas, transferring, rather than addressing, vulnerability and fragility. Devastating droughts and floods have ravaged the country in recent years, reducing economic growth and requiring significant humanitarian support to avoid widespread famine. Climate disasters and conflict drive large-scale displacement and mostly unplanned settlement around urban areas, transferring vulnerability from rural insecurity to often flood-exposed periurban settlements. Internally displaced persons (IDPs) continue to be physically vulnerable to climate impacts but are dislocated from means of production and traditional support structures. Desperation, marginalization, and inadequate state support can create grievance. IDP populations also create pressure on host communities, leading to resentment and higher risks of local conflict and recruitment by armed groups. Ongoing climate change will continue to bring extreme events alongside a range of chronic impacts, such as heat stress constraints on labor and livestock productivity.

Somalia's climate is semi-arid to arid, and rural livelihoods are often precarious and severely impacted by droughts and floods. The climate is characterized by low, highly seasonal and inconsistent rainfall, with most areas receiving around 200 millimeters annually, while the south and southwest receive 400 and 600 millimeters, respectively. Between 1991 and 2015, prevailing ambient temperatures were, on average, 1°C hotter than 1901–30. Recent precipitation trends are less distinct, but since the 1980s, the spring rains have been declining in many parts of the country. Extreme climate events have increased at rates exceeding regional and global averages. Just 13 percent of the country's total land area is suitable for cultivation (FRS 2013), although a much more extensive area is used for pastoralism and harvesting of natural products, such as resins and gums. Drought affects a large number of people every year (World Bank 2019), driving acute food insecurity and mass displacement. The 2016–17 drought alone resulted in $3.25 billion

of damage, with an estimated total recovery need of $1.77 billion. In recent decades, Somalia experienced severe floods in 1997, 2006, 2018, 2019, and 2023. The most recent floods, in November 2023, affected an estimated 2.48 million people, and took the lives of 188 people (FGS et al. 2024).

Acute climate impacts are directly felt by the vast majority of households, with significant consequences for the welfare of most citizens. During recent phone surveys, a large majority of households—including nearly 50 percent in urban areas—reported being directly impacted by climate shocks within the last year, and most also expected to be impacted again within the coming year. Almost half of all households stated that the frequency of droughts, flooding, and extreme heat has increased in the last five years. These shocks commonly cause loss of assets and income, with immediate effects on welfare, including nutrition and the ability to attend school. They can also result in the sale of productive assets, such as livestock, migration of male household heads to find alternative work, or displacement of the entire household, rupturing local support systems. Women, girls, and other vulnerable groups are more likely to engage in harmful coping practices, including increased risks of exploitation and gender-based violence.

Somalia is also affected by diverse and interwoven structural challenges that contribute to its protracted state of fragility, conflict, and violence (FCV). The civil war and subsequent instability led to the collapse of the state and devastated the country's infrastructure and economy, leading to widespread poverty. Relations between the FGS and the devolved administrations of the country's Federal Member States (FMS) remain fractious, with continued political contestation on core constitutional matters and resource distribution. Such political dynamics hamper efforts to deliver public services and restore the social contract between the state and its citizens. On top of this, complex intercommunal divisions—sometimes a result of clan-based dynamics—often lead to violence and exclusion. Violent extremist groups, such as Al-Shabaab, contribute to and benefit from these underlying drivers of FCV attempt to position themselves as an alternative source of governance. Large swaths of territory remain contested, and the country continues to exhibit high levels of conflict and violence, with an average of over 5,600 conflict-related fatalities per year over the past five years.

Climate impacts and conflict are mutually reinforcing, amplifying stresses, vulnerabilities, and governance challenges. Higher temperatures and drought conditions are both temporally correlated with a higher number of conflict-related fatalities across Somalia, as climate change increases the relative scarcity of key resources, and the competition and conflict over them. Climate impacts also exacerbate existing drivers of FCV, often leaving people reliant on fragmented and inequitable traditional systems or the governance of nonstate armed groups. Unfinished political settlement and weak governance, in turn, hinders disaster preparedness and response, heightening vulnerability and further weakening citizen's trust in state institutions.

Climate vulnerability and insecurity together drive massive displacement, largely of the rural population toward informal settlements and IDP camps around urban areas. Throughout 2023, 2.9 million people were newly internally displaced, including 2.2 million due to climatic shocks (largely as a result of floods) and 653,000 due to conflict and insecurity, though the number of new displacements dropped considerably in 2024.

Ongoing climate change is likely to leave Somalia hotter, on average, than any country's current climate, and continuing to suffer frequent acute climate disasters and a variety of chronic impacts. Under current global emissions trajectories, average annual temperatures in Somalia may increase by 3–4°C by 2080, leaving Somalia's average temperature higher than that of any present-day country and most of its land area confronting unprecedented heat within the next 50 years. Precipitation trends are less clear, but models generally predict increasing and more variable rainfall, which will increase flood risks. Droughts may also become more frequent, particularly under hotter climate trajectories. Rural livelihood systems will continue to bear the major brunt. Increases in chronic heat and water stress are also likely to impact livestock and

crop productivity in all but significantly wetter climate scenarios, and rising ocean temperatures will limit productivity in fisheries. A wider range of sectors will be impacted, though, particularly through the effects of heat stress and disease on human labor productivity.

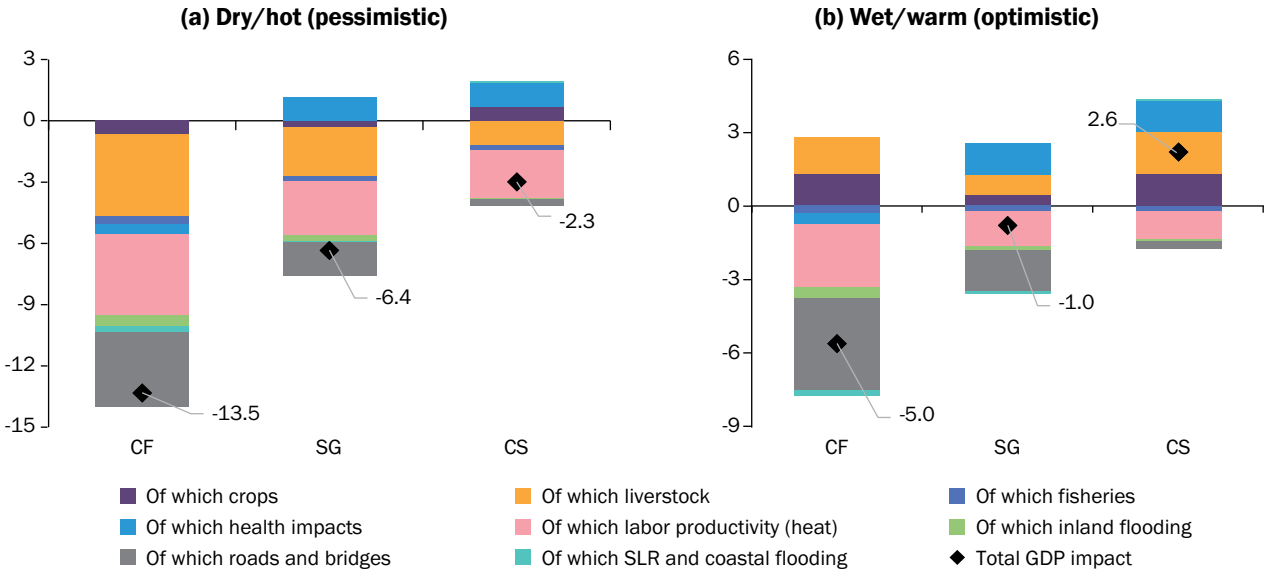
Macroeconomic results

A macroeconomic model of Somalia's economy was constructed and subjected to climate change shocks through 2060, based on sets of climate scenarios representing hotter and less wet (dry/hot) versus less hot and wetter (wet/warm) outcomes. Main climate change impact channels included in the modeling were the effects of: heat and water stress (including drought conditions) on crop and livestock production; ocean temperature and acidity on fisheries production; heat stress and other health impacts on labor productivity; and flooding on infrastructure and related disruption of labor supply. The model was run with two macroeconomic scenarios: the business-as-usual continuing fragility (CF) scenario and an aspirational stability and growth (SG) scenario, designed to achieve Somalia's goal of reaching middle-income status by 2060. The SG scenario was also treated with a set of enhanced climate adaptation interventions, called the climate-smart (CS) scenario.

Somalia's economy is extremely sensitive to climate impacts, but broad-based development supports resilience. Under a dry/hot climate and CF scenario, estimated climate impacts will result in over 13 percent loss of annual gross domestic product (GDP) by 2050–60, one of the higher GDP impacts of the countries assessed to date. But under an SG scenario the relative impact of climate shocks were more than halved, suggesting that high-quality development and economic diversification will substantially cushion the impacts of climate change. Under a wet/warm climate scenario, the net negative impact on annual GDP is substantially lower, at 5 percent under CF, and less than 1 percent under SG.

The largest climate impacts on GDP were heat stress effects on labor, impacts on livestock production, and flood impacts on transport infrastructure. But under the wet/warm climate scenario, there is a positive net impact on crops and livestock, indicating that net impacts are less than for current climate conditions. Under SG, net impacts on health were also positive, reflecting improved health outcomes with development (Figure ES1).

Figure ES1: Climate change impacts on GDP under three climate scenarios (2060)



Source: Industrial Economics estimates; World Bank staff estimates using CC-MFMod.

The CS scenario, which adds a set of targeted climate adaptation measures to the SG scenario, produces significant and cost-effective additional reductions in climate impacts. Under the dry/hot climate scenario, expected annual GDP loss by 2060 was again roughly halved from a little over 6 to a little over 2 percent. Under the wet/warm scenario, losses were reversed, achieving a net 2.6 percent gain in annual GDP. The investment cost of the adaptation measures included in the models was around $5.3 billion over 35 years, but they added $3–5 billion to annual GDP by 2060.

Main areas of action

The twin climate adaptation challenges for Somalia are to moderate the most severe climate impacts while supporting growth and diversification into more resilient sectors. This means reducing the rural vulnerability driving displacement, economic dislocation, and social fracturing; and investing in climate-smart cities that capture the growth and diversification potentials of urbanization. To this end, this Climate Change and Development Report (CCDR) highlights three broad areas of intervention: enhancing resilience to climate shocks, resilient rural livelihoods, and climate-smart urban development.

Enhancing resilience to climate shocks

Even under current conditions, expected annual losses from extreme events are in the low hundreds of millions of dollars, with the largest disasters costing several billion dollars, but Somalia's emergency preparedness and response capacity remain significantly underdeveloped. Numerous preparedness measures are either absent or ineffective, with the most significant gaps in information management, equipment, and facilities. Investments of around $76.6 million are needed to address these gaps, complemented by targeted strengthening of relevant institutions. Relatively modest investments now could potentially translate into major long-term savings in aid later.

Somalia's risk monitoring systems deteriorated during the civil war, leading to a significant data gap that hinders accurate flood and drought forecasting. The National Multi-Hazard Early Warning Center within the Somalia Disaster Management Agency (SoDMA) relies heavily on international partners' systems—such as the Food and Agriculture Organization of the United Nations' Shared Water Resources Information Management System, the United States Agency for International Development's Famine Early Warning Systems Network, and the Intergovernmental Authority on Development's Climate Prediction and Applications Centre—which provide crucial support for regional forecasting and data collection. There are insufficient in-situ hydrometeorological observing stations to support the reliable provision of early warning and hydrometeorological services. The lack of standard operating procedures for issuing early warnings also means the dissemination of warnings is often ad hoc and lacks impact-specific information and actionable guidance.

Disaster response efforts face major resource, coordination, logistics, infrastructure, and security constraints. The National Emergency Operations Center lacks necessary resources, trained personnel, and a standardized approach. Response efforts are often ad hoc, uncoordinated, and reliant on international actors for emergency logistics. Outside of the capital Mogadishu, response relies heavily on an underdeveloped air transport system, with poor quality and damaged airstrips often necessitating the extensive use of helicopters. And while communities often serve as the first and only responders, early warning messages often lack information on the impact of risks and actionable steps for communities. Effective community engagement is essential for improving hazard understanding and response. Strengthening early warning mechanisms and community-level engagement would mitigate impacts, protect vulnerable populations, and foster resilience and stability by reducing conflicts over scarce resources and improving adaptive capacities to climate-related challenges. DRM policy priorities also include strengthening disaster preparedness authorities, establishing operational response plans, approving the Hydromet Law, legislating

critical infrastructure resilience, developing a digital national disaster database, and completing risk and hazard mapping.

Somalia possesses a foundational social protection framework, but significant obstacles related to financing, coordination, and coverage hinder its effectiveness for emergency response. The social safety net system, Baxnaano, is being strengthened and has a shock response window designed to be able to rapidly identify disaster-affected households and scale up support in response. But it lacks prearranged funding and established trigger mechanisms. Creating a national emergency cash response operation plan would streamline approval processes and coordination mechanisms for efficient cash transfer responses to climate shocks.

Somalia lacks an overall disaster risk financing strategy. The Public Financial Management (PFM) Act allows for a contingency appropriation of up to 5 percent of total domestic revenue, but there are serious constraints in the availability of domestic revenue during shocks. The government mostly relies on appeals to development partners or redirects funds from existing projects to respond to disasters. In 2023, the FGS took out sovereign insurance against drought, with donor support, which it is expected to renew, and rolled out a national livestock insurance program for pastoralists, with World Bank support. Humanitarian donors are also prearranging funding through drought insurance and anticipatory action financing, but coverage is limited. Climate risk insurance for businesses and households is available but underused. Risk layering—which involves combining different financial instruments to ensure funds are available for both frequent, low-impact events and rare, high-impact events—could save the FGS and partners $20 million annually and up to $230 million for response to 1-in-20-year events or $470 million for 1-in-50-year events.

Resilient rural livelihoods

Agriculture (including crops and livestock) remains the foundation of Somalia's economy, but its overall contribution to GDP has significantly declined compared to pre-war levels. The crop sector's contribution to GDP deteriorated sharply from around 20 to 5.4 percent, following the collapse of critical irrigation and supply chain infrastructure during the war. In the 1980s, per capita cereal availability stood at over 60 kilograms per year, but by 2023, had plummeted to less than 5 kilograms, leaving Somalia highly dependent on imported cereals. In contrast, livestock herds have increased since the war, and the sector accounts for the majority of Somalia's exports. But productivity is chronically low, particularly in nomadic pastoralism. Rangelands cover the great majority of Somali territory but have been degraded by the unmanaged increase in herds and an increasingly erratic climate.

Rural production is highly constrained by water scarcity, and a dry/hot future will significantly impact agricultural production, exacerbate the risk of conflict, and increase IDP flows. Many major rainfed crops will see average production shocks of several percent by 2060 and significant geographical shifts in crop suitability zones, especially for more water-demanding crops, such as sugarcane and groundnuts. Conversely, under a wet/warm climate scenario, the productivity of most rainfed crops could increase. Animal products follow a similar rainfall-dependent pattern, especially for cattle. Drought-induced pressure on pastoral livelihoods also raises the risk of conflict over grazing lands and water resources and is likely to increase the number of IDPs.

Marine fisheries productivity is also expected to be negatively impacted by rising sea temperatures. By 2023, fish exports had surpassed all crop exports combined, and the largely artisanal sector generates over 100,000 jobs in direct and indirect employment. Increasing sea temperatures and acidity, alongside reduced oxygen concentrations, are predicted to reduce potential fisheries productivity by up to 15 percent by 2060, although poor fisheries management and overexploitation could have an even larger impact.

Historical performance and recent interventions demonstrate potential for expanding resilient agriculture through investments in efficient water management (on-farm and across landscapes), and more effective value chains. Investments are needed to expand large- and small-scale irrigation, as well as water-harvesting techniques, improved soil and water conservation, and climate-smart agriculture (CSA) practices to maximize soil moisture retention and use. This will require the scaling up of climate-smart extension and information services, including tailored weather forecasts and early warning systems. Reversing degradation of rangelands will support more resilient livestock production as well as the rainwater infiltration and retention in the wider landscape. This requires livestock management and addressing sustainable charcoal production. Developing value chains, particularly for key export products, by improving infrastructure, handling and processing, and quality assurance, will be crucial to enhance overall returns and therefore incentives for investing in more sustainable and resilient production. All these interventions will need to be underpinned by establishing robust land administration and tenure, and access to credit. Although little can be done to directly influence changes in ocean chemistry and currents, strengthening general fisheries resource and coastal habitat management is important for adaptation, as healthy marine ecosystems will be more robust to climate change.

Climate-smart urban development

Rural insecurity has driven the highest urbanization in East Africa (at least 47 percent), and urban growth has been very rapid, largely unplanned, and has left large populations vulnerable and disconnected, especially IDPs. Urbanization has exceeded the capacity of Somalia's cities to provide employment, housing, and services, displacing, rather than solving, vulnerability. Nearly 75 percent of Somalia's 3.5 million IDPs live in urban centers, and one in every four urban residents is an IDP. In the last 25 years, some urban centers have increased six- or sevenfold in area. Most of this growth is unplanned, leaving new arrivals, particularly IDPs, in vulnerable outlaying locations, unserved by efficient transport or services. In Garowe, approximately 19 percent of all buildings are in flood-prone areas, including large portions on the city's southern periphery, where over 3,400 structures face significant flood risks. Baidoa experiences widespread flood exposure, with the peripheries, home to large IDP settlements, exposing more than 94,000 people to regular flood hazards. Many IDPs live in temporary or semipermanent shelters and rely on unimproved pit latrines for sanitation and groundwater sources that lack infrastructure for consistent and safe water supply, making them even more vulnerable to flood impacts. Poor transport networks also leave many cut off from schools and hospitals during floods. Electricity is supplied by private companies through diesel-powered mini-grids, which is both inefficient and expensive, and reaches only 70 percent of households.

Transforming Somalia's urbanization process from a product of climate vulnerability into a driver of economic diversification and resilience will require not only additional attention to urban planning development and enforcement, but also major investments in resilient infrastructure and services. To date, identifying development zones has not succeeded in shaping urban growth patterns, as this needs to be complemented by the provision of services that will draw newcomers and provide for their integration into urban economies. These include resilient and efficient transport systems, upgraded power distribution systems that integrate renewable energy, water infrastructure for diversified supply and additional storage, and improved waste and sanitation facilities. To adapt to climate change, urban planning will also need to prioritize flood and heat resilience, including nature-based solutions and building codes that support both flood resilience and efficient cooling. Robust infrastructure and services are critical for the development of a diversified and climate-adapted economy. To improve regulations and service delivery, Somalia needs to enhance the capacity of urban and state-level governments and improve public sector integrity.

Summary of recommendations

Somalia's central challenge is to reverse the vicious cycle of climate vulnerability and social fragility, replacing it with a virtuous cycle of resilience and development by addressing immediate vulnerabilities while also laying the foundation for more resilient development. The management of scarce and unpredictable water resources is a central theme that runs through the three major areas of intervention identified in this CCDR. DRM and preparedness predominantly relate to managing hydrological extremes—that is, droughts and floods. The productivity and resilience of rural livelihoods center around the effective capture, storage, and use of water resources, including both surface (blue) and soil (green) water. To harness the potential of rural-urban migration as an engine of growth and diversification, Somalia needs to invest in resilient urban development and infrastructure, including water supply and flood resilience, renewable energy access, and urban heat stress management. These three focal areas also align closely to the NAP objectives to strengthen early warning systems, enhance agricultural drought resilience and water resources management, and build infrastructure resilience in coastal and urban areas; and the NDC adaptation priorities around disaster risk reduction (DRR) and mitigation, rural livelihood and food systems, integrated water resources management, and infrastructure and urban resilience. In contrast to the NAP and NDC 3.0, this CCDR does not include a focal area of action on health, because the key recommendation for this important climate challenge is to strengthen health systems in general. Health system improvements are assumed as part of the SG scenario, rather than included in the targeted adaptation measures under CS scenario. The CCDR also highlights the economic importance of addressing the impacts of heat stress on human labor productivity, mainly by providing cooling in indoor workspaces and mechanizing agriculture.

Continuing to improve governance and build capacity for effective service delivery and conflict management are both crucial. In addition to targeted adaptation investments, recommendations (Table ES1) also include wider progress on institution-building, governance, human capital, diversification, conflict sensitivity and inclusion. Such progress is needed to underpin these investments and support quality, resilient growth. Given the strong interconnectedness of Somalia's climate and conflict crises, climate action and humanitarian aid must be mutually reinforcing. Climate interventions can help address the drivers of fragility by clarifying mandates and responsibilities, and enhancing transparency across government (vertically and horizontally); strengthening visible government leadership and institutional capacity to deliver effective services; delivering jobs and improved economic resilience at the household-level; reducing existing inequity and building in safeguards to prevent climate interventions from exacerbating social tensions; and building community engagement and leadership through local institutions for resource management, cooperation, and dispute resolution.

The investment required to achieve resilient development is large but cost-effective, and feasible with commitment of both government and donors. The $5.3 billion needed to fund the targeted climate resilience measures modeled in this report is in the same ballpark as other estimates for adaptation-specific investment needs over the next couple of decades and would come on top of the several dozen billions of dollars needed to finance sustainable and high-quality development more broadly. Recent foreign assistance to Somalia has been substantial. Official development assistance (ODA) reached almost $4 billion in 2024, with remittances worth an additional 60 percent of that value. Between 2011 and 2023, Somalia received $14.4 billion in humanitarian aid alone. This CCDR suggests that well-designed adaptation expenditure should be highly efficient. Globally, investment in DRM returns around $4 in avoided losses for each $1 spent. Combined with investments in resilient and diversification, this could produce a virtuous cycle of resilience, growth, and jobs.

In the short term, the FGS will remain highly dependent on external funding and would benefit from improved efficiency of expenditure for resilient development outcomes. Although the ODA financing environment has become increasingly challenging, with several of the largest donors reprioritizing

development aid, it is likely to remain by far the largest potential source of climate finance to Somalia for some time. ODA is currently estimated at close to 10 times the size of domestic revenue mobilization. Funding from dedicated international climate funds—such as the Green Climate Fund and Global Environment Facility—is comparatively very small. Somalia will have to maintain high levels of external support for some time, while also achieving a gradual shift from recurrent ex-post expenditure that responds to the repeated impacts of climate, to ex-ante investments in DRR and other forms of resilient development. As such, it needs to continue to develop its capacity to assess, monitor, and improve the alignment of external assistance with climate objectives, and to demonstrate cost-effective results by:

- Ensuring climate (and conflict) risk assessments are systematically built into investment and project planning processes.
- Strengthening government leadership and improving donor coordination, potentially by establishing a climate platform to identify, support, and monitor action toward a limited number of critical resilience outcomes. Priorities and milestones should reflect the need to gradually shift emphasis from addressing the most acute vulnerabilities to building long-term resilience and diversification. Establishing transparent and need/merit-based systems for establishing priorities, evaluating success, and allocating further assistance is vital to maintaining donor support in an increasingly resource-constrained environment.
- Enhancing community-based resilience planning as a basis for aligning with climate objectives. This includes cash-for-work programs and other forms of humanitarian assistance, and the national community-driven development program, *Bulsho*, which can leverage remittances through its matching grants facility.

In the longer term, Somalia must escape dependency on uncertain foreign assistance, extending government leadership from coordination to direct implementation and financing. To do this, it will need to: build government capacity to assume direct implementation responsibility for public investment and services, and ensure their cost-effective execution; increase domestic resource mobilization over time, in concert with climate-informed public investment management; and engage more effectively with the private sector to channel private investment to adaptation priorities. This is all underpinned by the provision of macrofiscal and social stability through steadily improving impartial and transparent governance, and other political and structural reforms that would support Somalia's transition out of fragility. Table ES1 summarizes and prioritizes the recommendations of this CCDR. For more detailed recommendations, see Appendix 1.

Table ES1: Summary recommendations of this CCDR

Priority area and policy recommendations	Lead agency	Timeframe	Benefit		
			Adaptation	Mitigation	Development
Update DRM policy and capacity of FGS and FMS emergency response agencies	SoDMA, FMS	ST	H	L	H
Approve Hydromet Law Improve hazard mapping and infrastructure standards	SoDMA, MoECC, MoEWR, MoAI	ST	H	L	H
Develop a disaster risk finance strategy and implementation plan	MoF	ST	H	L	H
Support shock-responsive safety nets to offset post-disaster human capital losses	MoF, SoDMA, MoLSA	ST	H	L	H

Priority area and policy recommendations	Lead agency	Timeframe	Benefit		
			Adaptation	Mitigation	Development
Support community-led CSA, including small-scale water infrastructure, and soil and water conservation practices	MoAI, MoLFR, FMS	ST MT	H	L	H
Finalize and implement land tenure reforms to clarify ownership and improve investment security	All relevant agencies	ST MT	H	M	H
Rehabilitate, modernize, and expand major irrigation infrastructure and improve irrigation efficiency	MoAI, MoEWR	MT LT	H	L	H
Strengthen post-harvest management and value addition Establish aggregation and processing centers	MoAI	MT	M	L	H
Expand access to agri-financial services	All relevant public agencies	ST MT	H	M	H
Improve livestock production and rangeland management, building on local institutions	MoLFR, MoECC	MT LT	H	H	H
Enhance sustainable fishery and coastal habitat management	MoFBE, MoECC	MT LT	H	H	H
Develop and enforce urban planning regulations, embedding nature-based solutions	FMS	LT	H	H	H
Invest in infrastructure and services to shape urban settlement, including power distribution and integration of variable renewable energy; water, sanitation, and hygiene; and resilient and public transport	MoEWR, MoTCA, FMS	ST MT	H	M	H
Promote the use of clean energy resources for clean cooking	MoF	ST MT	H	H	H
Preserve public debt sustainability, strengthen revenue mobilization, PFM, capacity, and efficiency across levels of government to implement adaptation and resilience policies	MoF, FGS, FMS	Ongoing	M	M	H
Establish a climate platform to enhance the efficiency of external climate finance through coordination, transparency, and monitoring Involve the center of government in coordinating climate action and finance	Whole-of-government	ST	H	M	H
Enhance regulatory frameworks for environmental and social sustainability, including climate and conflict risk assessments Ensure all climate-related interventions in Somalia are FCV-sensitive	Whole-of-government	MT	H	H	H
Enhance community-based resilience planning to mainstream climate in cash-for-work program and *Bulsho* matching-grant mechanisms to mobilize remittances for climate action	MoIFAR	ST	H	H	M
Enhance public-private dialogue for climate action Provide greater access to climate risk information Develop green finance systems	MoF	ST	H	H	H

Note: Traffic-light color coding: short-term (ST) actions (within next 5 years) are coded red; medium-term (MT) actions (5-10 years) are yellow; longer-term (LT) actions (10+ years) are green. MoAI = Ministry of Agriculture and Irrigation; MoEWR = Ministry of Energy and Water Resources; MoF = Ministry of Finance; MoFBE = Ministry of Fisheries and Blue Economy; MoIFAR = Ministry of Interior, Federal Affairs, and Reconciliation; MoLFR = Ministry of Livestock, Forestry, and Range; MoLSA = Ministry of Labour and Social Affairs; MoTCA = Ministry of Transport and Civil Aviation. In the benefits columns, L = low; M = medium; H = high.

1

Development and Climate Challenges and Opportunities

1. Development and Climate Challenges and Opportunities

Somalia is highly vulnerable to climate change impacts, which significantly exacerbate its conflict and vulnerability dynamics. Much of the country's terrain is arid and semi-arid, though it is endowed with valuable natural assets such as a long coastline and relatively fertile river valleys. The country has a history of protracted conflict, limited state presence, weak state legitimacy, and complex clan dynamics. These structural challenges and an unfinished political settlement result in continued contestation over financial resource and other allocations, natural resource exploitation, and territorial disputes due to both a lack of clear land management policies and the absence of robustly enforced legal and judicial systems. Recurrent drought, floods, and extreme weather events have devastated the livestock and crop subsectors—the country's main sources of economic activity and exports—further straining the fragile socioeconomic fabric.

One of the world's poorest countries, in Somalia, high climate vulnerability interacts with protracted conflict and institutional and social fragility. There is limited state presence across large parts of the country, the social contract is fractured due in large part to a legacy of state collapse three decades ago, and complex intercommunal dynamics contribute to contestation and violence. Ranking 164th out of 187 countries for climate change vulnerability and readiness,[1] Somalia suffers from widespread poverty and some of the world's lowest human development indicators. Its path to sustainable development remains fraught with obstacles, necessitating comprehensive and resilient strategies to address its multifaceted vulnerabilities and build a foundation for enduring growth.

Despite these challenges and vulnerabilities, Somalia continues to enhance its resilience by making gradual progress in state-building, economic recovery, and inclusive and sustainable growth. Established in 2012, the FGS has implemented important state- and institution-building reforms, reaching the HIPC Initiative completion point in December 2023. In March 2024, it joined the EAC, committing to harmonize its policies with EAC members to benefit from improved regional integration.

1.1 Development challenges: poverty, fragility, and vulnerability

Somalia is a low-income economy with a legacy of high poverty and weak growth. Fragility, climate vulnerability, limited financing options, and gaps in labor force participation and skills have meant low and volatile economic growth. Real annual gross domestic product (GDP) growth averaged only 2.4 percent in 2018–24, while real annual GDP per capita growth averaged -0.4 percent. Declining global commodity prices have since helped ease inflation, and real GDP growth is projected at 4 percent in the medium term. But downside risks have recently intensified amid the expected significant reduction in development aid and uncertainty about global trade policy. Over half (54 percent) the country's population lives below the national poverty line, with rural and urban poverty rates at 65 percent and 46 percent, respectively. Human development indicators are poor. Only 25 percent of children are enrolled in primary school and 15 percent in secondary school (FRS 2023) and it has the world's highest morbidity and mortality rates (Warsame 2020). Across education and health, outcomes are significantly worse for women and girls. Maternal and infant mortality (563 and 10,400 per 100,000 live births, respectively) are considerably higher than regional averages, while at 6.9, Somalia's fertility rate is among the world's highest.[2] Infrastructure is inadequate and access to services is extremely low: only 62 percent of the population has access to electricity (FRS 2023), 10–15 percent to banking, and around 75 percent to improved water services. With high informality in the economy, only 35 percent of working-age men and 12 percent of working-age women are in work-for-pay employment and just 9 percent of the population owns a bank account. Somalia remains highly dependent on volatile foreign aid, remittances, and subsistence agriculture and pastoralism.

1 https://gain.nd.edu/our-work/country-index/rankings/.
2 https://data.worldbank.org/indicator/SH.STA.MMRT?locations=SO; https://data.unicef.org/country/som/.

The weakness of Somalia's public institutions has significantly amplified the role of the private sector and official development assistance (ODA), often in unconventional and precarious ways. In the absence of a functioning state for much of the past three decades, Somalia has become heavily dependent on volatile foreign aid, with most ODA provided off budget to finance humanitarian and development needs. On-budget support (4.5 percent of GDP) financed 60 percent of FGS spending in 2024. Remittances, accounting for 20 percent of GDP, provide an important safety net for many people, and finance domestic consumption and investment. Simultaneously, domestic private actors—from small informal enterprises to a handful of large conglomerates—have stepped in to provide essential goods and services. Today, the private sector accounts for approximately 95 percent of total jobs created and delivers most basic services, including education, electricity, telecommunications, and health care. This informal resilience has helped sustain economic activity, particularly in urban areas, but it has also entrenched fragmentation and limited the emergence of inclusive, coordinated systems for development. The dominance of trust-based networks and clan-linked arrangements reflects the country's continued reliance on traditional institutions in the face of weak or nonexistent formal regulatory frameworks. These informal governance systems, while adaptive, often reinforce patterns of social vulnerability and exclusion, particularly for women and marginalized groups.

Beyond its non-tradable, low-productivity, service-dominated economy, Somalia's development challenges are deeply rooted in the vulnerability of rural livelihoods. Most of the population depends—directly or indirectly—on agriculture, livestock, and fisheries for subsistence, income, and employment. These sectors are crucial for the country's economy. According to the latest employment survey, the agricultural sector employs 45.8 percent of employed people aged 15 and older. Agriculture exports generate about 93 percent of the country's total (based on partner countries' reporting). These are predominantly animal products and have been rising exports every year since the late 1980s, largely due to the expansion of livestock herds, often on marginal rangelands. Despite a precipitous decline during the civil war in the 1990s, the crop sector supports around 24 percent of the population and remains vital for food security and rural incomes, and has some limited export opportunities. High-value crops, such as sesame and citrus, present promising opportunities for export growth and diversification. Strong seasonal upwelling off Somalia's Indian Ocean coast provides one of the world's most productive marine ecosystems, with numerous fish and shellfish species, including valuable pelagic tuna, although its narrow continental shelf limits shallow-water fisheries. Some demersal stocks—such as sharks, lobster, grouper, and snappers—may be showing signs of overexploitation, especially near urban centers where fishing activity and demand is higher. Small pelagic resources are thought to be underused within Somali waters, although the large pelagic tuna stocks are assessed to be overfished by the Indian Ocean Tuna Commission and Somalia has captured limited value from the international fleets that harvest them. The transport of agriculture and fishery products within Somalia is highly vulnerable and unreliable.

Yet, Somalia continues to have a chronic food crop deficit (FRS 2023).[3] Pastoral, farming, and fishing communities all suffer from high rates of chronic malnutrition. The nomadic population has the highest poverty rate (78 percent), the largest poverty gap, and the highest rate of inequality. They also fall behind in terms of literacy and enrollment, and access to services, and have the highest exposure to climatic shocks.

Protracted conflicts have also significantly contributed to a legacy of high poverty and weak socioeconomic indicators. The civil war and subsequent instability have devastated the country's infrastructure and economy, leading to widespread poverty. The conflict in Somalia has a complex history that dates back several decades. The country experienced significant turmoil following its defeat in the Ogaden War in the late 1970s, straining the stability of the Siad Barre regime. The fall of the regime in 1991 resulted in the collapse of state institutions and the rise of various warlords and militant groups taking advantage of the power vacuum. Fragile transitional administrations and external interventions thereafter contributed to the emergence of the violent extremist group, Al-Shabaab. This period witnessed the loss of much of Somalia's

3 Local production meets only 22 percent of per capita cereal needs. Even in the best agricultural seasons, domestic production provides only about 40–50 percent of per capita cereal needs.

infrastructure, including a halving of crop production as the major irrigation systems in Shabelle Basin ceased to function. In 2012, Somalia adopted a provisional constitution establishing the new FGS, a watershed moment that opened the way to a gradual stabilization and the rebuilding of state institutions. Yet, the country continues to suffer from continued high levels of insecurity and limited state presence, with large swathes of territory—particularly in southern and central Somalia—contested and influenced by Al-Shabaab.

Although the root causes are complex and multifaceted, Somalia faces with three underlying drivers of fragility, conflict, and violence (FCV) that threaten long-term stability and development. These are continued intra-state instability and elite contestation; fractured relations between the state and citizens; and deep-seated intercommunal divisions. Collectively, these drivers reinforce each other, perpetuating vicious FCV cycles that hinder state-building and the attainment of peace, security, and sustainable development (World Bank 2023b).

The country's underlying fragility hinders the state's ability to effectively address climate change, and in turn, climatic shocks exacerbate the drivers of FCV. The politicization of resource allocation—which is often heightened during climate-induced crises—exacerbates tensions between the FGS and Federal Member States (FMS), undermining efforts to build a more stable political settlement. Ongoing political contestation and the lack of consensus on the federal structure, including resource-sharing responsibilities between the FGS and FMS, create a challenging environment for effectively channeling the investments needed for climate adaptation and respond to climate-related crises (Yasin 2023). So, competition over financial resources, including to address climatic shocks, frequently escalates intergovernmental disputes over power and authority (United Kingdom Humanitarian Innovation Hub 2023). These dynamics are compounded by the absence of clear land management policies and legal systems to resolve territorial disputes, which often overlap with resource competition (Majid and McDowell 2012). In this context, Al-Shabaab continues to exploit these governance voids, positioning itself as an alternative source of governance by mediating disputes and regulating resource access.

Climate shocks place immense strain on Somalia's already limited state capacity and ability to deliver services, exacerbating societal vulnerabilities and eroding public trust in government institutions. Successive crises—including prolonged drought and devastating floods—have exposed the state's inability to effectively deliver critical services, such as water and sanitation, and contributed to heightened levels of food insecurity and displacement. In southern and central Somalia, where climate disasters strike hardest, weak state presence and limited territorial control further restricts the government's ability to implement effective adaptation measures or deliver emergency assistance at scale. This governance vacuum leaves affected communities increasingly dependent on informal networks or nonstate actors for support. Over time, these cycles of governance failure deepen state fragility, eroding the ability of institutions to prepare for or mitigate future shocks. Even in areas with established state presence, such as major urban areas and their immediate surroundings, corruption, elite capture, mismanagement, and limited capacity further undermine the effectiveness of crisis response efforts.

Shocks intensify resource competition, disproportionately affecting vulnerable groups and heightening intercommunal tensions and contributing to the emergence and escalation of violence. In regions like the Shabelle River basin, recurrent tensions between pastoralist clans and farming communities illustrate how resource competition occasionally escalates into local conflicts. These disputes often flare at times of drought, when herders move their livestock into farmlands in search of grazing areas, disrupting agricultural activities and triggering violence (EU Agency for Asylum 2022). Competition over scarce resources, such as water and land, also enables elites to position themselves as protectors of a certain group's access to resources in opposition to other groups. This adds to existing fault lines, undermines social cohesion, and contributes to clan-based conflicts, further hampering efforts to establish effective state governance and legitimacy.

Looking ahead, multiple risks pose an additional risk to the country's fragility. Al-Shabaab continues to maintain territorial control and influence across parts of southern and central Somalia, and remains a threat to long-term peace and stability despite government offensives against it. Although the government's most recent offensive against the group, which began in 2022, resulted in the recovery of multiple towns, it has faced a violent backlash from Al-Shabaab and notable setbacks in terms of holding recovered territory. The evolving security context shows an equilibrium of continued high levels of FCV, with an average of over 5,600 conflict-related fatalities per year over the past five years.[4] Continued high levels of political contestation could also threaten state-building gains and strain the state's ability to provide security. Finally, as part of the drawdown of the previous African Union Transition Mission in Somalia, the number of authorized African Union troops in Somalia has almost halved since 2022 and currently stands at approximately 12,000 as part of the recently established African Union Support and Stabilization Mission. Despite the decreased troop numbers, questions remain regarding the mission's financial sustainability and ability to continue providing security support to the country. These risks threaten to further complicate the operating context, and in turn place an additional challenge to the government's ability to prepare for, manage, mitigate, and respond to climate shocks.

Despite these challenges, Somalia has key sources of resilience that help communities cope with, and adapt to, shocks and crises, and which serve as foundations for greater stability in the future. State, economic, and social resilience have all been pivotal to supporting livelihoods and represent crucial elements for attaining longer-term peace and prosperity. This includes improving state capacity and elite settlements that have underpinned progress over the last decade, the dynamism of the private sector, which has thrived in the absence of the state, and embedded social capital that often serves as the first line of assistance to communities impacted by poverty, climatic shocks, and conflict. Building on and strengthening these sources of resilience, while addressing Somalia's underlying drivers of FCV, will be crucial to transition out of fragility in the long term and more effectively address the threats posed by climate change.

1.2 Adverse climate conditions and impacts

Located on the Horn of Africa, Somalia has a predominantly arid climate, and little of its land surface is suitable for rainfed crop production. Average annual rainfall is under 200 millimeters in much of the country; but it is significantly higher in the northern highlands and in the south, where it ranges from 400 to 600 millimeters. Mean daily maximum temperatures exceed 30 °C in most areas, although they fall much lower in the northern highlands and are tempered by cool offshore currents along the eastern seaboard. The only permanent surface water resources are the Shabelle and Juba rivers in the south, whose valleys form the heart of Somalia's cropland. Just 13 percent of the country's total land area is suitable for cultivation (FRS 2013), including both rainfed and (much smaller) irrigated agropastoralism zones, although a much more extensive area is used for pastoralism and harvesting natural products, such as resins and gums.

The main growing periods typically fall in the two rainy seasons, which play out differently across the country. In the north, *Deyr* (September to November) tends to be the primary growing season, while *Gu* (March to June) is more important to agriculture in the south. Pastoralists migrate between the grazing areas during the transitions in the wet and dry seasons. The Gu rains are known for rejuvenating the pasturelands, especially on the central plateau, briefly bringing lush vegetation to the typically arid landscape.

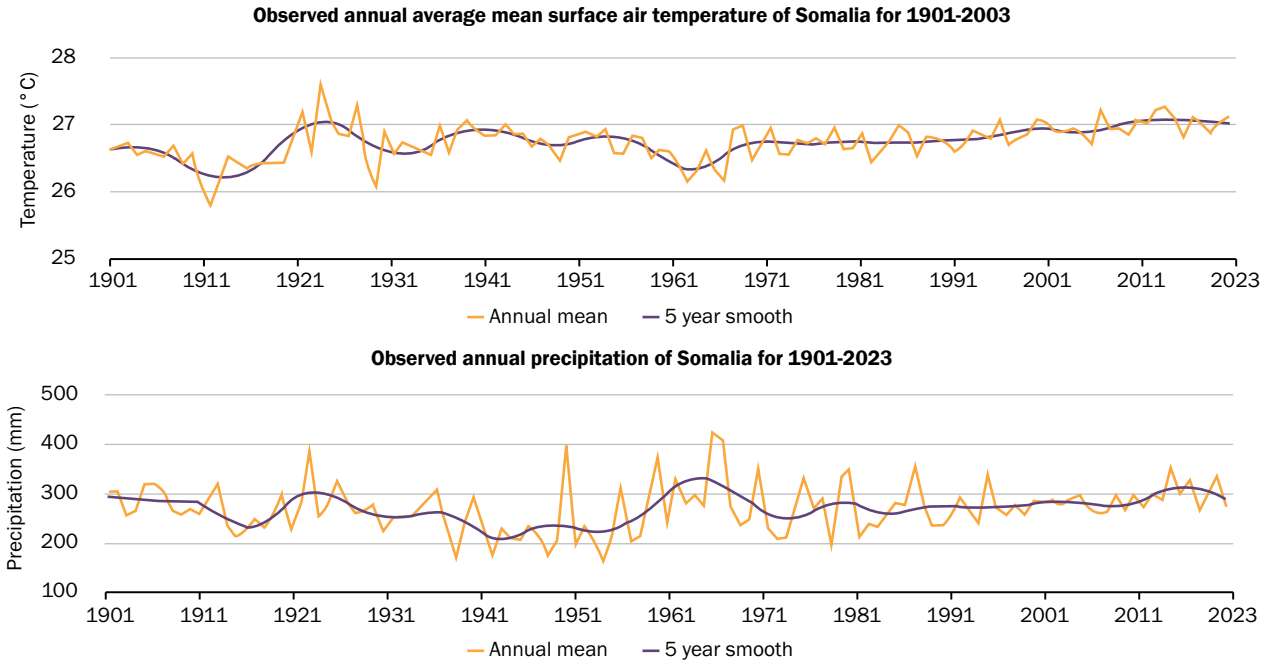
Somalia's climate has historically been characterized by low and inconsistent rainfall, with significant interannual and decadal variation. The years between 1991 and 2015 were, on average, 1 °C hotter than prevailing ambient temperatures for 1901–30. There has been a steady and significant rising trend in mean maximum daily temperatures over the last half century (Figure 1.1). Rainfall is driven by a complex interaction of winds and ocean currents, which creates considerable variability and challenges for long-term predictions,

4 Armed Conflict Location and Event Data Project 2020–2024, https://acleddata.com/.

in common with most of East Africa. Decadal precipitation trends are less distinct, but the Gu rains have been declining in many areas since the 1980s. These climate trends have been accompanied by an increase in extreme events that has exceeded regional and global averages, with both droughts and floods becoming increasingly frequent and impactful.

Flooding has tested the resilience of both people and infrastructure. While average precipitation is low across the country, it frequently takes the form of localized torrential rains. Heavier rains now lead to regular flooding, often following periods of drought when the parched land is quickly inundated. Flooding mostly occurs during the Deyr season, primarily influenced by rainfall in the upper catchments of the Shabelle and Juba Rivers in neighboring Ethiopia. In recent decades, Somalia has experienced severe floods on five occasions, in 1997, 2006, 2018, 2019, and 2023. The El Niño Southern Oscillation brings more rainfall and flooding during El Niño years and droughts in La Niña years (World Bank 2023a). Seasonal flooding often makes roads inaccessible or impassible. In 2019, over 320 kilometers of road and 23 bridges were damaged, and 5 percent of road embankments destroyed, with a total estimated cost of $94.8 million. Floods in November 2023 affected an estimated 2.48 million people, displaced over 1.2 million from their homes, took the lives of 188 people, and destroyed 48 health facilities (FGS et al. 2024). Fluvial and pluvial floods pose the greatest risk, in terms of the frequency and the impact on people, while coastal flooding—a risk to anticipate in the future— is driven by different dynamics and has not proven a regular threat to communities.[5] One World Bank study estimates that 15–20 percent of Somalia's population is exposed to a flood risk of 15 centimeters or more, rising to 20–30 percent in the regions around the Juba and Shabelle Rivers (Salhab and Rentschler 2020). Figure 1.2 provides key statistics on natural hazard occurrence for 1980–2020.

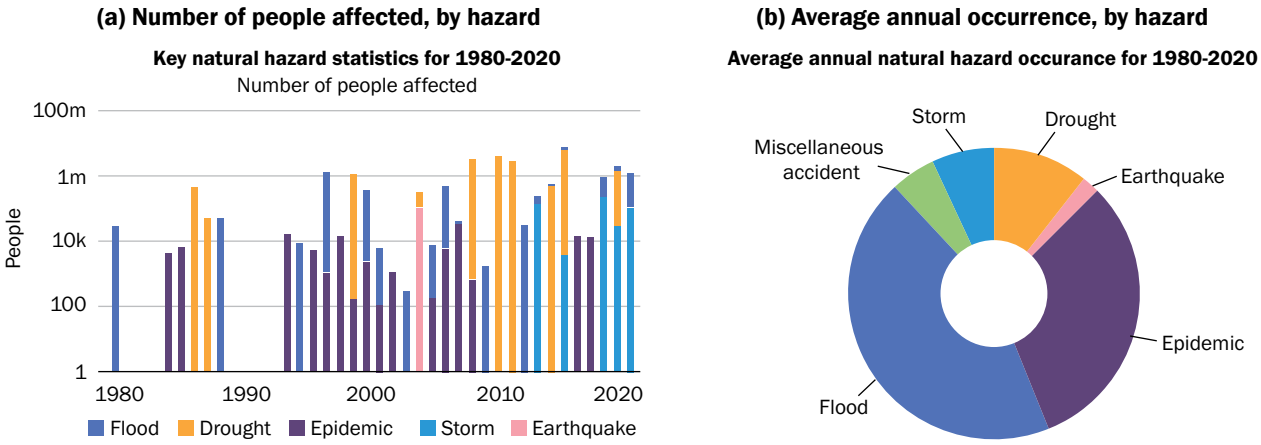
Figure 1.1: Observed average annual mean surface air temperature and precipitation for Somalia, 1901–2023



Source: World Bank 2025c.

5 Pluvial flooding is defined as flooding which results from rainfall-generated overland flow, before the runoff enters any watercourse or sewer. Fluvial flooding occurs due to overflowing of the normal confines of a river, stream or other water body when channel capacity is exceeded, inundating adjacent areas. Costal flooding refers to the inundation of normally dry coastal land due to high or rising tides and/or storm surge.

Figure 1.2: Natural hazard occurrence in Somalia, 1980–2020



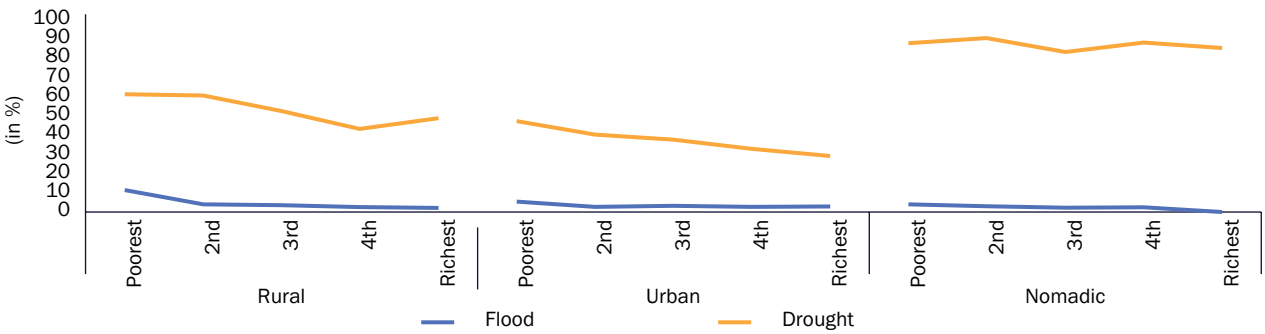
Source: EM-DAT (www.emdat.be).

Droughts are the costliest natural disasters and geographically spread across the country. Droughts affect the largest number of Somalis every year (World Bank 2019b), producing chronic food insecurity and large numbers of internally displaced persons (IDPs). The 2016–17 drought alone caused losses of $3.25 billion, and total recovery needs are estimated at $1.77 billion. The sectors with the greatest needs were agriculture (irrigated and rainfed crops) with 28 percent of total needs, and urban development and municipal services, with 17 percent of total needs (Otte et al. 2023). Livestock-related losses were valued a6 $1.3–1.7 billion, as widespread animal deaths severely impacted pastoralist communities who rely heavily on livestock for income and food security (Otte et al. 2023). Although nomads are most affected by drought (87 percent in 2022), large numbers of the wider rural and urban populations are also affected (53 and 36 percent, respectively, in 2022). In recent years, successive droughts, combined with high levels of insecurity, have devastated the rural economy, driving dire food insecurity and mass displacement.

1.3 Climate change, vulnerability, and conflict

Routine exposure to climate disasters is extremely high, particularly in poor, rural, and nomadic households. Most households are exposed to multiple climate and economic shocks. Drought was by far the most commonly reported major climate impact on households during 2020–22, with rural residents and nomadic pastoralists most affected, and 40 percent of urban residents reporting exposure (Figure 1.3). Across all categories, poorer households were significantly more exposed. Most Somali households were hit with multiple and contemporaneous shocks in 2022—including higher food prices, drought, and a loss of livestock—and almost half of all households stated that the frequency of droughts, flooding, and extreme heat has increased in the last five years (World Bank 2024c).

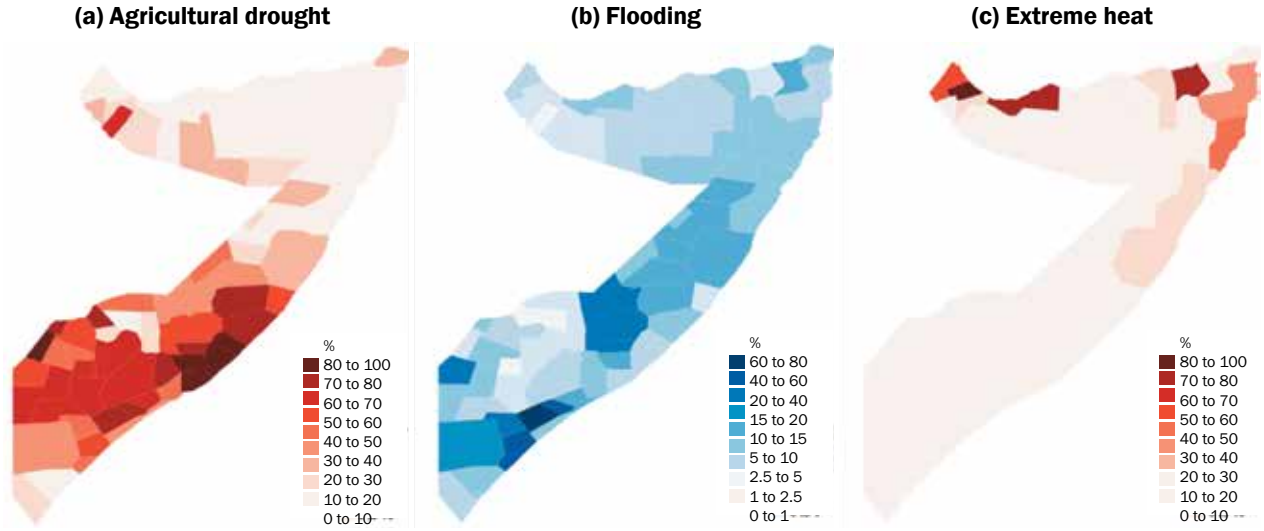
Figure 1.3: Share of households reporting exposure to drought or flood during 2020–22, by consumption quintile



Source: Based on World Bank data.

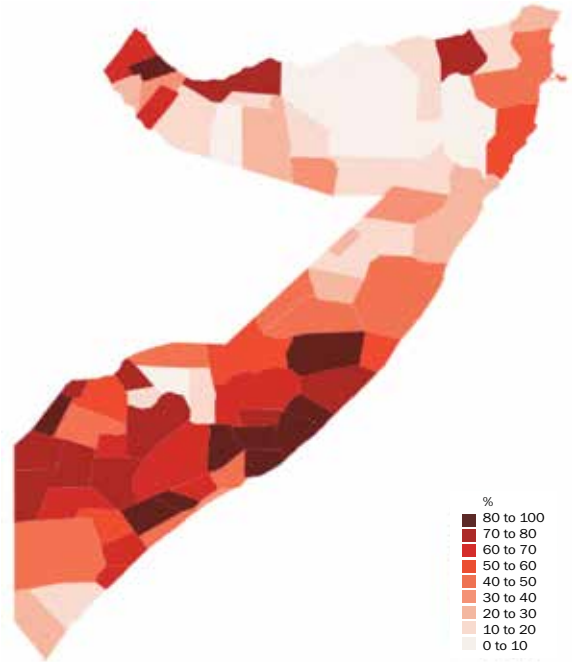
Climate threats are distributed across the country, with exposure and vulnerability both correlated with poverty and highest in southern and central Somalia. Exposure to the greatest threat, agricultural drought, is predominantly concentrated in the south, where most of the agricultural land is located (Figure 1.4). Exposure to flooding is also more common in the south, although it is concentrated in fewer districts, while exposure to extreme heat is concentrated in a few northern districts, and exposure to extreme heat is greatest in the north. Combining all three shocks, climate vulnerability is highest in the south, largely driven by exposure to agricultural drought (Figure 1.5).

Figure 1.4: Exposure to agricultural drought, floodings, and extreme heat in Somalia



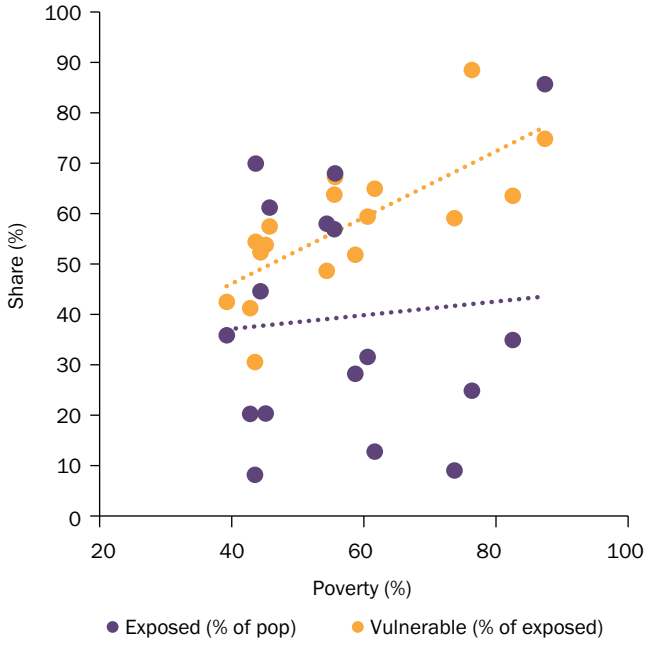
Source: Based on World Bank data.
Notes: Drought hazard (panel a) is defined as areas where at least 30% of cropland/grassland have experienced drought (Vegetation Health Index below 35) for the past 39 years; panel b shows share of people exposed to river flood hazards (inundation depths of at least 50 cm during 1-in-100-year flood events); panel c shows share of people exposed to 33 °C day max wet bulb globe temperature.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Figure 1.5: Exposure to any shock, household and exposed population



Source: Based on World Bank data.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

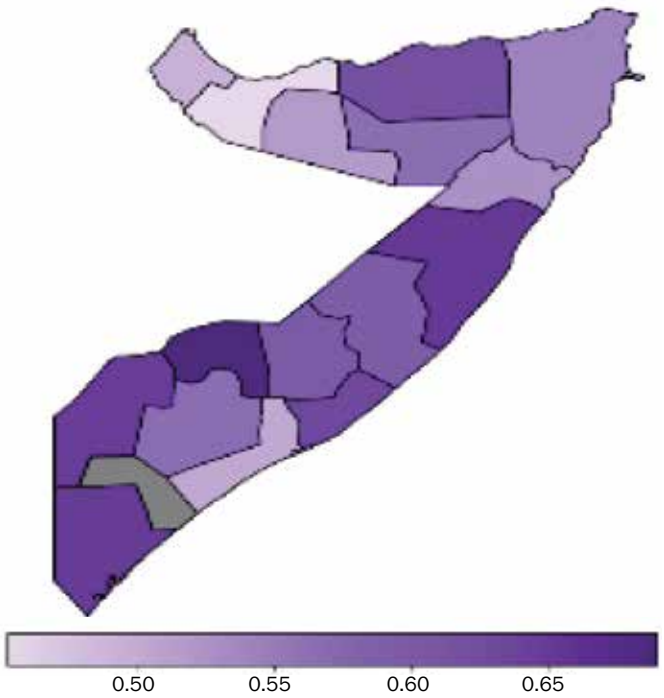
Figure 1.6: Share of exposed people who are vulnerable and poor



Source: Based on World Bank data.

Exposure and vulnerability are both correlated with poverty, contributing to the climate vulnerability of populations in southern and central Somalia. The share of households exposed to climatic shocks is only weakly positively correlated with regional poverty rates, but the share of exposed population who are classified as vulnerable is positively correlated with poverty (Figure 1.6). So, while climate shocks are not concentrated in poorer regions, the exposed population in poorer regions are more often vulnerable to these shocks.

Figure 1.7: Index of multidimensional exclusion



Source: Based on World Bank data.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Poverty and exclusion are also widespread, multidimensional, and concentrated in southern and central Somalia. A social exclusion index was applied to household data for Somalia, based mainly on similar criteria as the vulnerability index used in Figure 1.5 (level of education, employment status, access to basic services, diversity of income sources, bank account ownership, and access to financial services), but with additional elements covering access to quality housing, food security, and shock-coping strategies. This found that 89 percent of individuals experience more than one form of exclusion, with the average person simultaneously triggering five out of eight exclusion indicators. Multidimensional exclusion was most prevalent in the south (Figure 1.7), and significantly higher among rural than urban residents. Slight increases in multidimensional exclusion were seen in women over men, and in youth.

Conflicts, histories and cultural norms have also shaped patterns of alienation of specific groups. These have contributed to their marginalization and vulnerability, exacerbating exclusion from essential services and opportunities.

Minority clans: Clan identity has been politicized since the dissolution of the Somali state in the early 1990s, and the reliance of the country's political and economic systems on informal clan structures means that clan membership is influential in various dimensions of inclusion, including access to aid and safety nets. Several minority clans have been historically excluded and stigmatized, including the Madhiban and the Somali Bantu communities. Minority clan members are particularly vulnerable in the context of Somalia's conflict and climate impacts, especially in rural areas. For example, many of the subsistence farmers in the main river valleys belong to linguistic and cultural minorities (Rahanweyn and Somali Bantu) and are disproportionately victims of land appropriation and displacement. Members of weaker clans are also more likely to be pushed out of pastoralism, as commercialization has led to the concentration of herds and resource access in fewer hands.

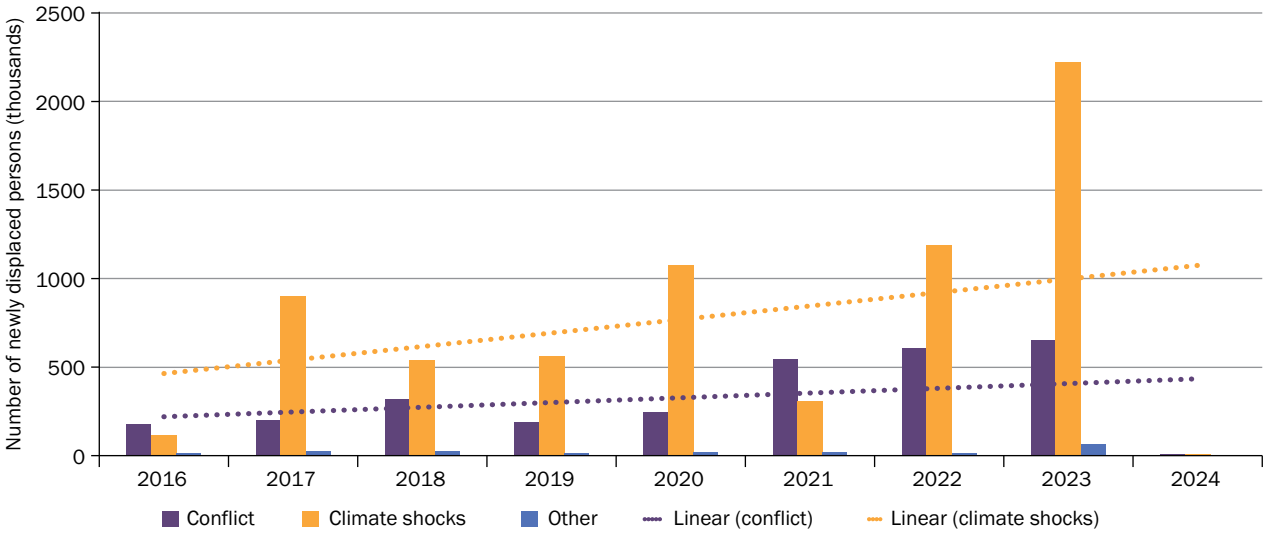
Gender: Women and girls face significant social exclusion due to patriarchal norms, and limited access to education and political participation. They are disproportionately impacted by climate shocks and likely to have fewer and more harmful coping mechanisms. In the wake of climate shocks, men are more likely to migrate to find work, leaving women more vulnerable within female-headed households.

Youth: Over 70 percent of the population is aged under 35, meaning that a significant majority of the population has not known peace nor stable governance, given that the Somali state disintegrated in 1991. Limited education, unemployment, and a lack of sustainable livelihood opportunities reduce their ability to cope with drought and other climate shocks, making them vulnerable to risky coping mechanisms such as irregular migration and recruitment by armed groups.

IDPs: Conflict and climate crises have displaced over 3.5 million Somalis and is a major driver of urbanization across the country (UN OCHA 2025). IDPs are predominantly from marginalized groups and minority clans, compounding their heightened vulnerability, and many have been displaced multiple times. Coming primarily from rural areas, displaced populations are largely concentrated in and around urban centers, drawn by the prospects of improved livelihoods, basic services and humanitarian assistance; in 2024, more than half lived in the capital Mogadishu and large cities like Baidoa and Hargeisa (UN OCHA 2025). Approximately 75 percent live in underserved irregular settlements on the outskirts of cities (UN OCHA 2022b). IDPs struggle to access water, sanitation, education, health, employment, markets, and other services, which are often contingent on wealth and kinship connections (World Bank 2020b). Over 70 percent of IDPs are women and children (Hall 2021) and are extremely vulnerable to gender-based violence, including sexual exploitation, within IDP camps.

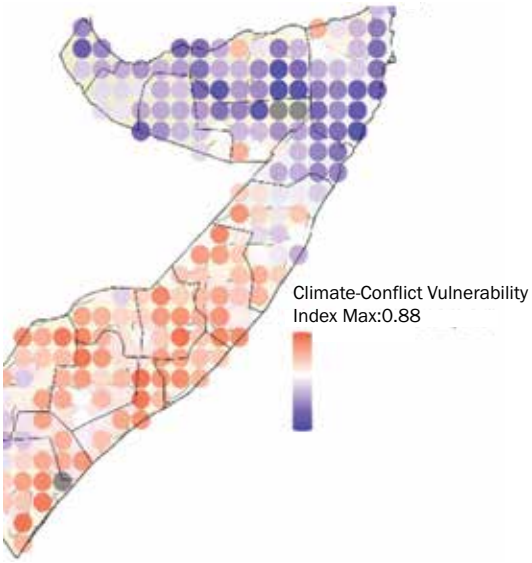
Though often overlapping, climatic shocks have overtaken conflict as the primary driver of migration, with droughts in 2017 and 2022 and floods in 2020 and 2023 causing mass displacement (Figure 1.8). In 2022, self-reported IDPs, especially poorer IDPs, cited drought as the primary reason for displacement (World Bank 2024d). In 2023, 653,000 Somalis were displaced by conflict and insecurity, an all-time high. Yet three times as many people (2.2 million) were displaced by climate shocks, primarily flooding (1.7 million) and drought (525,000). Climate and conflict shocks are often inter-related and show a high degree of spatial correlation, being particularly concentrated in southern and central Somalia (Figure 1.9). Many IDPs also move to camps or informal settlements on the periphery of urban centers, where they may still be subject to considerable climate vulnerability from urban flooding, and typically lack services and opportunities to allow their effective integration into urban economies (Figure 1.10).

Figure 1.8: Trends and drivers of newly displaced people (2016–23)



Source: World Bank 2025b.

Figure 1.9: Mapping the distribution of climate-conflict vulnerability

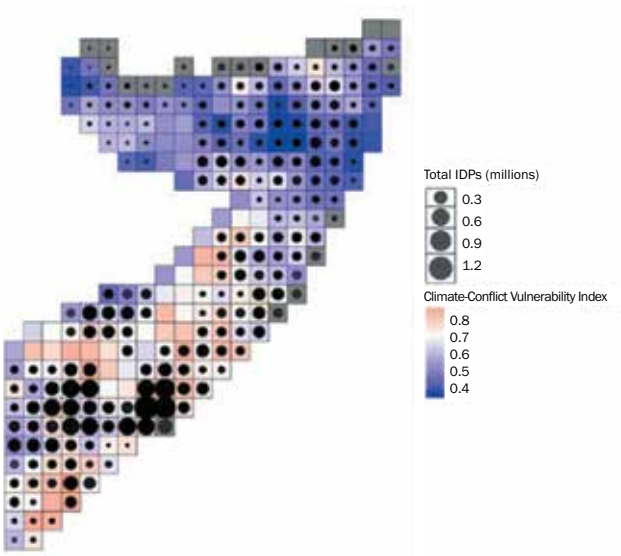


Source: German Federal Foreign Office, University of the Bundeswehr Munich, and Potsdam Institute for Climate Impact Research 2024.

Note: The figure shows the distribution of Climate-Conflict Vulnerability Index (CCVI) scores across areas of territorial control in Somalia. The index is a global composite index that maps levels of vulnerability to various climate and FCV related threats using a standardized approach. Higher scores are associated with higher vulnerability.

This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Figure 1.10: Geographic overlap between exposure to climate-related hazards and IDP concentration in Somalia



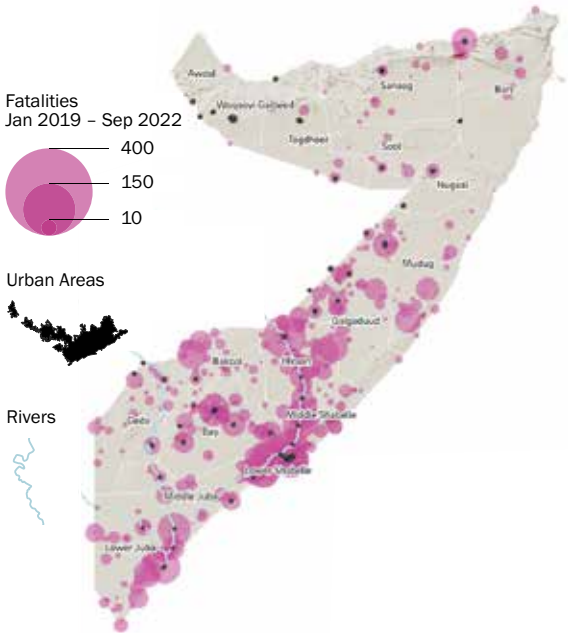
Source: Based on UNHCR and CCVI data.

Notes: The figure illustrates the spatial overlap between climate-related risk and the total number of IDPs in Somalia. Climate risk is assessed using the CCVI, a composite measure that captures both climate-related hazards and conflict vulnerability. Higher CCVI scores indicate greater exposure to climate-related risks. The risk levels are visualized using grid cells (55x55 km). Black circles represent the number of IDPs (in millions) within each grid cell.

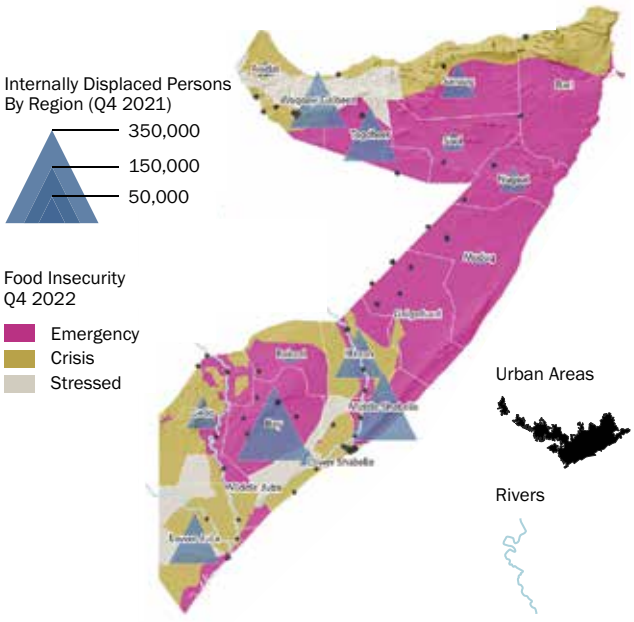
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Figure 1.11: Hotspots for conflict, climate, and displacement and food insecurity

(a) Armed violence



(b) Food insecurity and internal displacement

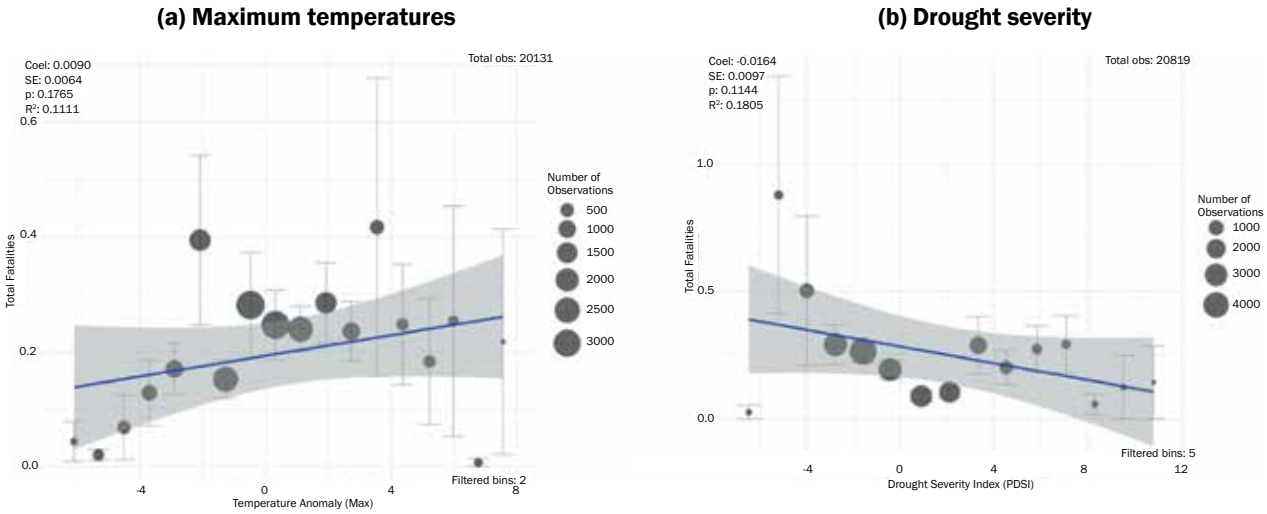


Source: Broek et al. 2022

This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Climate change amplifies existing risks in Somalia's FCV context, acting as a threat multiplier and compounding governance challenges (UN Security Council 2021). It intensifies contestation over increasingly scarce resources, weakens government capacity, and deepens societal inequalities (Tarif et al. 2023; Brochen et al. 2024). The convergence of climate shocks and conflict complicates recovery efforts, undermines local resilience, and heightens risks to Somalia's humanitarian and security landscape (Tarif et al. 2023; Van Giessen 2011). Left unaddressed, these vulnerabilities—ranging from heightened resource competition to weakened state institutions—can lead to maladaptation and further entrench Somalia's fragility (World Bank Group 2023). In particular, greater exposure to climate-related shocks can lead to an increase in FCV-related outcomes. Figure 1.11 shows hotspots for conflict, food insecurity, and displacement across the country, while Figure 1.12 highlights how high temperature anomalies and drier-than-normal conditions are typically associated with greater FCV-related fatalities across Somalia.

Figure 1.12: Relationship between heat-related extremes and FCV-related fatalities



Source: World Bank staff, using climate data from TerraClimate and FCV-related fatality data from the Armed Conflict Location & Event Data Project (https://acleddata.com/).

Notes: The graphs depict mean levels of FCV-related fatalities in months with higher (or lower) maximum temperatures (panel a) and drought severity, as measured using monthly anomalies in Palmer Drought Severity Index (panel b). Maximum temperature anomalies (panel a) and PDSI monthly anomalies (panel b) are calculated relative to a 1990–2020 baseline for each grid cell (55x55 kms). Negative scores are associated with months that have lower maximum temperatures (panel a) and more severe drought conditions (panel b) relative to the monthly baseline period. Positive scores are associated with months with higher maximum temperatures (panel a) or less/no drought conditions (panel b). Observations are binned and averaged.

Beyond deepening Somalia's underlying drivers of FCV, the interaction between conflict, exclusion, and climate vulnerability is complex, but includes a number of key pathways.

Weak governance serves to increase climate vulnerability, both nationally and locally. Fragile governance (very low capacity in, and resourcing of, public institutions) and ongoing political instability hinder service delivery and appropriate of climate vulnerability management and encourage unsustainable urbanization. Historically, Somalia's nomadic pastoralist communities have demonstrated greater resilience to climate shocks than sedentary farming populations, as their mobility allows them to adapt to changing environmental conditions. But conflict has constrained pastoralist mobility, and this resilience is being eroded.

In turn, climate impacts can aggravate social fault lines, amplifying grievances and deepening instability. In the absence of strong state systems, the loss of assets and livelihoods often leaves people reliant on traditional structures that may exacerbate inequality and increase both opportunities to siphon off aid and vulnerability to recruitment by armed groups. The high costs related to preparing for, and responding to,

climate-related hazards can also place considerable technical and fiscal pressure on already overburdened government systems. The scale of internal displacement places significant pressure on host communities and urban centers, disproportionately affecting vulnerable groups and heightening intercommunal tensions (Halakhe and Miller 2023). Competition for land, housing, and public services often leads to tensions between displaced and host communities, and can create new fault lines for conflict.

Climate impacts can intensify resource degradation and serve to increase competition and conflict over scarce natural resources. For example, during the 2021 and 2022 droughts, poor rainfall drastically diminished water availability across the country, with up to 80 percent of sources drying up, including the Juba and Shabelle rivers (UN OCHA 2022c; Ahmed et al. 2024). Reduced access to water points and grazing lands increased local resource competition and food insecurity, fueling tensions between pastoralists and farmers (UN OCHA 2022a, 2022b). Maladaptive practices, such as groundwater over-extraction and unsustainable charcoal production, also further undermine resilience while amplifying resource competition and societal grievances (Broek and Hodder 2022).

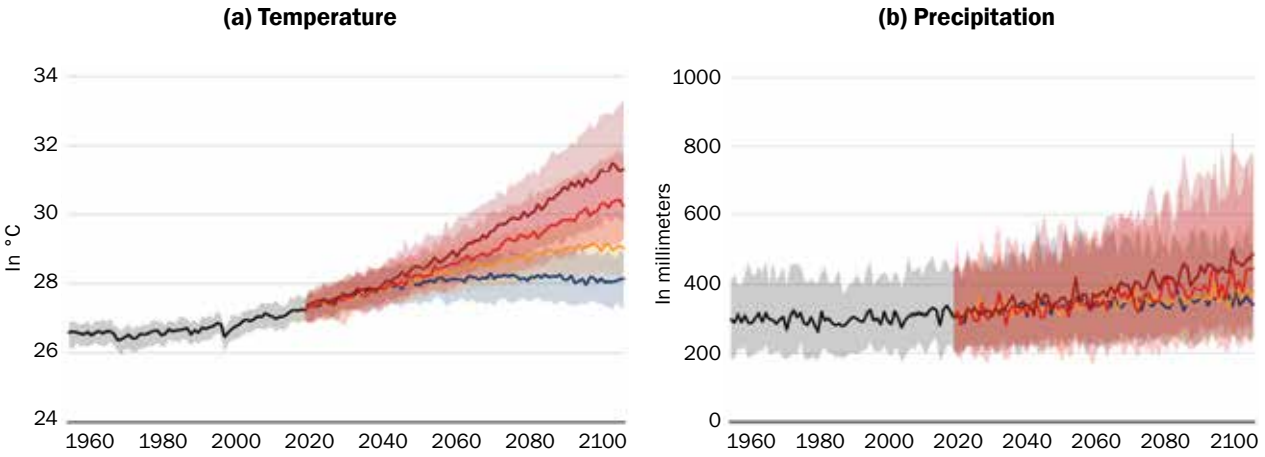
Climate shocks exacerbate vulnerabilities that nonstate armed groups, such as Al-Shabaab, have been adept at exploiting to consolidate their influence and governance claims. The links between resource competition, vulnerability, unaddressed grievances, and conflict are evident in southern Somalia around the riverine areas where al-Shabaab is most entrenched. These areas are home to numerous excluded and vulnerable groups, and the most highly contested resources: fertile land and water. Al-Shabaab's strategic approach to resource control has enabled it to act as a service provider during climate crises. For example, the group has seized key water points along the Juba and Shabelle rivers, monopolizing access to these essential resources (Broek and Hodder 2022) and entrenching its influence over local populations by restricting access or demanding payment for use.

1.4 Future climate impacts

Current climate projections show the temperature in the Horn of Africa rising by at least 2°C over pre-industrial levels by 2080. Under a low-mitigation scenario (which remains the current global trajectory), average annual temperatures in Somalia may increase by between 3 and 4°C by 2080 (Figure 1.13a), leaving Somalia's average temperature higher than of any present-day country and most of its land area- the entirety of the south and a significant portion of central Somalia— confronting "unprecedented heat" within the next fifty years. Rainfall trends are much less clear. Models generally predict that an increase in rainfall is most likely, but a wider range of uncertainty remains (Figure 1.13b). Overall, a greater degree of climate variability is expected. For the modeling in this report, 10 climate scenarios were selected to represent a plausible range of outcomes, under the most likely global emissions pathways (SSP2-4.5 or SSP3-7.0), and excluding outliers. These compromised five models reflecting more moderate heating and wetter outcomes (generally a more optimistic outlook), and five reflecting hotter and drier outcomes (more pessimistic).[6] See Box 4.1 for further details on selected scenarios. The average expected outcome of the dry/hot scenarios was a temperature increase of around 1.5°C by 2051–60, and little change in rainfall, while for the wet/warm scenarios, it was a temperature increase of just over 1°C and a 25 percent increase in rainfall (Table 1.1).

6 To address climate uncertainty in the analysis and try to capture a broad range of possible climate impacts, different general circulation models (GCMs) were used. Two combinations of the Shared Socioeconomic Pathway (SSP) and Representative Concentration Pathway (RCP) emissions scenarios were selected: a pessimistic SSP3-70 scenario and an optimistic SSP1-1.9. To capture an even broader range of impacts for the five channels for which data were available, specific GCMs within these SSP-RCP combinations were selected to construct a dry and hot scenario and another wet and warm scenario.

Figure 1.13: Projected mean surface air temperature and precipitation to 2100



Source: World Bank 2025c.

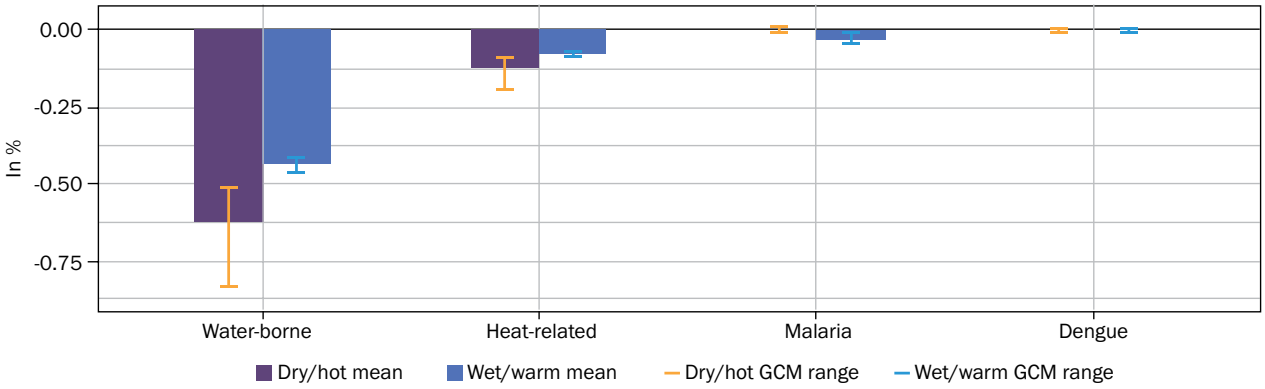
Broadly, under continuing climate change, the most prominent acute climate disasters—such as severe drought and floods—are likely to continue to present major and potentially increasing challenges, while a variety of chronic or high frequency risks may also become more prominent. Chronic climate effects, which are ever-present and change gradually with decadal climate change, are typically less obvious, but their cumulative impacts and economic consequences can outstrip acute climate disasters. Heat stress impacts labor productivity in humans and livestock productivity, while changed climate conditions have a range of other human, animal, and crop disease effects, and may eventually result in significant shifts in agroecological zones, and therefore the productivity of agricultural and renewable natural resource systems.

Table 1.1: Changes in average temperature and precipitation, relative to historical reference

	2021–30	2031–40	2041–50	2051–60
Temperature (in °C)				
Dry/hot mean	+0.54	+0.85	+1.15	+1.52
Wet/warm mean	+0.33	+0.58	+0.88	+1.03
Precipitation (in %)				
Dry/hot mean	+5.7	+3.5	+4.8	+0.4
Wet/warm mean	+11.6	+13.7	+13.0	+25.0

Rising heat stress from climate change is projected to significantly decrease labor productivity by mid-century. Increasing heat stress (a function of both heat and humidity) is predicted to reduce labor productivity by around 4.5 percent by 2051–60, on average, under the dry/hot scenarios, and around 2.9 percent under the wet/warm scenarios. Agricultural labor will be more severely impacted than productivity in services or industry, decreasing by around 8.1 percent under hotter conditions, due to the higher physical intensity and higher exposure outdoors. Other human health effects are expected to have a combined impact of at least another 0.8 percent on labor productivity under dry/hot scenarios, and 0.5 percent under wet/warm scenarios (Figure 1.14).

Figure 1.14: Average labor supply shock, by disease, under the CF scenario, 2051–60



Source: World Bank analysis.

Agricultural production will be significantly impacted by ongoing climate change, including extreme events. Overall rainfed crop production is expected to reduce by around 7.2 percent under the dry/hot scenarios, mostly due to heat effects on crops, while under the wet/warm scenarios, production could increase by around 6.2 percent, due to increased water availability and more modest heat-induced impacts (Table 1.2). The impacts of heat stress on livestock, which will reduce milk and egg production, were modeled, along with the impacts of fodder availability on meat production. Overall impacts were estimated at a decline of 4.4 percent under dry/hot conditions, due to higher heat stress and reduced fodder growth, and an increase of 1.3 percent under wet/warm conditions, due to more moderate heat stress and increased fodder growth (Table 1.3). Marine fisheries production was estimated to decrease by up to 16 percent due to the effects of warming on water temperatures, acidity, and oxygen levels.

Table 1.2: Mean annual rainfed crop production shock, 2051–60+

Crop	Shock from heat effects		Shock from water availability		Total shock	
	Wet/warm (%)	Dry/hot (%)	Wet/warm (%)	Dry/hot (%)	Wet/warm (%)	Dry/hot (%)
Beans	-0.6	-1.3	14.1	-3.1	13.4	-4.3
Cassava	-5.6	-8.9	4.5	-0.7	-1.3	-9.5
Groundnut	-1.5	-3.5	15.3	2.8	13.6	-0.7
Sesame	-7.3	-12.0	4.9	-0.6	-2.7	-12.5
Sorghum	-1.7	-3.9	10.9	-2.0	9.0	-5.8
Maize	-0.2	-0.7	19.8	-2.2	19.6	-2.9
Cotton	0.0	-0.1	6.0	0.4	6.0	0.3
Vegetables	-25.1	-38.2	41.1	7.2	6.0	-33.6
Sugarcane	0.0	0.0	36.4	-2.0	36.4	-2.0
Total	**-3.6**	**-6.1**	**10.1**	**-1.1**	**6.2**	**-7.2**

On average, urban flood damage is expected to increase by up to 35 percent from historical levels. Increased damage to transport infrastructure—mainly from heavy rain in the case of roads and flooding in the case of bridges—was predicted to cause additional costs of over $200 million per year in damages, with disruption of transport imposing labor supply impacts of close to 3 percent. Transport disruptions also limit access to key services in many urban areas during floods. Sea level on the Somali coast is expected to rise by 0.2 meters by 2050, leading to more than a 60 percent increase in impacts, and by around 0.6–0.7 meters by the end of the century. But overall impacts remain modest in relation to inland flooding because there is relatively little coastal infrastructure in Somalia, as coastal cities, such as Mogadishu, are moderately elevated above sea level, and major coastal storms are rare.

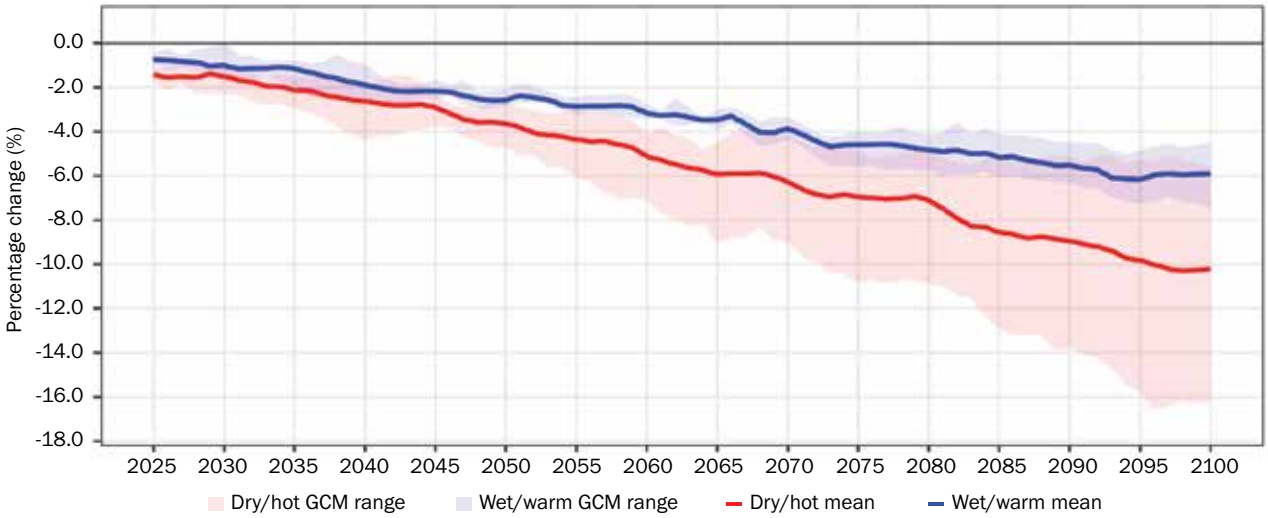
Table 1.3: Summary of livestock production shocks, 2051–60

Livestock product	Total shock	
	Wet/warm (%)	Dry/hot (%)
Cattle milk	-9	-15
Goat milk	-1	-3
Sheep milk	-3	-2
Chicken eggs	-7	-10
Cattle meat	8	-9
Goat meat	9	-7
Sheep meat	9	-8
Total	1.3	-4.4

Table 1.4: Change in urban flooding damage, relative to the historical period by 2060

City	20-Year event (%)		100--Year event (%)		Expected annual value (%)	
	SSP2-4.5	SSP3-7.0	SSP2-4.5	SSP3-7.0	SSP2-4.5	SSP3-7.0
Gaalkacayo	34	48	13	17	21	29
Garoowe	23	31	10	10	20	27
Burao	26	34	9	12	36	46
Berbera	37	46	4	6	18	26
Hargeysa	21	28	7	10	22	33
Mogadishu	25	34	9	11	15	20

Figure 1.15: National labor productivity shock, 3-year moving average, 2025–2100 (CF scenario)



Left unmanaged, climate impacts will continue to accelerate beyond 2060. By the end of the century, the impact of heat stress on labor is expected to more than double to a loss of around 10 percent on overall productivity under the dry/hot scenario (and reaching around 17 percent loss in the agriculture sector) (Figure 1.15). This pattern of more than doubling of the impacts between 2060 and 2100 plays out over most impacts and climate scenarios, including other climate-related health impacts. Reductions in crop productivity will increase from -7 to -16 percent under the dry/hot scenario, although there is no increase in the marginal productivity improvement under the wet/warm scenario. The increase in flood damage to infrastructure due to climate change will rise 35 to 55 percent under SSP3-7.0.

1.5 Climate change and development opportunities

Somalia has the ambition to become a middle-income country by 2060, achieving a peaceful and capable state, sustainable economic growth and prosperity, environmental sustainability, national unity, and social cohesion (FRS 2025a). The completion of the HIPC process and accession to the EAC have shown that significant institutional and governance advances are possible. Somalia has several growth assets. Having Africa's longest coastline provides opportunities for blue economic growth through trade, improved fisheries management and revenues, offshore energy exploration, and tourism. There is also potential to improve the productivity and quality of livestock products, participate in agriculture value chains, and re-establish cash crops that were prominent before the war. The private sector is very active in developing the digital economy—telecom company Hormuud is now the largest commercial employer—and has a growing presence in agri-supply chains (including climate-smart technologies) and microfinance. Recent rapid urbanization creates opportunities for agglomeration effects if managed well. Somalia also has a young population, and although human development indicators within the country remain low, there is a wealth of qualifications and international experience within the diaspora community, which forms an important development resource.

Climate and development challenges and opportunities are inextricably linked. Somalia will continue to struggle with a range of climate impacts, with floods and droughts likely to remain prominent and a range of more chronic impacts associated with heat stress and health becoming more prominent. The macroeconomic implications of these are further elaborated in Chapter 4. Somalia will need to develop its capacity to manage extreme climate events to reduce their contribution to the country's multifaceted fragility and provide the stability and security required to underpin growth. A more resilient rural economy that supports livelihood and food security will be key to this. If Somalia's climate future is significantly wetter, then its rural development narrative might not be solely about limiting the adverse impacts of climate, but also how to best exploit (modest) increasing production potentials in livestock and crops, as

well as opportunities to improve value addition, and the sustainable management and production of the natural resource base.

Drivers of future development will need to be climate smart. There is growth potential in economic diversification through the development of Somalia's urban- and trade-based economies. To turn urbanization from a partial consequence of climate change into a driver of future economic growth, Somalia will need to address the serious challenges of providing reliable services, safe accommodation, and ultimately the attractive living spaces needed to retain skilled workers. Existing needs for basic utilities are huge and rapidly growing, but significant constraints on water availability will remain, even in a wet/warm future, while climate pressures from flooding and heat stress will increase. New transport and energy infrastructure to address them will therefore need to be resilient. Somalia also has several unrealized blue economy potentials to support diversification, the development of which would need to be informed by climate risk. These include expanding maritime trade with planned infrastructure corridors to connect Ethiopia and other East African countries to external markets, offshore renewable and hydrocarbon energy exploration, and if it can improve security in the longer term, coastal tourism.

Climate mitigation potentials complement growth objectives. In 2020, Somalia's total greenhouse gas (GHG) emissions were low, estimated at 53.7 million tonnes of carbon dioxide equivalent ($MtCO_2e$) and representing less than 0.03 percent of total global emissions, although per capita emissions are around a third of the global average and have the potential to grow rapidly. According to its Third Nationally Determined Contribution (NDC 3.0), in 2024, the agriculture and land use, land use change and forestry (LULUCF) sectors contributed 46 and 40 percent, respectively, of the country's emissions, while energy, waste, and industrial processes and product use (IPPU) contributed 8, 3, and 1 percent, respectively. Although the LULUCF sector ranks as the second-largest source of GHG emissions, it holds the highest mitigation potential, with a targeted reduction of 19.3 $MtCO_2e$ representing 65 percent of total emissions. Appropriate mitigation policies—transitioning from diesel and unsustainable biomass to clean energy sources and decreasing deforestation by replacing firewood and charcoal—could produce a significant reversal to the decrease in tree cover. Under the CF scenario, emissions are projected to reach 84.9 $MtCO_2e$ by 2035, rising mainly due to the agriculture, forestry, and other land use sector, driven by growing deforestation, land degradation, expanding agricultural activities, and other land-use pressures. Agriculture and LULUCF are expected to remain the leading sources of emissions throughout the period, while energy, transport, waste, and IPPU also show notable growth. Although the national climate priority is adaptation, mitigation potentials could therefore support the country's climate development goals, through improved land and livestock management, and the provision of climate-smart energy and waste services to urban centers. The potential development of an offshore oil and gas sector could offer new opportunities and open fiscal space for at least some domestic funding of climate priorities; but success will depend on the overall governance environment (World Bank 2023b).[7]

This Climate Change and Development Report (CCDR) strategically aligns with the National Adaptation Plan's (NAP) key strategic orientations, national priorities to address critical development challenges. It addresses Somalia's main climate and development issues by focusing primarily on reducing fragility and conflict, contributing to economic growth, and strengthening institutional support in rural and urban landscapes in the context of a changing climate. Through three deep dive areas, it directly addresses challenges in disaster risk management (DRM), resilient rural livelihoods, and climate-smart urban development. These areas directly map to the NAP's frameworks of growth sectors, human development, and environmental sustainability, enabling a cohesive approach to addressing Somalia's economic, social, and climate priorities.[8]

7 Based on the prospects of substantial offshore oil reserves, the government has been preparing the legal and fiscal framework for petroleum management. But not all FMS have accepted the legitimacy of the Petroleum Act and the Somalia Petroleum Authority, creating the potential for political dispute in case of any FGS award in their territory (World Bank 2023c).

8 The NAP emphasizes building resilience in sectors that are highly vulnerable to climate change, such as agriculture, water resources, health, and infrastructure. Agriculture plays a pivotal role in the economy but remains exceptionally vulnerable to climate variability due to its reliance on rainfed systems, which are frequently disrupted by droughts and erratic rainfall patterns (FRS 2024).

2

Institutional and Policy Readiness for Climate Action

2. Institutional and Policy Readiness for Climate Action

The legal, policy, and institutional framework for climate action underpins the extent to which climate change considerations are mainstreamed across the public sector. This encompasses the entire public policy cycle (from planning and implementation to monitoring and evaluation), the existing policy and legal instruments, the roles and capacities of the institutional actors, and the integration of climate action into national development and peacebuilding processes. Somalia's current framework, while showing some progress, suffers from significant gaps, especially in coordination and implementation. The legacies of state collapse and protracted conflict have left Somalia with fragile institutions, limited state reach, and weak capacity to deliver basic services and control corruption.[9] While progress has been made in peacebuilding and state-building since the Provisional Constitution was adopted in 2012, the fledging federal project continues to face significant challenges, including as it relates to structural drivers of FCV that undermine the attainment of longer-term stability.[10] Given overlapping weaknesses in Somalia's institutions across sectors and levels of government, readiness for enabling climate action currently remains extremely limited, and will require continuous attention and effort to enable (incremental) improvements over time.

The interplay between climate vulnerability and fragility necessitates a calibrated approach that incorporates climate action into the ongoing state-building process. Climate action in fragile contexts—especially in countries like Somalia, where state presence is weak and heavily dependent on external aid—entails the 'art of the possible'. This means working within the context of an unfinished political settlement and contested governance arrangements with varying levels of legitimacy, capacity, and integrity, as well as a situation of protracted conflict characterized by the presence of non-state armed groups and high levels of insecurity. Rather than proposing a comprehensive set of reforms or entirely new business processes, the approach requires a focus on critical capabilities that are politically and fiscally feasible to implement (or can be supported to become feasible), building on nascent institutions and institutional legacies, and working in an incremental manner to build a viable positive cycle between institutional capabilities, stakeholder buy-in, and delivery of climate actions (Cloutier et al. 2022). Given the combination of fiscal, capacity, and integrity constraints, institutional readiness should at best be expected to expand gradually and partially, with efforts made to rationalize government institutions and promote implementation capacity in tandem with policy development, rather than develop institutional structures that cannot be sustainably financed or elaborate legal frameworks that remain unimplemented.

2.1 The legal and policy framework

Somalia has made initial progress in developing a legal and policy framework for climate action since joining the United Nations Framework Convention on Climate Change (UNFCCC) in 2009. The government adopted the Environmental Protection and Management Act and the related Environmental and Social Impact Assessment and Audit Regulations in 2024. The law defines the institutions and their respective mandates, which include the Ministry of Environment and Climate Change (MoECC), an Environmental Trust Fund to be established under the ministry, the National Environmental Council, and sectoral line ministries at the federal level, as well as FMS ministries of environment and climate change. Several policies and plans have also been adopted, establishing institutions mandated to address environmental concerns and climate change impacts (Table 2.1). But the Environmental Protection and Management Act only dedicates a short section with two articles to climate change, and the Provisional Constitution of 2012 does not explicitly mention climate change. The constitution does, however, define land management, deforestation, desertification, and environmental degradation as shared responsibilities between the FGS and FMS.

9 Somalia was the most fragile country globally according to the Fragile States Index (2024).

10 This includes (i) a lack of consensus on intergovernmental fiscal relations, specifically the equitable distribution of resources between the FGS and FMS; (ii) heavy reliance on external aid, often delivered through fragmented projectized modalities and driven by humanitarian crises, which is expected to decline going forward; and (iii) a domestic revenue-to-GDP ratio that is among the lowest globally.

The intended governance framework for climate change is most specifically set out in the National Climate Change Policy (NCCP) 2020, updated in 2023, which calls for coordination committees and a research center. These are not, however, yet in place. Generally, the effectiveness of emerging frameworks is hampered by capacity constraints and very nascent coordination between ministries and agencies. Gaps in the regulatory legal framework—such as Environmental Protection and Management Act's limited coverage of climate change and the absence of dedicated framework legislation—are not the principal constraints to Somalia's readiness for climate action. Rather, these lie primarily in the country's capacity to implement and the political challenges of the federal project.

Table 2.1: Somalia's key environment and climate change commitments

National Climate Change Policy (2020)
The NCCP objectives are to promote a harmonized response to the challenges and opportunities that accompany climate change; guide the establishment and operationalization of interventions and action plans; and safeguard the safety, health, and prosperity of Somalia's citizens by enhancing resilience and adaptive ability.
Nationally Determined Contributions 3.0 (2025)
At 53.7 $MtCO_2e$, Somalia's estimated annual GHG emissions (in 2020) represented less than 0.03 percent of the global total. The GHG emission level stands at 54.3 $MtCO_2e$ in 2024 and will rise to 84.9 $MtCO_2e$ by 2035 under the CF scenario. Emissions are projected to increase mainly due to the agriculture, forestry, and other land use sector, driven by growing land-use pressures such as deforestation, land degradation, and expanding agricultural activities. Agriculture and the LULUCF sector are expected to remain the leading sources of emissions throughout the period, while energy, transport, waste, and IPPU also show notable growth. The government has made a commitment to reduce its total GHG emissions by 34 percent (29.5 $MtCO_2e$) by 2035. The estimated cost for achieving NDC 3.0 is $5.17 billion for mitigation activities and $6.33 billion for adaptation activities for 2025–35.
National Adaptation Plan (2025)
The NAP aims to integrate climate resilience into Somalia's overall development agenda. It focuses on strengthening resilience in key sectors, including agriculture, water, health, and infrastructure, and proposes adaptation measures are estimated at $2.5 billion for 2025–30.
National Transformation Plan (NTP) (2025–29)
The NTP aims to steer Somalia toward sustainable development, economic stability, and long-term prosperity. It is structured around five pillars: (1) transformational governance, (2) sustainable economic transformation, (3) social and human capital transformation, (4) environment and climate resilience, and (5) enablers, including legal frameworks and transportation connectivity.

Source: Federal Government of Somalia.

The policy framework identifies the most vulnerable sectors and priority interventions for climate action. Given Somalia's economic and climate risk profile, the policy framework prioritizes adaptation over mitigation. The investments proposed to enhance climate resilience focus on agriculture and food security, sustainable land management (SLM), integrated water resource management, disaster preparedness and management, and developing climate-resilient infrastructure. Other priority sectors include renewable energy, coastal and marine environments, and fisheries. There is limited focus on the protection of coastal regions, marine resources, and forestry, mainly due to a lack of data, research, and knowledge generated regarding the issues in these topics and sectors.

Somalia's NTP for 2025–29 presents a substantial shift and expansion of focus on climate risks and impacts on the country's development compared to previous national development plans. It sets out an extended list of policy goals toward greater climate resilience, including better water management, reforestation, and other measures. In terms of institutional and legal enablers, it calls for updating existing laws, creating new regulations to address current environmental challenges, and ensuring strict enforcement to protect and sustainably manage natural resources. It also calls for a framework with clear triggers,

thresholds, protocols, and readiness measures for stronger disaster response readiness, the establishment of a national knowledge sharing forum, and centralized data collection for disaster risk reduction (DRR). The Somalia Disaster Management Agency (SoDMA) is expected to coordinate capacity strengthening efforts at subnational and district levels and to lead cross-sectoral coordination. FMS were consulted during the creation of the NTP to ensure alignment with respective state-level development plans, and the NTP foresees that they establish operational DRM hubs. Although the NTP does not extensively elaborate on the linkages between climate vulnerability and fragility challenges, it represents a strategic opportunity to comprehensively integrate climate considerations into national development planning.

2.2 Institutional capacity

Somalia suffers from fragmented institutional frameworks and ineffective intergovernmental coordination. There are conflicting mandates among ministries and a lack of a comprehensive platform for public-private dialogue on climate change. Capacity gaps are uneven and particularly acute at district level, hindering effective implementation of climate policies and projects. Donor-driven initiatives often lack coordination, leading to suboptimal use of climate finance and overlaps. Weak climate data collection, analysis, and monitoring further exacerbate these challenges.

Established in 2022 out of a directorate within the Office of the Prime Minister (OPM) to provide leadership on climate action at federal level, MoECC is one of the newest and smallest federal government ministries. Had a budgetary allocation of only $1.46 million in 2024—less than half the SoDMA allocation—and only 23 permanent employees. The Ministry of Planning, Investment, and Economic Development (MoPIED) is responsible for integrating climate adaptation into national development planning frameworks and coordinating relations with development partners. Several sectoral ministries are involved in climate resilience and mandated with implementing climate initiatives in their respective policy areas, including: Ministry of Agriculture and Irrigation (MoAI), with $50.19 million in 2024); Ministry of Livestock, Forestry, and Range (MoLFR), with $8.22 million; Ministry of Fisheries and Blue Economy (MoFBE), with $9.58 million; Ministry of Energy and Water Resources (MoEWR), with $12.84 million, and Ministry of Public Works (MoPW), with $60.44 million. Rationalizing some underfunded and poorly staffed ministries into fewer entities could help improve horizontal and vertical coordination, pool funding and scarce capacity, and lower competition for external resources.

The co-ordination challenge raised by climate change is profound, even in high-income country contexts. This is because it requires action across nearly every sector and is compounded by the nature of climate policy, which involves policy choices on adaptation and mitigation that run counter to the interests of powerful stakeholders. Environmental ministries and agencies often lack the resources and influence they need to convene, coordinate, and shape the work of other ministries that are essential for climate action, such as finance, transport, energy, and agriculture.

Some countries, including low-income ones, have demonstrated promising practices, typically by combining center-of-government leadership with climate and environmental sector expertise (OECD 2023; UNDP 2025). Successful coordination hinges on embedding climate responsibilities within central institutions, establishing clear mandates, and effectively leveraging external support. Strong leadership from the center of government can foster coherence across MDAs, enhance strategic focus, and improve monitoring and accountability. For example, Rwanda has established a central coordination mechanism through its Ministry of Environment and the Rwanda Environment Management Authority, which works closely with the OPM to integrate climate objectives into national development planning. This enables the country to align its climate goals with broader socioeconomic priorities and mobilize international climate finance. Ethiopia's climate strategy is coordinated by the Environment, Forest and Climate Change Commission, which reports directly to the OPM, ensuring high-level political support and cross-sectoral engagement. Uganda and Nepal

have created interministerial committees and climate units within their planning ministries to bridge gaps between their climate policy and development agendas while also strengthening the center of government's role in steering long-term climate action. Bhutan's independent National Environment Commission acts as the coordinating body on climate change mitigation and adaptation, and is the country's highest decision-making body on all matters relating to the environment. Chaired by the Prime Minister, the body has convening power, with representatives from government agencies, nongovernmental organizations (NGOs), civil society organizations, and the private sector.

As Secretariat for the various committees established by the NCCP, the MoECC is formally at the center of climate coordination in Somalia and has to take action across nearly every sector. The NCCP envisages the establishment of a national climate change committee as a multistakeholder, high-level policy committee with a mandate for overall coordination and supervision of climate change policy and implementation, engaging with civil society and the private sector. It also proposes a cross-sectoral climate change committee to bring together, at a senior technical level, ministries, departments, and agencies (MDAs) with roles in climate projects, programs, and related activities.

State and local governments are crucial for implementing adaptation measures at community level, localizing national climate strategies, building climate-resilient infrastructure, managing water and waste, and raising climate awareness. Each FMS has a ministry responsible for environment and climate change, but capacity and resourcing are uneven, and often contingent on political alliances with the FGS or FMS access to development aid and resources. District-level capacity and resources for implementing adaptation actions are also uneven, and vary substantially across the country. Only some 20 percent of the country's districts have functioning district authorities (World Bank 2025a). Looking ahead, the World Bank-supported *Bulsho* project aims to enhance climate resilience in relevant sectors, identify and build the capacity of community-based institutions to deliver essential services, and strengthen vertical linkages and financial flows between FGS, FMS, and districts.

While the MoECC has initiated engagement with the FMS on climate action, vertical and horizontal coordination remains weak. Following the passage of the Environmental Protection and Management Act in 2024, MoECC launched a forum to foster cooperation with state-level environment ministries. But horizontal coordination with MDAs remains fragmented, due to low institutional capacity at various government levels, particularly in the relatively new policy area of climate change, conflicting MDA mandates regarding climate action, donor-driven initiatives tied to specific MDAs, weak intergovernmental communication, competition for available resources, and a lack of collaboration.

Somalia's decades of experience in humanitarian assistance offer a model for climate change coordination, including between state and nonstate actors. There are several advocacy and representative platforms for Somalian NGOs working on climate change issues, and several thematic donor coordination groups.[11] But despite many attempts to establish one, there is no common platform that brings together the main government and nongovernmental stakeholders involved in climate action. In contrast, the 50 years of humanitarian engagement in the country has resulted in several active multistakeholder coordination mechanisms for humanitarian assistance, currently led by SoDMA. This could serve as valuable experience to draw on when building greater coordination capacity for climate change action, with a coordination system built by donors to support government, which could eventually be consolidated and led by government. The global experience on climate coordination suggests that, while donors often have a strong influence in the early phase of support and in entrenching initial coordination norms in low-income country contexts, over time, domestic actors will reconfigure coordination arrangements to better align with their own preferences and interests (Funder and Dupuy 2022). In Zambia, the World Bank initially had a strong initial influence on

11 NGOs include the Resilience Working Group within the Somalia NGO Consortium and Regional Durable Solutions Secretariat; thematic donor coordination groups include: Friends of the Environment, the Floods and Irrigation Technical Working Group, Somalia Multi-Partner Fund Consultative Group, and, launched in 2024, the Environment and Climate Change Pillar Working Group.

climate finance coordination, but structures became more localized and were reshaped by domestic actors over time. There is generally limited coordination between humanitarian and development stakeholders in Somalia, although there are positive signs of improvement in this regard (United Kingdom Humanitarian Innovation Hub 2023; World Bank, forthcoming).

Institutional capacity for climate action varies across government levels and regions. There has been some progress in augmenting institutional capacity at federal level, notably through the establishment of MoECC in 2022. While the climate agenda was previously set primarily by development partners, the government now uses its climate policies and plans more actively during international negotiations and program discussions.

MoECC capacity remains constrained, with a low share of permanent staff. As of 2024, only 23 (18 percent) of the more than 127 staff working at the ministry were permanent government employees: 84 (68 percent) were temporary, and the remaining 20 (16 percent) were externally financed. Staff retention and motivation pose challenges, given the scarcity of permanent positions and variable adherence to meritocratic principles. Project implementation remains outsourced to United Nations (UN) agencies, private contractors, and donor-supported project implementation units.

Other ministries with functions that have a significant bearing on climate resilience face similar challenges, to varying degrees. Most have few permanent staff, uneven technical capacities of staff, and weak adherence to meritocratic principles in recruitment and performance management. Trained professionals often leave after a few years, so there is a constant need to rebuild technical capacity and train new professionals. Climate change-related (policy and technical) competencies for the Somali civil service do not exist. The ongoing introduction of a pay and grading scheme and a competency framework for the civil service provides an opportunity to develop such competencies, including identifying suitable training courses, etc. This applies particularly to civil servants at MoECC, but also at the MoAI, MoLFR, MoEWR, and other MDAs that play crucial roles in mitigation and adaptation.

Opportunities to gain technical expertise on climate change in Somalia are limited, and Indigenous knowledge on climate adaptation remains untapped. While private education providers and universities in Somaliland offer some university-level courses on climate change, options to gain technical expertise in this field in Somalia remain scarce. One emerging research center on climate policy issues is the Institute for Climate and Environment, housed at Simad University. Local communities also possess extensive experiential, Indigenous knowledge on climate change adaptation, such as early warning systems (EWS), but this resource has not been thoroughly researched or used.

The most pressing functional deficits in Somalia's institutional architecture relate to implementation capacity in environmental governance, particularly for critical adaptation challenges such as water management and reforestation. There are plans to establish a national environmental management agency with responsibility for implementing national environmental policies and enforcing environmental regulations. Although this is a significant challenge in the country's context of intense conflict and elite contestation for resources, efforts to control the charcoal trade can offer some lessons. Given concerns about the proliferation of poorly resourced MDAs, the new agency could focus on a few critical and clearly defined implementation tasks, starting with a monitoring and reporting role. A phased implementation approach should gradually extend geographic coverage and functions, balance fiscal constraints with the need for impactful delivery, ensuring the agency complements existing mandates while addressing core functional gaps. An iterative approach that allows decisions to be made about appropriate federal structure, adapts to and allows for the consolidation of capacities over time would add the most value. Basic cost estimates suggest that Phase I could focus on regulatory setup and environmental monitoring in Mogadishu and Benadir, with startup costs of approximately $1.3 million and an annual budget of $0.36 million; Phase II could expand to monitoring and data collection and increase coverage to three

additional regions, with $1 million startup costs and an annual budget of around $1 million; and Phase III could introduce broader public awareness promotion and extend to three further regions, with $1 million in startup costs and an annual budget of around $1.6 million. These are at lower-end cost estimates, as costs will vary with conditions on the ground, and a detailed assessment of potential functions, geographic coverage, and operating costs will be needed.

Donors have supported important data collection and curation efforts but handing these over to national institutions remains challenging. The Somalia Water and Land Information Management (SWALIM) system supported and developed by the Food and Agriculture Organization of the United Nations (FAO) since 2003, provides an important information resource. But capacity constraints and competition over mandates hinder the process of handing over management of the system to Somali institutions.

2.3 Enhancing finance for climate action

Most climate change assistance in Somalia is primarily externally financed, but it has been weighted toward post disaster relief and remains fragmented. Heavy reliance on ODA from bilateral and multilateral donors has incentivized competition to access resources rather than collaboration across domestic institutions, resulting in duplicated efforts and inefficiencies. Much of the funding is also directed toward short-term humanitarian relief, with only some dedicated to long-term resilience-building. In 2023, around $1.2 billion went to emergency response efforts, including humanitarian and food assistance, out of a total of $2.28 billion in ODA. Limited domestic revenue further restricts the government's ability to take ownership of climate action projects and effectively implement climate policies.

Although government efforts to mobilize and target climate finance are underway, they need to be better coordinated. In 2024, the government established the National Climate Fund under the Office of the President to enhance climate finance. It is being assisted by the Taskforce on Access to Climate Finance (supported by the UK's Foreign, Commonwealth and Development Office) to develop its structure and mandate. But it is unclear whether it will function as a funding vehicle—and if so, what the source of funds would be—or primarily as a facilitator (the two roles are not mutually exclusive). How its role and responsibilities will relate to the MoECC and Ministry of Finance (MoF) is also unclear.

Much of the national discussion around climate finance is focused on mobilizing and managing additional resources from dedicated 'vertical' multilateral climate funds established in response to the UNFCCC and funding commitments made at various climate change conferences, such as GCF, GEF, and Adaptation Fund. But the level of available funding is small compared to other sources of climate finance. Table 2.2 provides an overview of GCF and GEF financing to Somalia. The Adaptation Fund does not support any activities in the country.

Table 2.2: International climate fund financing to Somalia

Climate fund	Project type and number			Budget ($, millions)
GCF	Total projects		6	172.7
	Readiness support		3	4.6
	GEF Trust Fund	National	3	23.7 (total co-financing ratio 9.23)
		Regional/global	17	204.3 (total co-financing ratio 2.47)
GEF	Least Developed Country Fund	National/regional	2	20.7 (total co-financing ratio 4.93)

Source: GCF, GEF, 2025.

2.3.1 Mobilizing domestic revenue

Effective climate action is crucial for restoring state legitimacy in Somalia's FCV context. The social contract between the government and its citizens relies on its ability to collect taxes and deliver essential services (Kunicova et al. 2024). Climate change impacts threaten this contract by hindering economic activity (and thus reducing tax revenue) and increasing demands on scarce resources, both for investments in resilience and to address emergencies. Efficient allocation of existing domestic resources and increased transparency and accountability in public spending are essential for attracting further domestic and international support.

Domestic revenue collection remains well below what is needed to cover public sector operating costs, limiting the availability of domestic resources to address climate change impacts. At 3 percent of GDP in 2024—4.2 percent, including FMS—revenue collection in Somalia is low, even for an FCV context. This, along with the country's dependence on donor grants and lack of designated climate expenditure tracking within budgets, hinders effective resource allocation. The public financial management (PFM) and nascent public investment management (PIM) systems do not have mechanisms for integrating climate risks into fiscal strategies and budgetary planning. The three de facto customs administrations, based in the country's three main ports, have varying tariff rates and procedures, which reduces overall revenue collection.

Government expenditure on climate action is neither designated nor tracked within FGS and FMS budgets. In the federal budget, all expenditure supporting climate action is entered at project level, indicating project name and supporting donors, with no more granular data publicly available. FMS budgets generally do not include project-level data, though some mention a total sum of appropriation of grants from foreign governments or international organizations.

The MoF has listed climate action among its budgetary and resource mobilization priorities but has not specified implementation measures. The priorities of its Budget Strategy for FY2025 include implementing climate change interventions to mitigate adverse effects on livestock and food security, such as promoting the use of clean energy resources for cooking to reduce deforestation. The Medium-Term Fiscal Framework also mentions the pursuit of climate finance among its financing strategies but does not articulate specific measures to attain these objectives. Given the low levels of domestic resources available, the government is seeking to support its climate policies and commitments—including those proposed in the NDC and NAP—through donor support and development aid.

Domestic public investment levels are very low compared to peer countries. The main sources of investment financing are development assistance, concessional funding, and public-private partnerships (PPPs). Capital expenditure represented only 0.2 percent of GDP in 2024, markedly below the 5.9 percent Sub-Saharan Africa average. PIM is at a nascent stage, with many necessary processes either informal or yet to be established. The draft PPP bill before Parliament mandates that project concept notes include a preliminary overview of climate change resilience and adaptation requirements, along with a strategy for their detailed assessment. It also stipulates that these requirements be integrated into the feasibility study. There are no systems to reliably address climate considerations in PIM.

2.3.2 Mobilizing external and private finance

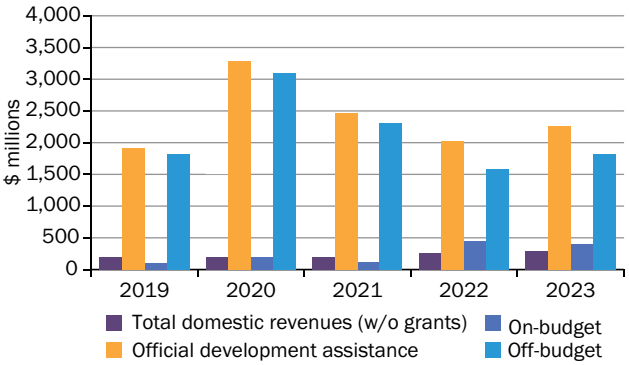
Domestic revenue in Somalia is dwarfed by ODA, which is mostly project-based, largely off-budget development aid and humanitarian support. On-budget ODA represents only a small fraction of the total aid flowing to the country (Figure 2.1a).[12] Many international partners avoid using Somalia's country systems

12 On-budget support refers to external funds that are presented and reported in the government's budget documentation. Off-budget support refers to external funds that are managed outside the national public financial management framework, under donors' own arrangements, and therefore not recorded in the state budget.

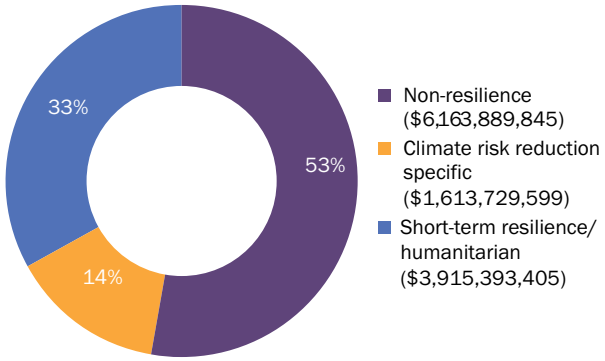
for delivering humanitarian and development assistance due to perceived high fiduciary risks. As a result, projects tend to be implemented by UN agencies and NGOs. According to UK government analysis of 1,326 aid projects implemented in Somalia from 2005 to 2023, interventions specifically targeting climate risk reduction accounted for $1.6 billion (or 14 percent) of the cumulative ($11.7 billion) budget of the projects reviewed (FCDO 2023; Figure 2.1b). Channeling more development aid focused on enhancing climate resilience through the country's systems and boosting capacity is an FSD priority.

Figure 2.1: Domestic revenue and donor aid in Somalia

(a) Trends in revenue and donor funding (2019–23)



(b) Share of interventions targeting climate risk reduction and resilience (2005–23)



Sources: Panel a: Federal MoF, OECD (2025); Panel b: SPARC, AIMS (2023).

Donor coordination is limited, and ODA is expected to decline sharply, making a shift toward investments in resilience more urgent. Development partners engage with the government mainly bilaterally, either through MoPIED, which coordinates donor contributions, or through the relevant sectoral ministries at federal or member state level. Since 2013, there has been significant momentum among development partners in supporting climate action in Somalia as improvements in PFM and the adoption of practices such as the domestic stolen asset recovery policy have attracted more resources. But the donor landscape remains somewhat fragmented, reflecting Somalia's internal political fragmentation. Donor agencies also often operate based on their own national interests, timelines, and budgetary cycles, and these are not always aligned with Somalia's development priorities. Uncertainty about donor funding has increased significantly, with the United States, United Kingdom, and other key donors announcing reductions in donor support due to changing priorities (ODI 2025). Shifting more funds toward building greater country resilience—including investing domestic implementation capacity—is crucial as future emergency response aid becomes increasingly scarce.

The government has several parallel initiatives for engaging development partners on climate. The MoPIED engages the donor community through Somalia's aid coordination infrastructure, based on the pillar working groups. And, unlike previous national development plans, one the NTP pillars is focused on environment and enhancing climate resilience, providing an opportunity for more robust government engagement of donors and development partners to support climate action. The MoECC also plans to revitalize the Friends of the Environment platform to engage the donor community on environmental and climate change issues.

Private capital is trickling into resilience-critical sectors. Off-grid solar companies are financing mini-grids, solar-home systems, and pay-as-you-go platforms; traders and processors are investing in cold storage, animal-health services, and limited water-saving technologies; and mobile money and remittance platforms process more than $10 billion in transactions each year, providing households with liquidity during droughts

and floods. Although these investments are not yet captured by formal climate-finance metrics and remain small relative to need, they represent an underleveraged source of adaptation and mitigation finance.

But creating an enabling environment to scale private sector climate action requires improved public stewardship. Provision of many climate-relevant services, such as power and water, currently falls to the private sector in Somalia. But despite its importance in providing both infrastructure and services, there are no data on the extent of private sector climate-related investment. Although investment in climate-smart solutions such as solar-based systems has been expanding, the provision of basic services, let alone climate-smart variants, remains wholly inadequate. Much of the private sector concentrates on non-tradable, low-productivity services, such as retail and informal commerce, which offer limited opportunities for structural transformation or climate resilience. And although a small number of firms—often with strong political or clan affiliations—operate across finance, telecommunications, and trade, the vast majority of enterprises remain micro-scale and informal. This dualism fragments economic opportunity and limits the reach of both public and private climate finance. In many cases, private actors operate without coordination, regulatory oversight, or access to formal support systems. limiting the scalability, quality, and equity of the services they deliver, particularly in underserved regions.

There are several weaknesses in Somalia's overall business enabling environment relevant to climate action. These include general legal frameworks, access to finance, human capital and business services, and weak public-private dialogue.

General legal frameworks: Regulatory frameworks (including technical standards, and environment and social requirements) are largely absent, and mechanisms to enforce contracts or resolve disputes are weak. This is especially evident in sectors that are critical to climate resilience—such as energy, agriculture, and water—where private actors continue to operate in largely informal environments, where core climate regulations (such as permits, water allocation, and renewable energy standards) are nascent, and many deals rely on trust-based arrangements. Uncertainty limits formal business formation and curtails competition.

Access to finance and insurance: Mobile money and remittance channels have expanded rapidly, providing basic financial access across much of the country. Mobile money operators process around $10 billion a year,[13] and money transfer businesses handle over $2.1 billion in remittances annually, equivalent to 20 percent of GDP. Mobile money platforms do not substitute formal savings, credit, or insurance products, but only 10–15 percent of the population has access to formal banking. Private sector credit has grown steadily but remains low, at around 4 percent of GDP. Collateral requirements remain high, and the absence of a centralized credit registry or risk-scoring framework inhibits the expansion of credit to small and medium enterprises. In rural and peri-urban areas, the absence of identification documents, credit information systems, and collateral frameworks makes it nearly impossible for small businesses and households to access credit. A revised Financial Institutions Law, enacted in May 2025, introduced a formal regulatory framework for oversight of all financial institutions, including microfinance institutions. Also enacted in May 2025, the new National *Takaful* Law established a formal legal framework for Shariah-compliant insurance and will stimulate growth of the nascent risk-sharing market. These critical regulatory reforms are expected to expand and deepen access to finance and insurance, particularly in climate-sensitive sectors, such as livestock and agriculture.

Human capital and business services: The education system fails to provide the skills employers need, including in sectors that are essential for climate resilience, such as agriculture, renewable energy, and digital services, leading to high unemployment rates among youth and nonurban populations. Business services are also insufficient, and there is high demand for business development services, which in the

13 2023 data from the Central Bank of Somalia.

context of climate risk, have an important role in helping enterprises understand vulnerabilities, adopt adaptive practices, and access climate-aligned finance. Business development service providers need targeted support to mainstream climate-risk diagnostics and resilience-oriented advisory services.

Weak public-private dialogue: While some sectors have public-private dialogue platforms, these rarely cover climate issues or systematically engage the private sector as a partner in adaptation. This lack of structured engagement prevents policy alignment and limits the government's ability to steer private capital toward resilience objectives. Developing standardized, investible adaptation business models is vital.

With such low fiscal and institutional capacity, shifting from a humanitarian response mindset and modality toward longer-term planning will help Somalia support the double dividends of climate resilience and development and maximize the benefits of donor funds as the overall aid envelope is set to decrease. Agreed and prioritized plans shared between the government and development partners will be essential to achieve greater resilience relative to financial inputs. As overall aid allocations for Somalia contract, it will need to strengthen resilience and focus on value for money to achieve and sustain more with less. This should include bringing more development and climate-dedicated resources 'on budget' to build government capacity and systems. An extensive focus on climate change issues within the NTP is a step in the right direction, but the government will need to further prioritize, monitor, and review progress together with external actors. The response to the 2022/23 drought and resulting humanitarian crisis provides some room for optimism in this regard, suggesting growing Somali capabilities and a more integrated approach from external actors (United Kingdom Humanitarian Innovation Hub 2024).[14]

14 The crisis was less severe than feared due to stronger government, national civil society, local-level, hybrid, and private sector capacities. There were more integrated efforts across development, humanitarian, peace, and state building, and an expanded role for development actors, including the World Bank.

3

Interventions for Development and Climate-resilient Growth in Somalia

3. Interventions for Development and Climate-resilient Growth in Somalia

Building resilience to climate shocks is crucial for Somalia to achieve its growth objectives. This requires a combination of accelerated and improved development alongside targeted adaptation actions. Enhancing the resilience of people and communities involves reducing poverty and improving access to essential and critical infrastructure. Policies that integrate climate considerations into agricultural development, DRM, and urban planning should promote adaptive social protection and use public incentives for climate-positive actions. This approach will ensure better, climate-informed development.

3.1 Enhancing resilience to climate shocks: actionable DRM and financing strategies

Somalia faces significant challenges from two main natural shocks—floods and drought—with severe economic and social impacts. Drought, the costliest disaster, leads to food insecurity, displacement, and economic loss. For example, the 2016/2017 drought required $3.25 billion and an additional $1.77 billion for recovery interventions. Drought pushes rural communities toward urban centers, straining already inadequate infrastructure, particularly sanitation services, and contributing to tensions between IDPs and host communities. Inland flooding, frequent during the Deyr season, affects up to 20 percent of the population, disrupting infrastructure networks, essential services, and urban settings, and exacerbating governance challenges. But despite these recurrent shocks, Somalia lacks effective adaptation measures, leaving it vulnerable to these natural disasters.

Modeling results for this CCDR indicate that under historical climate conditions, Somalia will continue to experience significant damages from inland flooding. Estimates suggest expected annual damages of 0.19 percent of capital, with much higher costs in the case of extreme events (Table 3.1). Under the baseline scenario, expected annual damages are projected to increase by an additional 35 percent by 2060 under the SSP3-7.0 mean climate scenario. Damages for events of specific return periods could be even greater. For example, the change in capital damages associated with the 20-year flood event is projected to increase by as much as 45 percent by 2060 in certain regions of the country, under SSP3-7.0. Damages will vary across the country: although they will be highest in Mogadishu at an absolute scale, percent increases in other cities, such as Gaalkacayo and Berbera, may be more significant.

Table 3.1: National inland flooding damages

Recurrence interval	Historic capital damages	SSP2-4.5, 2060	SSP3-7.0, 2060
	Damage (percent of total capital)	Percent change vs historical	Percent change vs historical
20-year	0.88	35	45
50-year	2.24	20	27
100-year	4.65	10	13
Expected value	**0.19**	**26**	**35**

Somalia could avoid a considerable amount of loss, damage, and hardship if effective systems are put in place to prearrange funding ex ante, warn people about an imminent climate shock, and respond quickly when disaster strikes.[15] Somali authorities and their partners recognize the value of such warning systems and have begun work to improve preparedness, but the absence of a coordinating framework hampers efforts. Improved hydrological and meteorological (hydromet) services are greatly needed for Somalia to achieve climate-resilient economic development, and a modern forecasting and dissemination system should be the cornerstone of Somalia's approach to DRM.

3.1.1 Legal and institutional DRM foundations

Somalia's emergency preparedness and response capacity remains significantly underdeveloped. A comprehensive assessment of Somalia's emergency preparedness and response capacity evaluating 72 indicators and 360 attributes across five categories—legal and institutional accountability, information, facilities, equipment, and personnel—scored only 74 out of a maximum 360, indicating that 286 attributes were either absent or too weak to be effective (FGS 2022). The country scored highest in legal and institutional accountability, information and communications technology, and international support coordination, while the most significant gaps were in information management, equipment, and facilities. The estimated investment required to address these gaps is $76.6 million over three years.

Challenged by weak legal and institutional foundations, Somalia's DRM framework lacks dedicated legislation for crisis preparedness and response, and faces obstacles due to outdated provisions. Governance structures exist but are marred by confusion over mandates and insufficient coordination, hindering effective leadership in international partnerships. The Provisional Constitution of 2012 and the 2017 National Disaster Management Policy (NDMP) address DRM but remain under-implemented, with the NDMP leaving room for interpretation and complicating leadership roles. The dismissal of the Ministry of Humanitarian Affairs and Disaster Management in 2022 added complexity, with responsibilities shifting to the SoDMA, which operates independently and includes key emergency centers. Political issues have stalled contingency financing despite government/World Bank efforts to enhance financial resilience. The Ministry of Planning supports SoDMA with post disaster assessments, contributing to key initiatives, such as the 2019 Drought Impact Needs Assessment. Undefined labor division between federal and subnational authorities causes policy inconsistencies,[16] and the NDMP's lack of budgetary guidance leads to ad-hoc decisions by the OPM, advised by the MoF.

Humanitarian assistance has historically been channeled outside of government systems, limiting the state's role and responsibilities. Between 2011, when Somalia last faced famine, and 2023, the country received $14.4 billion in humanitarian aid, averaging $1.1 billion per year. While a growing share of development-focused aid is being delivered through country systems, on-budget and on-treasury, the vast majority of humanitarian aid continues to be delivered outside of government PFM systems. Increasing the number of trained personnel, boosting their participation in functional governmental coordination mechanisms, and strengthening governance and interagency alignment requires sustained funding for the emergency preparedness and response system, along with incrementally increasing the delivery of aid on budget.

Somalia needs to update its NDMP and standard operating procedures (SOPs) to reflect recent governmental restructuring. There is also a need for relevant sectoral DRM legislation, including climate

15 Data compiled by the Sendai Framework Monitor shows that the disaster-related mortality ratio is six times higher in countries with underdeveloped multihazard EWS (categorized as limited or moderate by the Sendai Framework), compared to countries with functional multihazard EWS (categorized as substantial or comprehensive). Similarly, countries with limited to moderate multihazard EWS coverage have nearly four times more disaster-affected people than countries with substantial to comprehensive coverage (UNDRR and WMO 2024).

16 For example, the 2014 Puntland Disaster Management Policy assigns this responsibility to the Puntland president and makes no mention of the FGS or federal authorities.

change adaptation, infrastructure design, land use, environmental planning, and public health. Clarifying the division of labor for DRM between federal and subnational authorities is essential to ensure consistent policy implementation and resource allocation. Establishing clear guidelines for delegating authority and jurisdiction over government resources during emergencies is crucial. Opportunities exist to enhance coordination with international partners by strengthening FGS and SoDMA capacities. As SoDMA becomes more established, there is potential for increased engagement and consultation with humanitarian actors, improving the overall effectiveness of DRM in the country.

3.1.2 Understanding and monitoring risks

Somalia's risk monitoring systems, once advanced, have deteriorated since the civil war, resulting in significant data gaps that impede accurate flood and drought forecasting. The loss of data archives, damaged equipment, and the dispersal of trained personnel have challenged effective meteorological monitoring. The National Multi-Hazard Early Warning Center within SoDMA is the most prominent agency handling EWS, but it heavily relies on international partners and open-source data, lacking a robust national data collection system. Fragmented institutional frameworks and insufficient coordination between the national center and other early warning committees lead to duplicated efforts and confusing messages. Overlapping responsibilities among various agencies, such as the Somali Civil Aviation Authority, create inefficiencies and information gaps, with no clear consensus on leadership, resulting in contradictory plans and a failure to provide authoritative, credible, and dependable services essential for effective disaster response and recovery.

International partners such as FAO and the Intergovernmental Authority on Development provide crucial support for regional forecasting and data collection through systems like SWALIM, the Famine Early Warning Systems Network, and the Climate Prediction and Applications Centre. SWALIM operates numerous rainfall and weather stations and has developed the Combined Drought Index for drought monitoring. But the transition of SWALIM's work to Somali government agencies is still underway, with ongoing discussions about the optimal structure and responsible ministry (currently the MoECC).

While the government is involved in disseminating warnings, there are no SOPs, leading to inconsistent and potentially ineffective communication with at-risk communities. Warnings are shared through various channels (email, websites, social media) without formal agreements between the government, the media, and cell carriers. This ad-hoc dissemination of warnings often lacks impact-specific information and actionable guidance, reducing the effectiveness of the EWS, while the circulation of false messages undermines the credibility of the warnings, leading people to disregard them. Community-level monitoring uses traditional knowledge from elders, but innovative mobile phone-based systems like Digniin struggle to reach all pastoral communities due to inadequate network coverage in remote areas. Overall, Somalia's risk monitoring suffers from fragmentation, information gaps, and a lack of coordination, necessitating a streamlined national EWS with clear SOPs, improved data collection, and effective communication channels.

Data gaps and limitations are critical challenges for Somalia's EWS. The collapse of the country's hydrometric network during the civil war resulted in insufficient in-situ hydromet observing stations to support the reliable provision of EWS and hydromet services. Crucial data for risk assessments—such as topographic surveys and exposure data—are lacking. While satellite data can be useful, the capacity to systematically access, process, and integrate remote sensing products into hydromet services is limited. Quality control and assurance of available data are also problematic, further complicating data management.

Insecurity in many parts of the country hinders on-the-ground data collection, supplementing remote sensing data. This limits the accuracy of hazard maps and the ability to reach remote communities with warnings. With most hydromet observing stations that provide on-the-ground data located in more secure

areas around major cities due to security issues, hazard maps rely heavily on remote sensing products and cannot be supplemented with on-the-ground data due to inaccessibility.

Somalia needs a streamlined national EWS to address fragmentation, improve efficiency, and reduce delays in disaster response. This requires clarifying mandates, roles, and responsibilities across agencies to ensure coordinated and effective services. The MoEWR's development of a policy for national hydromet services in 2022 and the 2023 approval of a bill to establish a meteorological and weather service agency within the MoECC show a commitment to formalizing early warning structures, but there is a lack of consensus or coordination about which agencies will be involved and how the structure will look.

Modernizing and upgrading hydromet services—including expanding the weather station network and improving data management—is crucial. This includes building capacity for data collection, processing, and integrating remote sensing products. The FGS needs to facilitate data sharing across institutions to establish a national hydromet monitoring network built on an interoperable data management system. In addition to satellite imagery and geographic information system data, multidimensional and on-the-ground data are essential for better projecting the impacts of potential risks.

Community engagement is essential for improving local-level understanding of, and response to, hazards. Integrating traditional knowledge and community participation in risk assessments and warning systems will enhance the effectiveness of EWS, while strengthening community-based DRM capacity through training and awareness raising will empower communities to take proactive measures in response to early warnings. This includes developing community-based EWS that leverage local knowledge and resources.

A comprehensive baseline survey of risks and vulnerabilities is needed to inform risk reduction investments and development planning. This should include flood risk assessments, drought mapping, and climate-induced urbanization trends. With World Bank support, SoDMA has created a cloud-based database that will host the baseline and its data sources in a form that will be publicly accessible to users. Compiling existing data and collecting new strategic information to complete the baseline, such as identifying critical infrastructure, will provide a solid foundation for effective early warning and disaster response systems.

3.1.3 Financing disaster response

The FGS has established legislative foundations for emergency public financing mechanisms. The PFM Act allows for a contingency appropriation of up to 5 percent of total domestic revenue, which is significant compared to Somalia's peers. This contingency budget should be replenished with each supplementary budget, ensuring that finance for emergency response is always available. The act also grants the Minister of Finance significant power to action uncapped transfers and reallocations at their discretion. Similarly, the Procurement Act enables the government to swiftly procure necessary items to respond to shocks through framework agreements with verified vendors, while the SoDMA Act provides for the establishment of a national disaster risk management fund to support rapid emergency response and promote sustainable recovery.

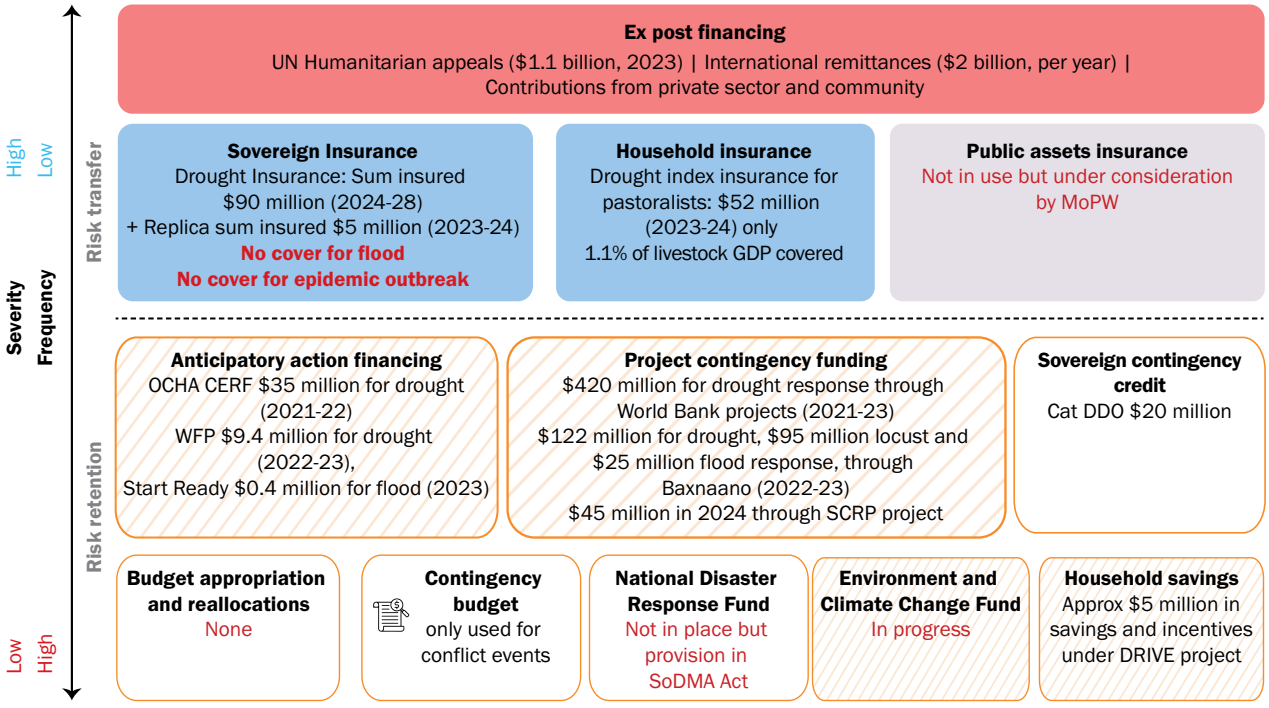
In practice, the FGS has faced significant fiscal constraints for budget appropriation or reallocation to respond to crises, and procurement flexibilities are sometimes exploited; but a new line of contingency credit established in May 2025 will help alleviate fiscal constraints. SoDMA's budget is limited ($5.3 million in 2023), and the general contingency budget has only been used for conflict-related disasters. Most FGS expenditure is recurrent and non-discretionary, leaving little room for reallocations during shocks. The government often relies on appeals to development partners or redirects funds from existing projects to respond to disasters. The World Bank approved the Somalia Disaster Risk Management Development Policy Financing with a Catastrophe Deferred Draw Down Option in May 2025, with total International Development Association financing of $20 million. In addition to financial preparedness, this loan will support policy

reforms to enhance institutional and regulatory capacity for disaster and climate resilience and improve delivery systems.

The FGS has started to adopt risk transfer mechanisms, but coverage remains low compared to needs, and prearranged humanitarian funding is emerging slowly (Figure 3.1). In 2023, it took out a sovereign insurance policy against drought, with donor support, which it expects to renew with further premium support. Humanitarian donors are also prearranging funding through drought insurance and anticipatory action financing, but coverage is limited. International remittances are a crucial source of development finance, but disaster-related remittances are often unofficial and difficult to quantify. The most marginalized and vulnerable populations also tend to be less connected to remittance-sending diaspora networks. Climate risk insurance for businesses and households is available but underused, with uptake enabled through development partner-supported projects. For example, the World Bank financed De-risking Value Enhancement of Pastoral Economies project has enabled access to index-based livestock *takaful* for up to 113,431 pastoralists, covering about $80.7 million in 2022–24. But this coverage is equivalent to only 1.1 percent of livestock GDP for 2023–24. The project takes a PPP approach and helps build the capacity of the domestic *takaful* sector, which has the potential to help close the protection gap.

Somalia lacks a disaster risk financing (DRF) strategy. A risk layering strategy—which combines a range of financial instruments for more efficient resource allocation to ensure funds are available for both frequent, low-impact events and rare, high-impact events—could be cost-effective, saving the FGS and partners $20 million annually on average. This could increase to as much as $230 and $466 million for response to events with a 5 and 2 percent chance of occurrence, respectively. A DRF strategy would enable the government to prearrange finance for specific disaster events and pre-identify delivery channels, ultimately improving the efficiency, timeliness, and transparency of disaster response. It would also clarify MDA roles and responsibilities, minimizing ongoing and potential overlaps across institutions with mandates that are relevant to DRF.

Figure 3.1: Status and use of DRF instruments in Somalia



Source: World Bank 2025b.

Opportunities to leverage Islamic social finance mechanisms have yet to be fully explored. Somalia's predominantly Muslim population presents opportunities to leverage Islamic social finance mechanisms, such as *zakat* (mandatory alms tax) and *shadaqah* (voluntary alms) managed through sustainable structures like waqf (an endowment fund). But this potential will only be realized if action is taken at multiple levels. The Central Bank of Somalia (CBS) needs to develop concise Sharia-compliant guidance on how banks and mobile money operators should hold, invest, and report *zakat* or waqf assets, as well as supervisory capacity-building so examiners can oversee these products effectively. Led by the government, stakeholders could also help craft a national framework that standardizes collection and auditing practices, accredits eligible charitable committees, and integrates digital payment platforms with a vetted pipeline of climate-resilient and poverty-alleviation projects. Targeted technical assistance could further equip regulators, financial institutions, and local NGOs to manage these instruments transparently, turning faith-based giving from ad-hoc transfers into a scalable, sustainable source of development and resilience finance.

3.1.4 Strengthening primary response to climate shocks

Since 2022, the FGS has faced significant challenges in coordinating disaster response efforts due to resource constraints, overlapping mandates, and limited access to insecure areas. The National Emergency Operations Center (NEOC), part of the SoDMA, aims to lead preparedness and provide a coordinated response to disasters. But it lacks the resources, trained personnel, and a standardized approach to effectively manage nationwide emergencies. Infrastructure deficiencies further complicate response efforts, as Somalia is heavily reliant on international actors for facilities, transportation, and storage.

The fragmented nature of Somalia's emergency response system is a major obstacle. The Benadir Regional Authority in Mogadishu has an incident organization structure that could serve as a model for other regions, but scalability is limited due to resource constraints. The lack of dedicated resources, trained personnel, and a database of common response resources contributes to the fragmentation of the response system.

Infrastructure and equipment for disaster response in Somalia are limited. The country relies heavily on international actors for emergency logistics operations, transportation, and storage. Temperature-controlled storage is only available in Mogadishu and the northeastern city of Bosaso, and emergency housing is largely absent. Even in Mogadishu, response times average over an hour and a half. Outside of Mogadishu, emergency response relies heavily on an underdeveloped air transport system, with poor-quality and damaged airstrips necessitating the extensive use of helicopters in many regions. District-level evacuation plans exist but lack awareness and professional assessment, further hindering effective response.

Due to limited government capacity, communities often serve as the first and only responders. The Somali Red Crescent Society plays a significant role in community-based disaster response, with over 20,000 volunteers across the country. But it faces challenges with resources, skilled personnel, and widespread coverage. Government-led community engagement programs for emergency response are largely absent, and community engagement activities are primarily driven by external actors. Strengthening community-based DRM capacity through training, awareness-raising, and community-led mitigation efforts can significantly enhance response effectiveness. Investing in resilient infrastructure—including storage facilities and improved shelter—is crucial for effective response. Leveraging existing programs, such as the Somalia Resilience Program and Building Resilient Communities in Somalia, for improved alignment and donor coordination can enhance resilience. To mitigate the devastating impacts of climate shocks, Somalia will need to address these obstacles and capitalize on these opportunities.

Despite these challenges, there are significant opportunities to improve Somalia's disaster response capacity. Strengthening SoDMA and the NEOC by investing in capacity building, resources, and infrastructure

could enhance their effectiveness. Prepositioning aid in strategic locations could reduce response times and security risks. The Flood Anticipatory Action Framework demonstrates the potential of proactive, pre-arranged approaches to disaster response, and scaling this model for other hazards is crucial.

3.1.5 Strengthening social support systems

Somalia has a robust social protection policy (2019) designed to protect vulnerable groups from shocks and promote resilience. The policy includes a five-year implementation plan and outlines a clear institutional framework linking social protection and DRM entities. Key components—such as the Unified Social Registry (USR) and the shock-responsive safety net program Baxnaano—are being rolled out. Using cash transfers, Baxnaano responds to climate shocks, such as locust infestations, drought, and flooding, and has reached millions of Somalis. A flexible payment system, transitioning to government control, facilitates rapid cash transfers. The Somalia Food Security Crisis Preparedness Plan (FSCPP) provides a framework for timely responses to food insecurity crises, incorporating monitoring and protocols for triggering actions and funding requests.

A critical challenge is the absence of pre-arranged financing for shock-responsive safety nets. While Baxnaano has a shock response window, it lacks pre-allocated funds for scaling up during crises, hindering timely assistance. The FSCPP also suffers from a lack of pre-arranged financing, making rapid operationalization difficult. Coordination between SoDMA and the Ministry of Labour and Social Affairs (MoLSA), which are responsible for disaster response and social protection, respectively, is ad hoc there is no formal data-sharing agreement between them. This limits the effectiveness of integrating early warning information into the Baxnaano system. The FSCPP also faces coordination challenges due to siloed reporting systems and inconsistent data collection across regions.

The USR, crucial for identifying vulnerable groups, is incomplete, with registration pending in many districts. This limits the reach of Baxnaano and other social safety nets, delaying response efforts during crises. The absence of clear roles and responsibilities between government agencies and humanitarian partners in managing crisis-induced displacement and providing integrated support hampers effective response. Expanding the coverage of Somalia's social safety net program remains a priority. Completing the USR registration and expanding Baxnaano's coverage would significantly improve the timeliness and effectiveness of crisis response. Securing additional funding for this expansion is underway.

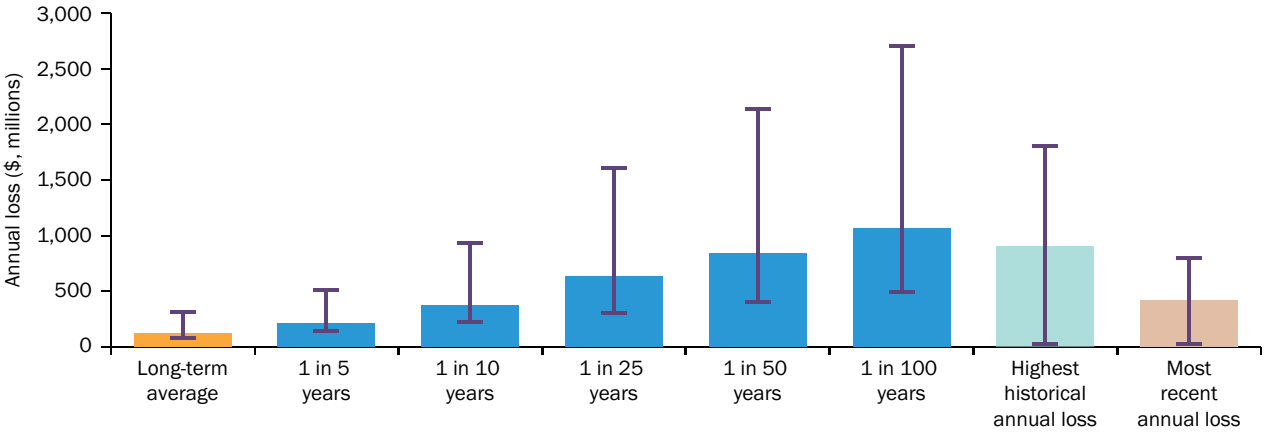
Establishing a formal data-sharing agreement between SoDMA and MoLSA would improve the integration of early warning information into social protection responses. Similarly, improving coordination mechanisms within the FSCPP would enhance its effectiveness. Pre-arranged financing linked to the FSCPP's costed actions would enable rapid operationalization and promote government oversight of food security crises. This would also improve the visibility and coordination of humanitarian partner actions. Strengthening the Somalia Resilience Program and Building Resilient Communities in Somalia and aligning them with the FSCPP offers opportunities to enhance resilience and integrate it into humanitarian assistance, particularly in managing displacement and providing comprehensive support. Exploring Islamic social finance mechanisms could also provide a new, community-driven funding stream and help transform faith-based giving into a transparent, pre-arranged pool of resources that can top up safety net cash payments whenever FSCPP triggers are met. Creating a national emergency cash response operation plan (NECROP) would streamline approval processes and coordination mechanisms for efficient cash transfer responses to climate shocks.

In summary, Somalia possesses a foundational social protection framework, but significant obstacles related to financing, coordination, and coverage hinder its effectiveness in responding to climate shocks. Addressing these obstacles through the opportunities outlined above would significantly enhance the country's resilience and improve the lives of its most vulnerable citizens.

3.1.6 DRM areas for prioritization

The financial risk of not investing in preparedness is significant. Illustrating simulated average annual costs of disaster response in Somalia for different return periods, Figure 3.2 shows that the distribution is highly positively skewed, suggesting a substantial likelihood of very large response costs. Damage to public assets and infrastructure is excluded from the figure, so costs are expected to increase once damage to public assets and infrastructure are considered.

Figure 3.2: Simulated average annual costs of disaster response in Somalia over a year for different return periods



Source: World Bank (2025b).

Early warnings about Somalia's climate future make clear that investments would benefit from prioritizing preparedness and resilience, both to improve development outcomes for its people and break the pattern of spending the bulk of its external assistance on humanitarian aid. DRM is made possible by professionals trained to fulfill certain roles and responsibilities in a coordinated system, with the support of tools, equipment, and reliable resourcing. Tools and equipment are insufficient without trained professionals and vice versa. International partners play a crucial role in providing technical assistance and financing for tools, building infrastructure, and training operational capacity. Ultimately, Somalia needs to commit to sustained funding of its DRM system within its budget, and establishing clear legal and institutional foundations, strong governance, and interagency alignment to grow the number of personnel and expand their participation in functional government coordination.

Somalia's National Emergency Telecommunications Plan provides a strategic framework to leverage mobile networks and digital tools for disaster response. Services like the SWALIM Digniin short message service alerts and emergency ringtones from operators such as Hormuud Telecom show how digital platforms can deliver real-time warnings. For maximum impact, these systems need nationwide expansion and interoperability through a Common Alerting Protocol, but limited network coverage could reduce effectiveness. Success depends on improving connectivity and active participation from telecom operators, whose infrastructure and expertise are essential for reliable emergency communications.

Climate adaptation in Somalia must be rooted in efforts to disrupt the linkages between climate, social fragility, and conflict. A guiding principle must be to "do no harm" by ensuring interventions intended to address one dimension of the challenge do not exacerbate another, and using social risk management tools that are informed by the social and political context. Ensuring that women, youth, disadvantaged clans, and other vulnerable groups have full and equitable representation in, and derive meaningful benefits from, adaptation planning is key to avoiding adverse social impacts of climate

investments. Where possible, win-win solutions should be identified to address both the climate and social dimensions of risk in tandem.

To effectively address Somalia's primary climate hazards and ongoing challenges related to FCV, three key areas for prioritization emerge: strengthening DRM institutional underpinnings, enhancing drought and flood risk information, and advancing DRF. Establishing robust policy and institutional structures is crucial to sustain progress in Somalia's DRM system, requiring updated national policies and a comprehensive implementation roadmap with clearly defined roles and responsibilities. Enhancing risk information involves conducting comprehensive surveys to identify hotspots for targeted interventions and creating a digital national disaster database to improve coordination and planning. Disaster risk financing focuses on developing strategies and plans to enable informed decision-making, scaling up financing instruments, and creating diversified mechanisms to manage risks proactively, ensuring funds are channeled through budget support for transparency and alignment with DRM priorities. These areas are interdependent and reinforce each other to build resilience and improve crisis response capabilities.

Addressing the overarching priorities summarized below could bring about a future with accessible risk information that can be acted on proactively, DRM institutions that are responsive and well coordinated, and financing that is in place in anticipation of a climate shock. Appendix 1 includes a detailed list of potential targeted activities expanding on these priorities, several of which were drawn from assessments carried out in the aftermath of recent climate disasters, when first responders and other actors were acutely aware of the gaps and needs in the current system. Somalia's experience of the last decades suggests that the path ahead will not be linear, and actors must be prepared to adapt. But even meaningful intermediate progress toward these goals will protect infrastructure and save lives.

Legal and institutional foundations: To strengthen the legal and institutional foundations for DRM, priority actions include: updating the existing national DRM policy and implementation roadmap to ensure it aligns with current needs and challenges; strengthening and expanding the reach of FMS disaster preparedness authorities for a coordinated response; establishing operational response plans for all emergency management agencies; and approving the Hydromet Law. Medium-priority actions include approving a river flood and drought risk management and infrastructure policy and establishing legislation on critical infrastructure. A long-term priority is creating a policy or directive on women's representation and participation in the DRM system.

Understanding and monitoring risks: To develop a comprehensive understanding and monitoring system for disaster risks, high-priority actions include developing a digital national disaster database and completing the SoDMA's baseline survey of risks and hazard mapping, both of which are already underway. Medium-priority actions involve developing risk-informed preparedness and emergency response plans at national and FMS levels; strengthening community-based DRM capacity; prioritizing the provision of hydromet services; and repairing and enhancing flood prevention infrastructure along the Juba and Shabelle Rivers.

Financing disaster response: To develop effective financing mechanisms, which are crucial for disaster response, high-priority actions include developing a DRF strategy and implementation plan. Medium-priority actions involve adopting a regulation that establishes a systematic approach for transferring funds specifically allocated to DRM activities; increasing investments in preparedness to enhance the capacities of exposed populations; and strengthening public asset management while expanding sovereign insurance to cover floods. A long-term priority is fast-tracking the adoption of the National *Takaful* Bill and Financial Institutions Bill and investigating opportunities for establishing a National Drought Fund.

Primary response: To enhance primary response capabilities, medium-priority actions include: mapping existing, functional response stations across the country; establishing a network of warehouses for storing

and distributing prepositioned aid; and assessing transportation (including local airstrips) and equipment needs to support emergency response. Long-term priorities include establishing framework contracts with existing facilities that can be used as training facilities, establishing improved shelter facilities across the country, and strengthening local NGO capacities to engage with DRM.

Social protection: To ensure social protection in the aftermath of disasters, high-priority actions include supporting shock-responsive safety nets to offset post-disaster human capital losses. Medium-priority actions involve adopting the Social Protection Policy 2025 and developing a NECROP. A long-term priority is integrating resilience into humanitarian assistance to enhance the overall effectiveness of disaster response and recovery efforts.

3.2 Resilient rural livelihoods for economic development and poverty reduction

Although the agriculture sector continues to provide livelihoods for the majority of the population, its economic role has diminished due to prolonged conflict, fragile governance, and increasing climate shocks. Multiple compounding challenges continue to undermine the performance and resilience of the sector. These include the collapse of irrigation infrastructure, widespread land degradation, weak input systems, poor market connectivity, and increasing vulnerability to climate variability. Most farmers operate in rainfed systems with limited institutional support and are therefore highly exposed to environmental shocks. Climate-related risks, such as severe drought, flooding, and erratic rainfall, have grown in frequency and intensity, further stressing already fragile farming systems. Postharvest losses, inadequate storage, and minimal agri-processing capacity also weaken the sector's ability to participate in markets and compete with imported food commodities, while the destruction of irrigation systems, flood control infrastructure, and rural road networks has severely constrained farmers' ability to maintain or scale production.

Declining yields further expose systemic inefficiencies and environmental degradation in the crop sector. Yield trends provide a clearer indication of structural weaknesses, including declining soil fertility, insufficient input use, and worsening climatic conditions. After peaking at 1.37 tonnes per hectare in 1986, maize yields have declined drastically to 0.56–0.77 tonnes per hectare in recent years, indicating a severe erosion of productivity. Sorghum yields have followed a similar pattern, dropping from 0.61 to 0.33 tonnes per hectare between 1986 and 2023, underscoring the consequences of soil degradation and limited adoption of improved seed varieties. Even more striking is the collapse of rice yields, which fell from 3.9 to just 1.55 tonnes per hectare between 1983 and 2023, primarily due to irrigation system failures and shifting land-use priorities. The decline in cereal production is even more severe when measured on a per capita basis, as Somalia's rapidly growing population has far outpaced agricultural output. In the 1980s, per capita cereal availability stood at over 60 kilograms per year, but by 2023, this figure had plummeted to less than 5 kilograms. This drastic reduction reflects the widening gap between food production and consumption needs, leaving Somalia increasingly dependent on imported cereals to meet dietary requirements.

Despite the potential for domestic production, Somalia remains a net importer of essential foods. Maize, wheat, and rice are heavily imported, making Somalia vulnerable to fluctuations in global food prices. The lack of production capacity to meet domestic demand for these staples, coupled with limited export volumes, makes Somalia highly reliant on international markets. Cereal imports are the largest category, with rice and wheat dominating the food basket. In 2023 alone, Somalia imported $641.4 million worth of cereals—almost double the 2015 level, indicating a sharp rise in food demand unmet by domestic production (FSNAU 2024).[17] This growing import dependence is further fueled by shifts in dietary

17 In 2023, cereals represented 32% of total crop imports. Rice and wheat dominate cereal imports, with rice reaching $225.7 million and wheat (including flour) totaling $158.8 million.

preferences, especially in urban areas where consumers increasingly prefer polished rice, pasta, and processed wheat products. While there has been some export activity, primarily in fruits and vegetables, it remains relatively small-scale, and the sector faces stiff competition from other countries. Exports of cash crops like bananas were once significant but have dwindled due to infrastructure challenges, pests, and competition in global markets.

As the largest sector in the Somali economy, the performance and potential of the livestock sector is critical for poverty reduction, food security, and developmental priorities. Livestock remains the primary direct and indirect livelihood for over 60 percent (FAO, EU and CIRAD 2022)—and possibly over 65 percent (FGS-CBS 2024)—of the population. This includes livestock producers from nomadic and agropastoralist communities, periurban dairy farms, traders, butchers, transporters, and input suppliers who provide essential resources, such as veterinary services, feed, and equipment. Unprocessed livestock products, such as fresh meat, fresh (raw) milk, and *ghee*, dominate the economic output of the sector. Livestock exports contribute significantly to Somalia's revenue generation and foreign exchange earnings, with an estimated record total of 5,230,577 heads of sheep and goats, cattle, and camels exported in 2023 (MoLFR 2024, 2025). The main production systems are nomadic pastoralism—which has little or no integration with crops and relies heavily on seasonal migration in search of pasture and agropastoralism, or settled mixed farming.[18] Commercial livestock-rearing operations with dairy animals (mostly camels) have been on the rise in periurban settings, supplying nearby markets with fresh raw milk and mainly relying on purchased supplements and grain and crop byproducts for fodder (FGS-MoLFR 2019). Underlying the minimal modernization of the main production system, commercial domestic availability and storage of feed and fodder from either domestic production or imports remain small, with imports peaking at $5.8 million in 2022.

The intersectoral linkages between water, agriculture, and the environment are deeply intertwined, impacting people's livelihoods and the health of ecosystems in rural areas. Water availability directly dictates agricultural productivity, particularly through rainfed farming and livestock raising. The agriculture sector, including crops and livestock, was the dominant water user, responsible for 99 percent of the country's 21,540 million cubic meter water footprint in 2019. Being an arid region, a staggering 97 percent of this water footprint in Somalia is green water (rainwater stored in soil), and just 3 percent is blue (surface or ground) water. The agriculture sector's dependence on reliable blue and green water sources heightens its vulnerability to climatic change. The country's heavy dependence on water-intensive livestock exports also contrasts sharply with its growing reliance on water-embedded crop imports, exposing a critical imbalance in its water resources and trade dynamics. More than half of Somalia's freshwater resources are produced from beyond its national borders, flowing through Shabelle and Jubba rivers in the south, supporting flood irrigation. The irrigation infrastructure is in a dilapidated condition following the war, which has reduced irrigation efficiency. This issue is further compounded by inefficient water use practices. Though a substantial share of Somalia's water footprint comes from green water, poor environmental and rangeland management reduces water retention capacity in soils, disrupting local hydrological cycles and further intensifying water scarcity issues. Somalia has hardly any natural surface water storage, leading to the lower blue water footprint. Approximately 80 percent of Somalia's population depends on groundwater, yet these vital aquifers face severe stress from limited natural recharge in an arid climate and overextraction driven by population growth, urbanization, and drought.[19] In northern regions, rare intense rain events barely replenish the aquifers, while chronic low rainfall and unregulated drilling have led to declining water tables, especially near towns and IDP camps. Water use efficiency is another critical issue, as Somalia's $0.2 per cubic meter is significantly lower than the Eastern and Southern African average of $27.8.

18 Nomadic pastoralism takes place mostly in the 53% of the country which is classified as arid zones, agropastoralism mostly in the 30% of the country classified as semi-arid zones with sparse vegetation also suitable for rainfed crop cultivation (SWALIM 2025), and most livestock rearing is scattered on the 68% of Somalia's land mass considered to be rangeland (FAO, EU and CIRAD 2022), encompassing both arid and semi-arid areas.

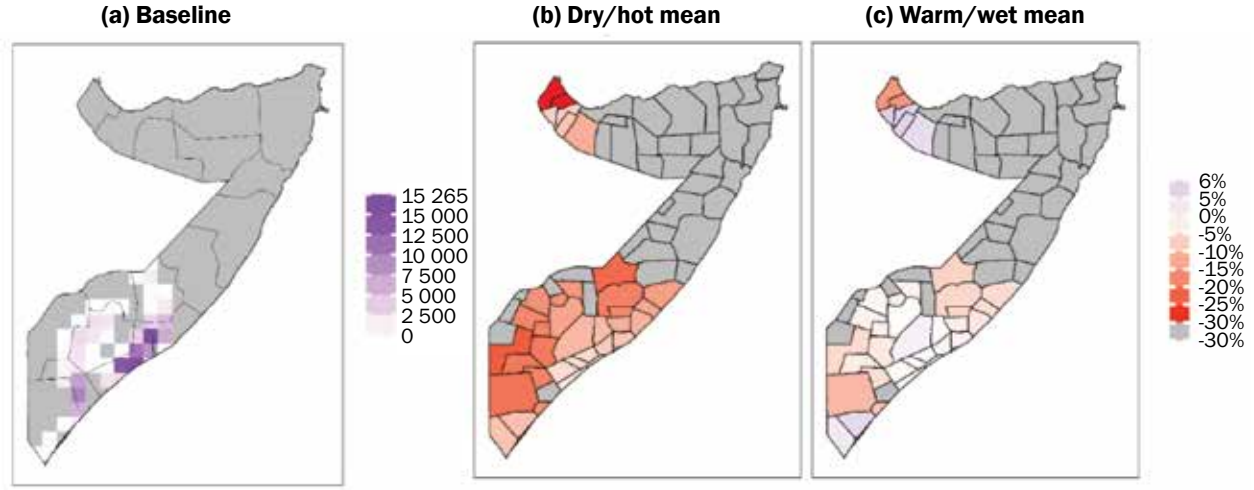
19 UNEP. Interactive Country Fiches: Somalia, Water. https://dicf.unepgrid.ch/somalia/water.

As well as threatening livelihoods, climate shocks have the potential to increase competition and conflict. Water scarcity compels pastoralists to alter their traditional movement patterns as grazing land and water resources become scarce (Nilsson et al. 2020). This can lead to conflicts over land and water between different pastoralist groups and between pastoralists and other users of water (WFP 2018). Climate shocks risk aggravating social cleavage and vulnerabilities, reducing social cohesion, increasing competition and violent confrontations, and leading to further displacement and migration.

3.2.1 Agricultural production and rural livelihoods

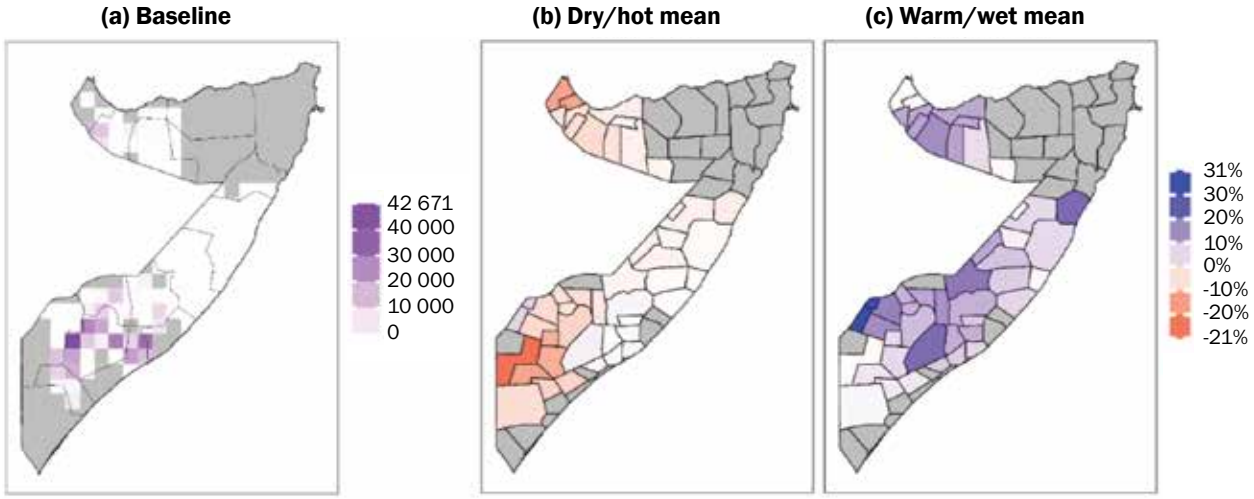
By 2060 and under the CF scenario, climate change is anticipated to result in varied production impacts for rainfed and irrigated crops. For most rainfed crops, these are projected to be driven predominantly by changes in water availability rather than higher temperatures. Figure 3.3a presents crop production areas for rainfed sesame, one of the country's highest-revenue rainfed crop, during the historical reference period, while panels b and c illustrate estimated production shocks under the dry/hot and wet/warm mean scenarios during the 2050s. Overall, production shocks for sesame are projected to reach -2.7 and -12.5 percent under the wet/warm and dry/hot mean scenarios, respectively. These impacts are

Figure 3.3: Rainfed sesame production areas and climate shocks, 2051–60



Source: World Bank/IEc analysis.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Figure 3.4: Rainfed sorghum production areas and climate shocks, 2051–60



Source: World Bank/IEc analysis.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

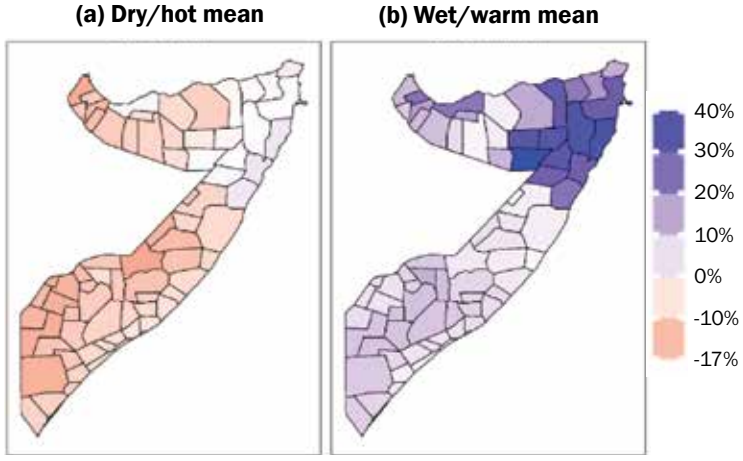
partially explained by the most severe production shocks in the southwest and northwest of the country corresponding to areas with relatively low sesame cultivation.

Similarly, Figure 3.4a presents crop production areas for rainfed sorghum, an important food crop, with panels b and c illustrating production shocks under the dry/hot and wet/warm mean scenarios. Overall, production shocks for rainfed sorghum are projected to reach +9 and -5.8 percent under the wet/warm and dry/hot mean scenarios, respectively. Production of this crop is distributed across large parts of the country in the north, south, and central areas, which are generally projected to face production shocks of around -10 and +15 percent under the dry/hot and wet/warm means, respectively.

Climate change is expected to alter the geographic suitability for both cropland and grazing agriculture in Somalia, particularly in the north.[20] As some crops are already at the margins of their optimal growing ranges, these climatic shifts will inevitably influence suitable cultivation zones. Sorghum and maize are expected to experience both gains and losses in climatically suitable areas, with the net effect being relatively balanced. Beans and sesame are expected to experience an expansion in suitable areas, while sugarcane and groundnut are projected to experience net losses in total suitable areas. These projections are based on resilient zones: areas where suitability is confirmed under all four general circulation models (GCMs) used for the analysis. In contrast to the mixed response across crops, grazing livestock are expected to see increased or consistent, areas of suitability. Cattle, currently the most constrained species due to greater temperature sensitivity and grazing needs, see reduced suitability along the northern coast but increased suitability in the central region, reflecting expectations of threshold temperatures being exceeded in the north, while increased precipitation in the central region will support greater forage supply. Sheep and goats are currently suitable across much of the country, and this holds under all climate scenarios.

Under dry/hot conditions and the CF scenario, declines in the production of cattle, goat, and sheep meat are anticipated. Figure 3.5 shows production shocks to goat meat due to changes in pasture availability. Shocks to goat meat are concentrated in the west and south. Under the dry/hot mean scenario, production impacts are largely negative, with some districts in the northeast experiencing production gains (panel a). Percentage changes at the tip of the Somali Peninsula are positive and large under a wet/warm future (panel b). But a small fraction of livestock is located in that region, so the effect is more

Figure 3.5: Goat meat production shock (percent) by district, 2051–60



Source: World Bank/IEc analysis.
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

20 A land suitability analysis prepared for the Somalia CCDR assessed shifts in climatic envelopes for important crops and grazing species under four GCM simulations representing the range of potential climate conditions. The assessment estimated the impacts on suitability in terms of current cropland area and potential extensification, number of suitable species per land unit, and impacts on agricultural producers and systems. Uncertainty in climate projections complicates the effort to predict how crop suitability will vary across different regions. The inherent variability in model outputs makes it challenging to identify a single, most likely future scenario. To address this uncertainty, the assessment focused on identifying resilient zones for each crop—areas where suitability is consistently predicted across all four GCMs evaluated.

significantly driven by impacts elsewhere. Impacts across other products are proportionally higher/lower, but with similar spatial patterns.

3.2.2 Fisheries

Fish exports have outpaced all crop exports combined, becoming Somalia's second-largest agricultural export. Despite the country's long (3,333-kilometer) coastline, its sizable Exclusive Economic Zone (EEZ), and having one of the world's richest coastal marine ecosystems, its fisheries' contribution to the economy is limited. The sector saw strong growth in 2017 and 2018, reaching $39.2 million, and continued its upward trend despite minor fluctuations in 2020 and 2021. By 2023, fish exports had surpassed all crop exports combined, positioning the sector as Somalia's second-largest agricultural export after livestock.[21] But despite having continental Africa's longest coastline, fish imports also reached $33.8 million in 2023. These were mostly processed fish products, underscoring the limitations of domestic processing and cold storage. Its fisheries sector is predominantly artisanal, with over 100 landing sites along the coast. Somalia has 10,000–30,000 fishers and an estimated 90,000 people are employed in full and part-time fisheries-related jobs.

The fisheries sector could face relatively significant impacts due to climate change over the coming decades, with shocks to fishery output of as high as -15.8 percent under the CF scenario.[22] Table 3.2 shows the projected impacts to exploitable fish biomass in Somalia relative to a five-year historical baseline (2018–22), which are assumed to correspond to changes in sector output or revenues. Impacts are projected to grow incrementally toward mid-century and vary depending on the climate scenario considered, with SSP5-8.5 resulting in more negative shocks, largely due to higher levels of warming. The magnitude of impacts is subject to uncertainty about the degree of climate change that will ultimately be experienced, as well as how such changes will affect marine ecosystems. Human-driven changes in fish stocks could also cause overexploitation of the resource and result in greater and faster declines in output when 38 percent of the stock in the EEZ is already overexploited or collapsed. Approximately three-quarters of the total estimated volume extracted from Somalia's EEZ is attributed to foreign enterprises. The exploitation of offshore resources by these foreign actors played a significant role in fueling the rise of piracy in the region during the 2000s, with piracy incidents reaching their peak in 2012.

Table 3.2: Summary of fisheries shocks under the CF scenario

2031–40	SSP1-2.6 mean			SSP5-8.5 mean	
	2041–50	2051–60	2031–40	2041–50	2051–60
	-12.6%	-14.2%	-9.1%	-14.5%	-15.8%

Source: World Bank/IEc analysis.

The fisheries sector has the most immediate potential for job creation and economic growth but must account for the expected impacts of climate change. Other ocean-based sectors, especially maritime transport through ports and shipping, have potential for expansion as the country becomes more secure and politically stable. Other sectors that could drive economic growth, job creation, include mariculture, coastal tourism, and salt production. Such growth needs to be integrated and sustainable, preserving the coastal ecosystems on which it depends. Beginning in 2018, the FGS started issuing licenses to foreign tuna longline

21 Before the civil war, crop agriculture and livestock dominated Somalia's exports, with fish playing a relatively small role. But in the postwar period, fish exports have emerged as a key growth sector, rising from $27.9 to $61.6 million between 2015 and 2023.

22 Two individual models (SSP1-2.6 and SSP5-8.5, from Phase 6 of the Coupled Model Intercomparison Project or CMIP6) were perturbed using different GHG emissions scenarios to estimate how these different climate scenarios influence exploitable fish biomass through 2100.

vessels operating beyond 24 nautical miles bringing in a much-needed revenue. Vessels are monitored through satellite system and other reporting requirements, setting an important precedent for how Somalia could benefit from legal and regulated offshore fisheries. Private companies have made sizable investments to export lobsters, tuna, and other high-value seafood species to markets in East Africa and Asia. Efforts to enter Western markets are hampered by the inability to meet international food safety standards, and to that end, Somalia recently launched a competent authority.

3.2.3 Fostering resilient rural livelihoods and economywide growth

Strengthening agricultural and agropastoral systems against future climate shocks

While recent policy advancements represent significant progress, their full potential can only be realized through coherent, climate-informed, and well-sequenced implementation. Somalia should continue to strengthen the capacity of its federal and state agricultural institutions—especially the MoAI, MoLFR, and the Somali Agricultural Regulatory and Inspection Services (SARIS)—to deliver climate-smart agriculture (CSA)-aligned services, promote agricultural input use and technology adoption, enforcement regulations, coordinate policy, and enhance collaboration between public and private institutions. All public offices, especially those at the FMS and district levels, have major capacity and resource gaps and unclear division of jurisdictions. This inhibits their ability to deliver even the most basic services, let alone advanced ones such as research, and leaves the task of delivering virtually all critical basic services, including limited extension services, to the private sector. A co-management framework based on collaboration between public and private institutions is a realistic and efficient option to strengthen the sector's governance, fill knowledge gaps, improve rangeland management, deliver core animal health services, rebuild and expand production and trade infrastructure, and promote investment in processing and value addition.

Somalia would benefit from undertaking a series of water management initiatives in both the short and medium term. The interdependent nature of water-environment-agriculture-land management requires it to move toward an approach that builds on resilience, innovation, and integrated systems to increase the long-term resilience of its water resources and economy. In the short term, the country would benefit from strengthening infrastructure: repairing and building small-scale water storage infrastructure, enhancing rainwater infiltration for crops and pasture to increase the green water footprint, enabling off-season farming, and ensuring blue water availability for critical needs.[23] In the medium to long term, it will need to gradually rehabilitate irrigation systems for efficient blue water capture and use. In the short term, training farmers in water-saving techniques and better livestock and agriculture water productivity will help optimize rainwater use and improve green water capture through soil conservation practices. Scaling up the efforts of successful World Bank programs such as Barwaaqo and Somalia Urban Resilience Project (SURP II) will help promote community water and local resource governance measures. In the medium to long term, it can focus on implementing conjunctive surface and groundwater use, optimizing the use of rainfall stored in soil, and allocating this water to the highest social value, economic, and environmental uses. More aggressive irrigation efficiency improvements may also be worthwhile, as well as modernizing and diversifying agriculture, and measuring and optimizing agriculture virtual water use. To manage increased rainfall variability, Somalia will need to focus on improved land and water management and storage facilities, as well as collecting information on water availability and use across various sectors to feed into water allocation decisions and meet the national transformation plan goals. This will require strengthened water management institutions that can improve coordination and monitoring across various levels of government, work in line with a comprehensive water management policy that integrates both blue and green water use, implement modern water-saving technologies and approaches to ensure water remains a strategic asset, establish river basin authorities, and work toward addressing the challenges of transboundary water issues.

23 *Green water* is rainfall stored in soil; blue water is surface or ground water.

Promoting CSA practices and water and soil conservation can mitigate the impacts of erratic weather patterns and strengthen the resilience of rural livelihoods. Expanding access to certified climate-resilient seed varieties—including drought-tolerant, flood-tolerant, and early-maturing crops—will enhance agricultural productivity and build resilience to climate shocks. Such efforts should be complemented with the establishment of seed banks and strengthening public-private seed systems to ensure consistent availability and distribution. Promoting CSA practices, such as legume intercropping, mulching, and crop rotation, through farmer field schools and tailored extension services will further support SLM, while addressing bottlenecks in the input supply chain by improving access to high-quality seeds, fertilizers, and modern technologies will enable farmers to adopt improved practices and increase yields. Investing in storage solutions, including hermetic silos, Purdue Improved Crop Storage bags, and solar-powered cold storage, is also vital for minimizing postharvest losses, especially during the Gu and Deyr seasons. Strengthening CSA-compatible value chains, particularly for soil-enhancing and nutrient-rich crops like legumes and cowpeas, can improve market access and link production to institutional procurement and urban markets. In the medium to long term, Somalia can improve productivity and facilitate stronger adaptation to a rapidly changing climate by modernizing the livestock sector by transitioning from traditional pastoral-based production systems to modern commercial animal farming and ranching systems, while expanding feed and fodder availability will enhance climate resilience and ensure sustainable growth.

Expanding climate-relevant information services and strengthening EWS are both critical for enhancing risk preparedness in Somalia's pastoral and agropastoral sectors. While mobile phone access has enabled some farmers to receive weather and market updates, broader technological adoption remains limited due to weak infrastructure and low digital literacy (Akester et al. 2018). To address this gap, Somalia could consider scaling up climate risk management tools, including localized EWS, weather-indexed insurance products, and seasonal forecasts tailored to support agricultural planning and planting decisions. Establishing a government-led early warning early action system, building on existing platforms, such as SWALIM and the Food Security and Nutrition Analysis Unit, would institutionalize and coordinate risk monitoring and response. The system should collect and publish monthly district-level data on vegetation indices for pasture and cropland, market prices for livestock and animal products (such as fresh milk, meat, eggs) and inputs like fodder and crop residues, and livestock export volumes and prices. On a quarterly basis, it should analyze and disseminate epidemiological data, including vector and pest density, and publish relevant briefs to inform timely action and policy response.

Expanding financial services to pastoralists could also be an important strategy to tackle poverty and promote inclusive economic development. Financial institutions typically exclude pastoralists from their services due to their inability to pledge collateral or provide a guarantor, limited financial literacy, and mobility, as well as the high transaction costs involved and risks related to climate, health, and clan conflict events. Women in pastoral and agropastoral communities traditionally face even greater barriers than men in accessing finance. To improve access to finance in the livestock sector, the government has identified three main measures. First, it will develop an appropriate strategy to increase financial access for all livestock businesses and related value chains, including by enhancing financial literacy and introducing formal credit services. Second, it will design a set of incentives to increase interest among financial institutions and mobile money providers to develop financial products or platforms that better suit the needs of pastoralists and dairy and meat producers. And third, it will expand recent offerings of, and access to, livestock insurance related to climate and animal disease shocks—beyond the limited products recently introduced—in terms of amounts and number of beneficiaries. Since 2020, lending to the livestock sector has been underway through Gargaara, a wholesale financing facility that is launching a livestock value chain fund to further incentivize lending in this sector. Gargaara is also working to operationalize a risk-sharing mechanism to further promote credit to the livestock sector. In parallel, the government is supporting the development of complementary insurance products and business development services for this segment. Collectively, these financial and nonfinancial interventions aim to mobilize private capital, deepen financial inclusion, and enhance resilience within Somalia's agropastoral economy.

Reversing the environmental degradation of the rangelands and ensuring sustainable natural resource management

Promoting sustainable grazing practices, improved pasture management, and soil conservation measures can help Somalia address rangeland degradation by enhancing both productivity and ecosystem resilience. Various developments over the past decades—including climatic variations, significant land use change, large-scale tree cutting for uncontrolled commercial charcoal production and its illegal export due to the financial benefits it brings to Al Shabaab, the spread of private enclosures leading to overgrazing of remaining communal pastureland, and the spread of invasive species—have resulted in severe environmental degradation of the rangelands, reducing forage in most parts of the country and requiring an ambitious new program of rangeland rehabilitation and management (FGS-MoLFR 2019; Hussein et al. 2021). A large number of pastoralists with larger herds from the northern and central regions where rains are sparse and/or delayed often converge at the same time on the same few areas with better water and pasture, impacting already degraded rangelands through high animal density and overgrazing, which stifles vegetation recovery. With the total area of pasture available for grazing on commons also considerably reduced by the spread of private enclosures, especially in the northern and central regions, animal productivity has declined and animal diseases increased due to greater contact between herds.[24] Rangeland rehabilitation, backed by substantive technical assistance and public investments for soil and water conservation, reforestation, and afforestation, and pasture reseeding are both necessary to support the sector's resilience and sustainable growth.[25]

Finalizing and implementing land tenure reforms would help clarify ownership, improve investment security, and encourage the long-term adoption of sustainable practices, protecting rangelands, natural water sources, and reservoirs. A weak or absent legal framework and weak or absent institutions—particularly the lack of policies on land use and rangeland management—threaten the sustainability of traditional pastoral and agropastoral livelihoods and the wider economy. Recent claims of private land enclosure ownership have also eroded the centuries-old traditional *Xeer*-based approach to communal open pasture management.[26] Prewar land tenure laws and regulations designated and identified nonurban land as either pasture, agricultural, or forestry land. The traditional customary law system also governed all social relations between communities, including communal, family, and personal conflicts and resource sharing. By laying ownership claims on common grazing lands, restricting their use and demanding payments for access, and/or expanding cultivation onto pastureland, often under the protection of subclans, claimants of private enclosures violate both the prewar legal framework and the *Xeer* and are increasingly a source of social conflict over natural resources. Tree cutters and traders that cut down Acacia trees for charcoal production on communal forested land, often linked or under the protection of Al Shabaab, also violate the *Xeer*. But the lack of supportive government enforcement capacity means that local communities have been unable to enforce the *Xeer* since the late 1980s. To update and enforce a tenure law and related regulations, the government will need to build and reach consensus with local communities over related policies and their implementation and improve communities' capacity to manage their natural resources in a sustainable manner.

The government also needs to enforce the charcoal export ban and invest in alternative energy solutions—such as liquefied petroleum gas (LPG) stoves, briquettes, and solar cookstoves—to reduce pressure on forest resources. Efforts to shift domestic energy use and reduce deforestation have yielded some progress, but rural reliance on charcoal persists. Deforestation has expanded desertification and contributed to widespread land degradation, reducing both cropland and pasture availability, especially in Jubbada Dhexe

24 In contrast, agropastoral households in the southern regions have smaller herds and are less mobile, due to both higher availability of water and their mixed livestock-crop enterprise that typically offers opportunities for using crop residues as animal feed in dry seasons.

25 Somaliland and Puntland are engaged in pilot initiatives, often with support from development partners, to address widespread communal rangelands degradation, including grassroots-level investments in establishing and upgrading community-managed rangelands reserves.

26 Xeer is a traditional dispute resolution mechanism based on clan customary law.

and Juddaba Hoose regions, which were responsible for 81 percent of all tree cover loss between 2001 and 2023.[27] Though successive administrations have reaffirmed the 2012 UN Security Council Resolution 2036 ban on Somali charcoal exports, enforcement has been uneven. Smuggling operations through southern ports such as Kismayo and Buur Gaabo have allowed illicit exports to persist, undermining conservation efforts (UN Security Council 2014; Akester et al. 2018) and maintaining an important source of financing for Al Shabaab. Between 2014 and 2016, the uptake of gas stoves in urban areas—led by diaspora investments and private importers—helped reduce household demand for charcoal in cities like Mogadishu and Hargeisa. But rural communities remain dependent on biomass fuels, and external demand for Somali charcoal, particularly from the Gulf region, continues to incentivize illegal exports. Without large-scale reforestation, alternative livelihoods, and better enforcement of the export ban, the ecological and economic cost of charcoal will continue to rise (Aketser et al. 2018).

Effective natural resource management is critical for Somalia's climate adaptation agenda, particularly in fisheries, forestry, and the protection of key natural habitats, including coastal ecosystems. Addressing land degradation through SLM practices will enhance ecosystem resilience and support long-term adaptation strategies. Somalia's NDC 3.0 sets targets to protect 120,000 hectares of forests, sustainably manage 50,000 hectares of land, and implement agroforestry systems on an additional 50,000 hectares. Achieving this will require a combination of actions, including expanding agroforestry and replanting native species such as Acacia to restore ecological buffers. Targeted land restoration and reforestation programs should prioritize degraded rangelands, wetlands, and areas impacted by charcoal production and enhance the active participation of communities, women, and youth to ensure inclusive and sustainable outcomes. Somalia should scale up its efforts to reduce emissions from deforestation and forest degradation, including REDD+ readiness activities and implementing a charcoal policy.[28] Finally, strengthening ocean governance in alignment with the Provisional Constitution of 2012 and the Fisheries Law is vital to protect Somalia's maritime resources and foster a stable environment for sustainable blue economy investments.

Fostering export-oriented value chains

To reduce import dependency and boost domestic value addition, Somalia would benefit from revitalizing its agroprocessing industries and strengthening high-potential, export-oriented value chains. Revitalizing processing for sesame, sunflower, maize, cassava, and other key crops can generate employment, boost rural incomes, and support national food security. Establishing aggregation and processing centers near production zones, equipped with quality control infrastructure, will improve food safety and enhance export readiness. These centers can serve as hubs for sorting, grading, and packaging, while also facilitating access to markets for smallholder farmers. As only 31.2 percent of the rural population lives within 2 kilometers of an all-season road (World Bank Group 2019), access infrastructure remains a crucial challenge, necessitating the need to rehabilitate rural road networks and invest in climate-resilient feeder roads, particularly in the flood-prone south to ensure consistent connectivity between farms and markets.

Somalia will need to strengthen its market institutions to successfully integrate producers into domestic and international value chains. It can develop structured trading platforms and digital market information systems to better connect farmers with buyers, processors, and exporters. Enhancing quality standards and certification systems—for example, by operationalizing the SARIS—will help ensure compliance with sanitary, phytosanitary, organic, and fairtrade standards. Supporting agricultural cooperatives is also vital, as they play a vital role in contract negotiation, produce aggregation, and foster inclusive value chain participation. Together, these investments can create a more resilient, competitive, and inclusive agricultural sector.

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27 https://www.globalforestwatch.org/dashboards/country/SOM/ (accessed May 11, 2025).

28 REDD' stands for 'Reducing emissions from deforestation and forest degradation in developing countries. The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks. https://unfccc.int/topics/land-use/workstreams/redd/what-is-redd.

Strengthening resilience to climate impacts and contributing to global mitigation goals

Agriculture and LULUCF contribute to 46 and 40 percent, respectively, of the country's GHG emissions, mostly from deforestation, land degradation, livestock, and increased agricultural activity (FRS 2025b). The agriculture sector is the largest single contributor, accounting for 25.2 $MtCO_2e$ in 2024, and the LULUCF sector follows, at 21.9 $MtCO_2e$. Under the business-as-usual scenario, the agriculture and LULUCF sectors will generate net emissions amounting to 39.2 and 34.1 $MtCO_2e$, respectively, by 2035. Implementing the NDC 3.0 mitigation priority actions for the agriculture and LULUCF sectors could reduce emissions by 23.5 $MtCO_2e$ by 2035, but would require an estimated $3.33 billion (64.4 percent of the total NDC funding needed). The country aims to promote sustainable intensification in the livestock sector through improved feeding, breeding, veterinary services, and better manure management to reduce methane emissions. Crop production will also be intensified to limit the expansion of agricultural land, while agroforestry practices are set to expand by 50,000 hectares by 2035. In the land use sector, the NDC 3.0 targets the conservation of 120,000 hectares of forest, the reforestation, afforestation, and SLM of 100,000 hectares, and the landscape restoration of 2 million hectares of arid and semi-arid lands. These measures are designed to enhance ecosystem resilience, improve carbon sequestration, and support SLM in the face of increasing climate pressures.

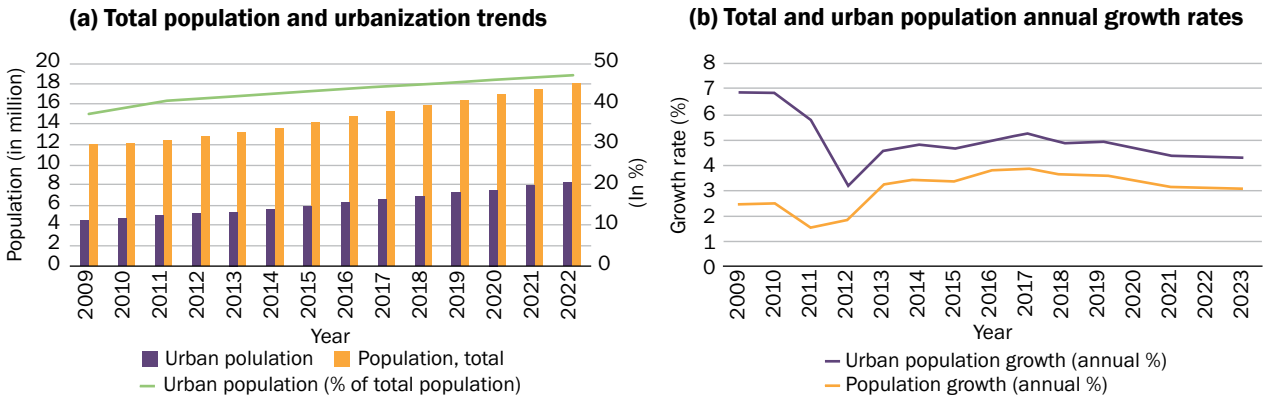
3.3 Urban development and resilient cities

Somalia's rapid urbanization, primarily fueled by conflict and climate-induced rural-urban migration, has led to significant challenges in climate resilience and service delivery within its cities. This urban growth has resulted in unplanned sprawl and densification, exacerbating the vulnerability of cities to climate risks such as flooding, heat stress, and water scarcity. Informal settlements and IDP communities, often located in marginal, low-lying areas, are particularly at risk from these environmental hazards.

3.3.1 Rapid urbanization driven by conflict and climate change

With approximately 47 percent of the population—or roughly 8.8 million people—living in urban centers, Somalia is among the world's fastest-urbanizing countries, experiencing annual urban growth rates of around 4.3 percent (World Bank 2020b). This trajectory will add approximately 3.8 million residents to its cities by 2030 and 11.6 million by 2050 (World Bank 2020b). Conflict, loss of land access, environmental disasters, and food insecurity have consistently driven this 'forced urbanization'. Nearly 75 percent of Somalia's 3.9 million IDPs live in cities, meaning one in four urban residents is internally displaced. IDP migration is primarily directed toward large urban areas or nearby cities, with most people traveling fewer than 120 kilometers from their origin due to social ties, travel costs, poverty, security risks, limited access to information about more distant locations, and other factors (World Bank 2020b).

Figure 3.6: Population and urbanization trends in Somalia

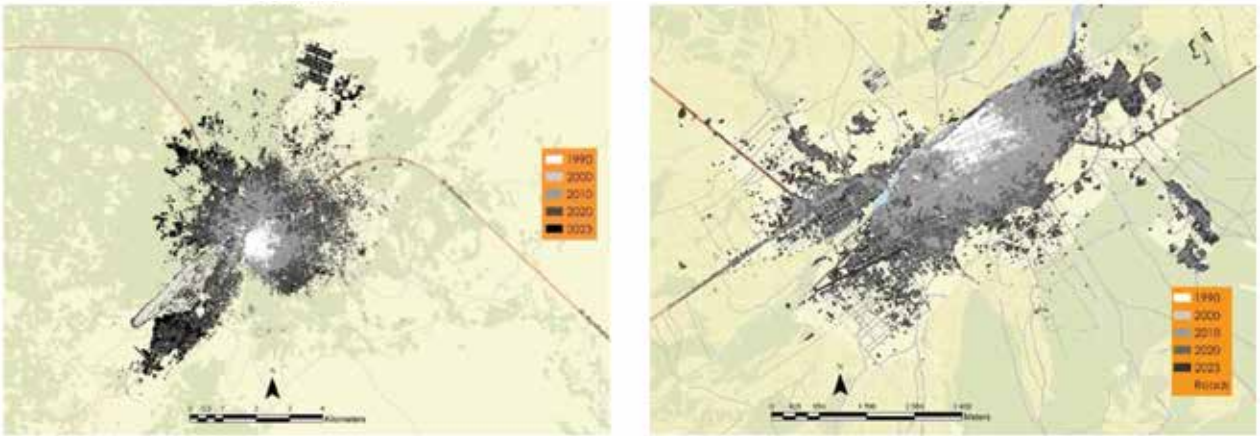


Source: World Development Indicators 2024.

Due to a lack of planning, urban sprawl and densification have worsened flood risks and intensified urban heat islands. Baidoa, the largest city in the South West State, experienced a 26 percent densification of its existing urban footprint between 2018 and 2023, characterized by deliberate infill and increased vertical construction within strategic central locations. Similar trends are evident in Mogadishu and Garowe, the capital of Puntland. The rapid and uncontrolled inflow of migrants, including the forcibly displaced, has also significantly contributed to the expansion of Somali cities. In Baidoa, the built-up area grew from 6.2 to 30.2 square kilometers between 2004 and 2023, with an average annual growth rate of 7.7 percent. The most rapid expansion occurred between 2003 and 2013 where growth was nearly 10 percent per year, driven by IDPs, and urban expansion toward peripheral areas. Similarly, Garowe's built-up area expanded from 3.03 to 14.85 square kilometers between 2003 and 2023, with an annual growth rate of 8.3 percent (Figure 3.7). Projecting the urban growth rate identified between 2016–23 (6.2 percent annually) forward, the urban area in Garowe will reach approximately 21.3 square kilometers by 2030, about seven times its size in 2003. In Baidoa, similar rates are anticipated with the total area equaling 41 square kilometers in 2030, a sixfold increase on 2004 (World Bank 2024b).

Figure 3.7: Urban expansion in Baidoa and Garowe

(a) Baidoa **(b) Garowe**



Source: World Bank 2024a.

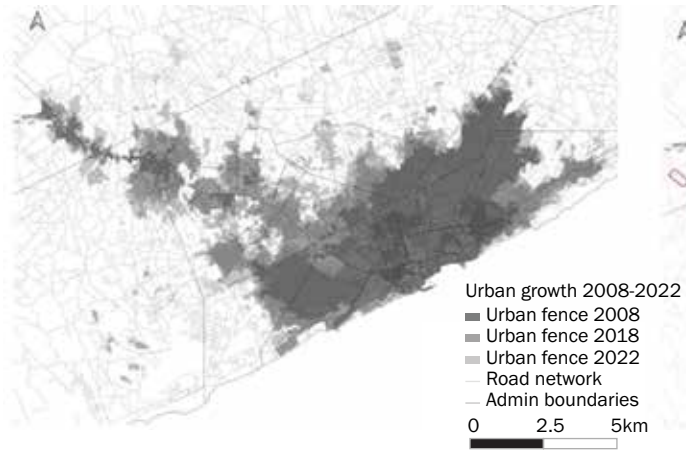
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Similarly, Mogadishu's urban footprint has more than doubled from 80 to 167 square kilometers between 2008 and 2022, reflecting an average annual growth rate of 5.4 percent (Figure 3.8). This expansion accelerated to 6.6 percent annually between 2018 and 2022, driven by population growth, inward migration, and increased demand for land. While part of this growth has come from IDPs settling in the urban outskirts, the city's growth has triggered widespread land subdivision with large tracts demarcated and primed for development in peripheral areas. But much of this land remains undeveloped, posing long-term challenges for infrastructure integration (World Bank 2023b).

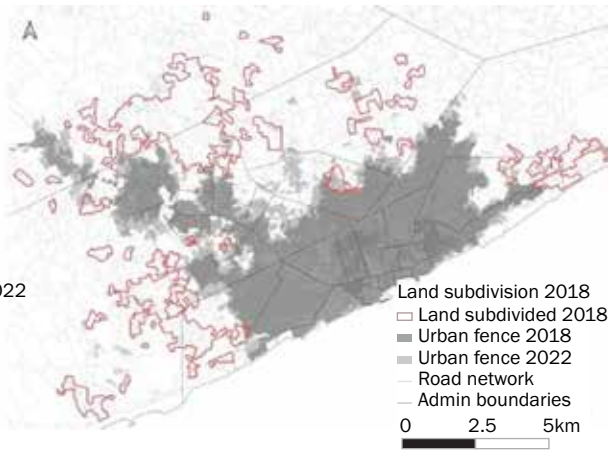
This pattern of urban expansion disproportionately impacts the most vulnerable, particularly IDPs, who are often relegated to the outskirts of cities (Figure 3.9). Few IDPs integrate into central urban areas upon arrival; instead, they join those in protracted displacement or establish new settlements in underserved peripheral zones. These areas are frequently beyond the reach of network infrastructure, making access to basic services exceedingly difficult. For example, in Mogadishu, more than half of the 400,000 IDPs profiled in 2016 were concentrated on the city's outskirts (World Bank 2020b); in Baidoa, IDPs predominantly live along the periphery; and in Garowe, major IDP settlements are entirely disconnected from the main city. This exacerbates the 'uncontrolled growth' of dense, unserved settlements on urban fringes, where IDPs face persistent risks of eviction and exploitation.

Figure 3.8: Urban growth in Mogadishu

(a) Urban growth (2008–22)



(b) Land demarcated for future development identified in 2019 and urban expansion from 2018 to 2022

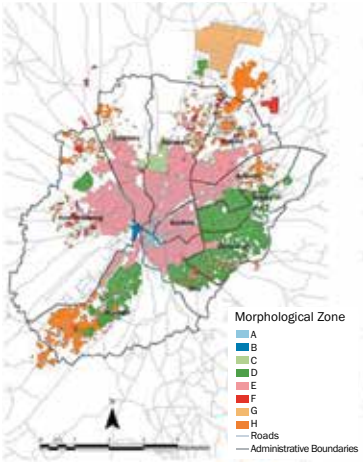


Source: World Bank 2024b.

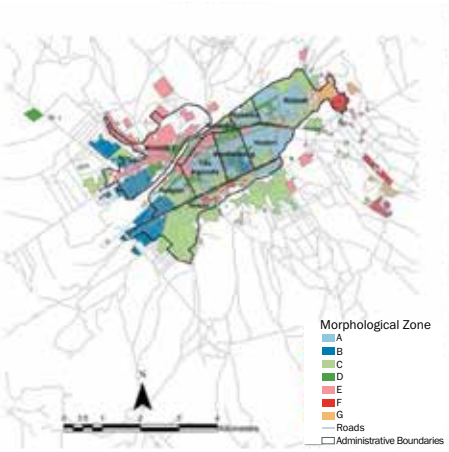
This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

Figure 3.9: Location of IDP settlements across key cities

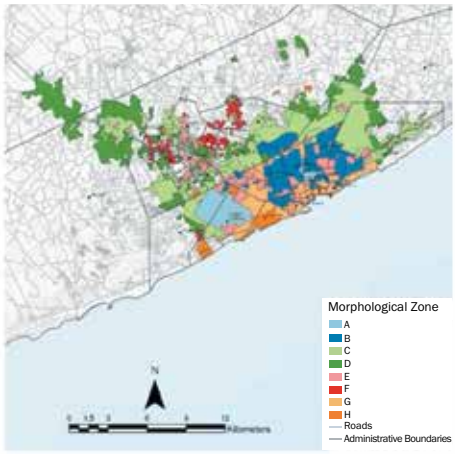
(a) Baidoa



(b) Garowe



(c) Mogadishu



Source: World Bank 2024a.

Note: Panel a: Settlements F, G, H represent a combination of planned and spontaneous IDP settlements; D and E are semiregular dwellings, many of which are informal, constructed with low-quality building materials. Panel b: Settlements F, G represent a combination of planned and spontaneous IDP settlements; C includes semi-regular dwellings, many of which are informal, constructed with low-quality building materials. Panel c: Settlement F represents IDP settlements; E includes informal dwellings, which are constructed with low-quality building materials; D are irregular, scattered dwellings across the urban periphery.

This map is for illustrative purposes and does not imply any judgment on legal status or boundaries.

3.3.2 Climate vulnerability and service delivery challenges

Unplanned growth has significantly exposed urban populations and built-up areas to flood risk. In Garowe, approximately 19 percent of all buildings are in flood-prone areas, including large portions on the southern periphery, where over 3,400 structures face significant flood risks. IDPs, who constitute some of the most vulnerable populations in these areas, often lack the resources or resilience to cope with flooding. Similarly, Baidoa experiences widespread flood exposure, with over 39,000 individuals at risk in central parts of the city, more than 94,000 people—30 percent of the city's population—exposed to regular flood hazards in the peripheries, which are home to large IDP settlements. Many IDPs live in temporary or semipermanent shelters, heavily reliant on humanitarian aid, further compounding their vulnerability.

These impacts deepen the ongoing humanitarian crisis, particularly for IDPs who are already marginalized within urban society (World Bank 2024a).

As in Baidoa and Garowe, significant portions of Mogadishu's built-up areas are exposed to flood hazards. Neighborhoods with better-quality construction and higher socioeconomic resilience are better equipped to manage flooding, while areas with poorer-quality structures and vulnerable populations face greater risks. Many of these flood-prone areas in Mogadishu are home to IDPs living in nondurable housing, where regular flooding undermines their ability to build assets, adapt, and achieve self-reliance (World Bank 2024a). Flood risks also impact residents' ability to access emergency and other services due to the inadequate and flood-prone road networks, with 37 and 45 percent of residents unable to access their nearest school and hospital, respectively, during flood events.

Mogadishu is also at risk of coastal flooding. Driven by rising sea levels and intensifying storm surges, coastal floods could significantly worsen economic and social vulnerabilities by mid-century. Without adaptation, annual economic losses due to coastal floods could increase dramatically—from 0.038 percent of the city's GDP in 2005 to approximately 0.415 percent by 2050 (World Bank 2023a). Alongside direct economic impacts, flooding-induced salinity poses severe risks to freshwater sources, contaminating drinking water and irrigation supplies. Increased water salinity also threatens agricultural productivity and public health, heightening risks of elevated blood pressure in pregnant women and higher infant mortality rates (Scheelbeek et al. 2016). Poorer households, who cannot relocate or rebuild, will disproportionately suffer livelihood disruptions and reduced resilience.

Flood risks also pose significant challenges to sanitation and public health in Baidoa and Garowe. In Baidoa, many households, particularly in peripheral neighborhoods, rely on unimproved pit latrines without slabs or open pits. These latrines, which tend to be between 3–10 meters deep, are chosen by lower-income households for their affordability and long service life but present severe public health risks. Similarly, in Garowe, IDP settlements and newly developed areas struggle with inadequate sanitation infrastructure due to financial constraints and poor road access, further limiting service availability. Increased flooding, driven by changing rainfall patterns, intensifies these challenges by heightening the risk of waterborne diseases and overwhelming fragile public health systems. As climate impacts worsen, the contamination risks from unimproved sanitation systems are expected to escalate.

Urban sprawl and densification also exacerbate the urban heat island effect that already poses a tangible, year-round risk for Somalia's fast-growing cities, and the threat will intensify without targeted cooling measures. Satellite analysis of 12 East African capitals shows daytime surface urban heat island intensities from 1°C in Dodoma to 8°C in Khartoum. Mogadishu experiences mild surface urban heat island effects, with land-surface temperatures in the built-up interior averaging about 2°C warmer than the Indian Ocean shoreline. Seasonal profiling classifies Mogadishu—alongside Nairobi and Dar es Salaam—as a "non-seasonal" surface urban heat island city, meaning the extra urban warmth is steady all year rather than peaking in late summer or winter (Garuma 2023). Although urban heat island measures for inland centers such as Baidoa and Garowe are not readily available, a combination of minimal green space and tree cover, and dark, heat-trapping surfaces are likely to create a pronounced urban heat island effect. By the mid-21st century, parts of Somalia's north, and interior southern and south-central coast regions could see 40–100 days per year with temperatures exceeding 40°C. The evidence makes clear that without intervention, rapid urban densification and the loss of tree canopy will amplify heat stress for Somalis living in towns and cities, with the poorest households in informal settlements facing the greatest exposure (Gulati et al. 2023).

Poor land governance—including its hybrid formal statutory frameworks and informal customary systems—coupled with highly fragmented institutional capacities, unclear mandates, and significant regulatory and implementation gaps in Somalia's planning framework significantly amplifies climate risks. The absence of effective land administration exposes vulnerable populations to flood

risks, contaminates floodwaters, and heightens health and mobility challenges (African Cities Research Consortium 2024). Institutional fragmentation and incomplete land records also impede the identification of rightsholders and suitable land for climate-resilient transitional shelters (UN Habitat 2010). Rapid, unplanned urbanization driven by weak governance compounds these issues, resulting in unplanned settlements that are highly susceptible to climate-induced hazards (World Bank 2021b). Weak policy and legislative frameworks exacerbate environmental management challenges, undermining efforts to control urban emissions, waste management, and groundwater protection amid rapid urbanization. The lack of urban master plans and public control mechanisms for land management further constrain sustainable urban development and climate-resilient infrastructure planning (NRC, UN Habitat and UNHCR 2009).

Weak building management and insufficient urban governance structures also heighten climate vulnerabilities in Somali cities. The absence of comprehensive building permits and regulatory frameworks contributes to uncontrolled urban expansion and slum formation, notable in rapidly growing areas such as north Mogadishu and along the Afgooye corridor (UN Habitat 2019). While a federal building code has been introduced, weak enforcement and underdeveloped municipal regulatory frameworks continue to compound these vulnerabilities and highlights the need to strengthen permit processes and compliance capacity (The Arab Land Initiative 2024).

A strong reliance on decentralized groundwater sources (wells and boreholes), which often lack the necessary infrastructure for consistent and safe water delivery, coupled with the absence of adequate sewage and wastewater systems in Baidoa, Garowe, and Mogadishu pose significant risk for aquifer sustainability and pollution. Limited utility reach in Baidoa means that only 37.7 percent of households have access to piped water, and 43 percent in its underserved areas use unimproved water sources, such as unprotected dug wells. In Garowe, 22 percent of households are underserved, and just 1 percent is served by piped water (World Bank 2024a). Theft, vandalism, and uncoordinated private extraction challenge decentralized water systems and threaten aquifer sustainability. Aquifers are also polluted by poor wastewater management and absent sewage systems, fueling waterborne diseases like cholera, with over 110,000 affected in 2017–20 (World Bank 2020b). Climate change will exacerbate these issues through increased flooding, reduced aquifer recharge, and degraded water quality, heightening water insecurity and health crises for vulnerable urban communities, especially underserved ones.

Water-related challenges in Garowe, Baidoa, and Mogadishu threaten sustainability and public health in those cities. In Garowe, the rapid depletion of the Ligle Basin, its primary water source, has led to a drastic drop in the static water level, indicating an unsustainable rate of depletion. Baidoa also experiences severe water shortages, due to extended drought periods exacerbated by rising temperatures and decreasing rainfall reliability, forcing residents to rely on unsafe water sources, increasing their vulnerability to cholera, diarrhea, and other waterborne diseases. Periodic flash floods also overwhelm the city's drainage systems, contaminating water sources with waste and debris, and damaging vital infrastructure. Mogadishu relies almost entirely on groundwater from the Lower Shabelle Basin, which is at risk due to overextraction and pollution, posing significant threats to long-term sustainability.

The growth of cities and towns and the absence of sustainable solid waste management systems also impact public health and the environment. In Baidoa, poor disposal methods—such as burning waste, and open dumping, practiced by 74.4 and 4.8 percent of households, respectively—release harmful pollutants and contaminate water sources. Similarly, in Garowe, 16.2 percent of households burn waste, and 15.4 percent resort to open dumping, leading to environmental degradation. Access to formal waste collection services is limited and further hindered by financial constraints: only 37.6 percent of households in Garowe and 8.8 percent in Baidoa can rely on municipal, private, or community-based systems (World Bank 2024a). In Mogadishu, inadequate solid waste management results in only 30 percent of the 1,155 tonnes of daily waste being collected, leading to widespread open dumping and burning (World Bank 2022) and clogging drainage systems, intensifying flooding during heavy rains.

Low electricity access, coupled with inefficient and highly expensive electricity, hinders economic growth and sustainable cities. Electricity supply is managed by private electricity service providers (ESPs), which deliver decentralized electricity through low-capacity medium- and low-voltage networks powered by small-scale, high-speed diesel generators, serving major cities like Mogadishu, Baidoa, and Garowe, and smaller load centers across the country. This setup has resulted in a fragmented electricity sector, and an inefficient and costly electricity supply. Nationally, electricity access is estimated at 50 percent, leaving nearly 8 million people without access. Urban areas have a 70 percent access rate, while rural areas lag at 32 percent. A recent household budget survey indicates that 62 percent of households have some electricity access, but only half of these have grid electricity, and one-third rely on flashlights for basic lighting (NBS 2023). The cost of electricity is also high, at $0.25–1.3 per kilowatt hour, with a weighted average of about $0.61. Integrating renewable energy sources and energy storage solutions in the ESP operation would help improve the overall performance of existing mini-grids, reducing reliance on fossil fuels and increasing the reliability and affordability of electricity supply. There is also a strong need to rehabilitate and reinforce the mini-grids serving the major load centers in Mogadishu, Garowe, Baidoa, and other large FMS load centers to reduce technical and commercial network losses and increase the network's capacity to connect new customers. Last mile connection barriers also need to be addressed, especially for low-income households.

On its path to achieving universal electricity access, Somalia would benefit from leveraging both ESPs operating in larger urban load centers and decentralized renewable energy (DRE) solutions in rural areas. Characterized by much lower electricity access and high vulnerability to climate change, DRE solutions such as solar photovoltaic and battery energy storage offer a transformative pathway for rural Somalia. Currently reliant on polluting biomass and diesel, these communities face escalating droughts, floods, and extreme heat. DRE applications contribute to climate change mitigation by transitioning from diesel generators and unsustainable biomass to clean energy sources, and curtailing deforestation by replacing firewood and charcoal with renewable energy for cooking and other household needs. They also help alleviate heat impacts and enhance adaptation by powering essential cooling solutions, such as fans and refrigeration, and enhancing water security by enabling renewable-powered water pumping and purification systems, which are vital when water is scarce during heatwaves and droughts. DRE improves health care services by providing reliable electricity to rural clinics for storing temperature-sensitive medicines, operating medical equipment, and ensuring adequate lighting during heat-exacerbated health crises, thus strengthening community resilience to climate-related disruptions and enhancing overall living conditions, which can help reduce climate-induced migration and displacement.

In Somalia, it is often private sector institutions, local civic groups, and lineage-based mutual support systems, rather than the state, that deliver basic urban services. Local authorities do not always directly finance or manage these services; rather, they are meant to provide regulatory oversight (World Bank 2020b). But although relying on third-party service delivery may fill the governance void, it is not without its challenges. Commodification of basic services restricts access to households that can pay, leaving the poorest reliant on informal support. Competing authorities and unclear roles can also lead to weak accountability, inadequate performance monitoring, and weak enforcement of safety and environmental standards, as evidenced in solid waste management in Mogadishu (World Bank 2022). To ensure sustainable, inclusive, and climate-smart delivery, significant technical support and structure partnerships are essential, with clear policies and measurable performance indicators at municipal level to improve accountability and effectiveness in service provision.

Somalia's urban transport infrastructure and systems have not been able to cope with its rapidly expanding cities. As their footprints have grown, the already poor condition of the core road infrastructure has been exacerbated by unplanned and sprawling development. This is acutely evident during flood events, when many residents lose access to basic services due to road flooding (around 27 and 45 percent of the population of Garowe and Mogadishu, respectively, cannot access a hospital during a flood event). So, the

country's road sector planning and regulatory structure will need to be developed using climate-resilient road designs. Developing Somalia-specific road design manuals will ensure the vast stock of road still to be constructed or rehabilitated is developed in a sustainable manner. Most urban Somalis rely on an underdeveloped and informal public transport system, with minibuses and *bajaj* (three-wheelers) providing mobility for poor residents, and taxis and ride-hailing services serving those who can afford them. The proliferation of such low-capacity modes has contributed to growing traffic congestion in Mogadishu and other large cities. In the south, air transport is a key supplier of emergency and high-value freight and connects people to other areas of the country.

3.3.3 Sustainable urban development policy options

To effectively manage urban growth, Somalia must protect flood-prone and environmentally sensitive areas from encroachment. In key cities and towns, such as Garowe, Baidoa, and Mogadishu, vulnerable lands have been identified and should be safeguarded through community-based initiatives, fencing, urban parklands, and strict enforcement measures. Residents already living on environmentally sensitive lands should be identified and comprehensive relocation plans developed. All cities have started to identify—and in some instances demarcate—land for new settlements and such initiatives should be supported considering environmental and social safeguard considerations as well as other climate considerations.[29]

Addressing Somalia's complex land tenure issues will help tackle urban vulnerabilities and boost climate resilience. Several cities and towns have already started innovative land titling initiatives, fit-for-purpose approaches that use existing informal institutions and community norms that can serve as a practical alternative to complex tenure reform (World Bank 2021b). By recognizing and formalizing customary land-use practices, integrating traditional institutions into spatial planning, and employing context-sensitive urban planning solutions, Somalia can mitigate climate risks and urban informality while enhancing the resilience of the built environment.

Adopting climate-smart building codes, nature-based solutions in urban planning, and low-cost cooling solutions can help Somalia's cities protect against climate shocks, ensure structural integrity, promote biodiversity, enhance livability, and improve food security. Identifying land for urban parks and vegetated buffers, investing in riparian restoration, and incorporating wetlands into new settlements, particularly in periurban zones, can help filter pollutants, recharge aquifers, and serve as natural flood defenses. Supporting urban agriculture initiatives, such as community gardens and green roofs, can boost food security and provide livelihood opportunities, especially for vulnerable groups like IDPs. Low-cost cooling solutions—including large-scale tree planting initiatives like the Green Somalia Initiative and UN-Habitat's Baidoa City Strategy (UN Habitat 2023)—aim to mitigate heat island effects and improve urban environments. Combined with reflective roofs, shade-oriented street design, and pocket parks, such efforts can create cooler, healthier, and more livable cities.

To achieve universal electricity access, Somalia would benefit from adopting a holistic approach that should incorporate the several priority areas. Integrating renewable energy and energy storage with existing diesel-based generation at major urban load centers can improve grid performance, reduce fossil fuel reliance, and increase electricity reliability and affordability. Reinforcing and upgrading the ESP-operated distribution network will increase efficiency of operations, reduce network losses, and expand capacity to connect new customers, including last-mile connections for low-income households. Developing its transmission networks would integrate isolated distribution networks, enabling bulk off-takers for larger centralized renewable energy generation and power imports and enhancing the reliability and stability of electricity supply, providing access to lower-cost electricity. Promoting DRE solutions, such as solar

29 The Somalia Urban Reconstruction Project has supported the creation of two new settlements for IDPs impacted by drought. The location of these settlements followed the existing municipal plans.

photovoltaic and battery energy storage, in rural areas would help address low electricity access and high climate vulnerability, while promoting cleaner cooking technologies, such as LPG or solar cookstoves, would reduce indoor air pollution and improve household health. Making these technologies more accessible and affordable would enable households to transition away from traditional biomass fuels, which contribute to respiratory illnesses and environmental degradation. The government is already working to establish a robust regulatory and institutional framework to support private sector investment in renewable energy and rural electrification, developing a national energy policy, energy regulations, and a national electrification strategy, and operationalizing the policy and law to establish a regulator.

Investing in public transportation systems and developing resilient transport infrastructure are essential strategies for improving urban mobility, reducing environmental impact, and supporting economic growth. Developing robust and efficient public transportation networks in cities would reduce traffic congestion, lower emissions, improve air quality, and enhance mobility for all residents. Investing in reliable, climate-resilient, urban transport infrastructure—such as rehabilitated roads, walking and cycling networks, efficient public transit systems, and green corridors—can enhance connectivity, support economic growth, and facilitate access to essential services for urban populations, including IDPs and marginalized groups. Recognizing the scale of road infrastructure to be built, the design of such investments should be based on a Somali-specific climate-resilient road design manual.

Implementing effective waste segregation and recycling policies, developing modern waste treatment facilities, diversifying water sources, enhancing water infrastructure, and improving water governance and regulation will help the country achieve sustainable waste and water management. Implementing policies that encourage waste segregation at the source and establishing recycling programs will reduce the volume of waste that ends up in landfills or is burned. Educating the public on the importance of recycling and providing the necessary infrastructure can significantly improve waste management practices. Investing in the construction and maintenance of modern waste treatment and disposal facilities, including composting plants and sanitary landfills can help cities manage waste more effectively, reduce environmental pollution, and address urban sanitation challenges. Identifying and developing alternative water sources, including desalination and rainwater harvesting, can ensure long-term water security and sustainability, while investing in and enhancing water storage facilities can mitigate drought impacts. Improving drainage and flood protection systems can help prevent contamination and protect infrastructure from flood damage, and strengthening and expanding water distribution networks can help ensure efficient and reliable access to clean and safe water. Finally, strengthening governance and regulatory frameworks for water distribution networks and private suppliers can help ensure affordability, reliability, and sustainable access to safe drinking water.

3.4 Crosscutting recommendations

This CCDR makes a number of crosscutting recommendations in relation to Somalia's general approach to resilient development. These are summarized in Appendix 1, alongside indicators of likely benefits and challenges, based on the qualitative assessments of World Bank experts.

3.4.1 Investing in resilience and development

Post-disaster foreign aid plays a vital role but is unsustainable. Long-term reliance on aid to manage the impacts of recurrent disasters treats the symptoms, but not the cause, of the problem. It is also unreliable, as there is an increasing squeeze on international humanitarian aid budgets,[30] and it can lead to aid dependency, which inhibits recovery and development. For example, IDP camps are designed around the principle of delivering aid efficiently, not to reintegrate IDPs into employment and the productive economy.

30 UN OCHA estimates a funding gap of $1.3 billion (https://fts.unocha.org/plans/1133/summary, accessed April 24, 2025).

While humanitarian aid and post-disaster assistance must continue to be provided to those in critical need, shifting the balance of international assistance to Somalia toward durable investment in DRR, wider climate resilience, and economic growth and diversification is vital. Globally, investment in DRR has been found to be very cost-effective, with typical benefit-cost ratios of 3:1–15:1 (Shreve and Kelman 2014) and a broad-based estimate of 4:1 (UNDRR 2015). This calls for extra investment resources to reduce acute humanitarian needs over time.

Where possible, humanitarian aid should be used to support development and resilience outcomes. The Organisation for Economic Co-operation and Development already encourages this transformation through its Development Assistance Committee's Recommendation on the Humanitarian–Development–Peace Nexus (2019), which emphasizes coherence, complementarity, and coordination of humanitarian assistance. This includes aligning short-term aid delivery with national climate adaptation plans. The UN Common Guidance on Helping Build Resilient Societies (2021) also encourages investing in resilience measures — such as EWS, shock-responsive safety nets, and nature-based solutions—within humanitarian contexts, while the World Bank's Crisis Response Framework calls for adaptive recovery pathways.

In Somalia, the humanitarian response has increasingly shifted toward integrated programming. The 2023 Somalia post-disaster needs assessment, supported by the World Bank and European Union, recommends using early recovery financing to rehabilitate flood-damaged infrastructure using climate-resilient standards and restore livelihoods through CSA interventions. Humanitarian assistance is often provided via food-for-work programs and could be better oriented toward supporting adaptation and resilience outcomes. Similarly, the use of anticipatory action frameworks by the United Nations Office the Coordination of Humanitarian Affairs and World Food Programme—triggered by climate forecasts and impact models—has allowed for the prepositioning of aid and early cash transfers in advance of predictable droughts, reducing suffering and asset loss while reinforcing local adaptive capacity.

3.4.2 Government leadership

Visible government leadership is crucial for coordinating and ensuring efficiency of climate resilience efforts, enhancing government legitimacy and therefore aid peace-building, particularly in the sphere of DRM, as protecting the population is the most basic function of any state, and enhancing impact by coordinating investments with legal frameworks and reform, such as land administration, resilient infrastructure design standards, the rule of law, and the business environment. Strengthening government-led coordination of priority climate action programs would be a good start, by establishing a coordinated platform for a limited number of priority areas based around a broadly agreed set of targets and robust monitoring, incorporating modern technologies, such as drones, remote sensing, and mobile tools, to support community participation. For each priority area, such a platform could address major analytical gaps and establish core strategy documents, provide examples and manuals for key implementation models, map interventions, and identify and prioritize funding gaps and options. They could also include key performance indicators, benchmarks, and timebound targets, as well as coordination, monitoring and evaluation, policy, and advocacy. Ultimately, the government will need to take a large role in implementation, which will require it to rebuild state institutions and capacity.

Coordinating and clarifying mandates at the center of government, and ensuring coordination between the FGS, FMS, and district governments, will be vital. This will require OPM leadership and collaboration across key ministries. Development partners can facilitate some of the coordination across government levels and should avoid uncoordinated engagements with individual ministries. The government must establish a whole-of-government institutional framework for climate action, led by the highest levels. A high-level steering body, such as a national council on climate change, convened by the OPM, could represent all important climate action stakeholders.

It will also be important to set (and gradually expand) goals for government action. Government, development, and humanitarian partners should jointly review where donors can be most efficient and impactful, and where government implementation capacities are most critical. For example, external actors can develop infrastructure and deliver emergency supplies, but they cannot enforce the protection of forests and will struggle to maintain food and water reserves across districts. Where government implementation capacity is most essential, development partners can help develop and sustain these with at least medium-term (for example, five-year) strategies and funding commitments. Overcoming institutional fragmentation and bilateral, siloed engagement of donor agencies should be a priority for both the FGS and the donor community. Donors should support ongoing FGS efforts to centralize resource mobilization efforts, including climate finance, and administer development aid via country systems to help capacitate these in due process.

The government would also benefit from seeking internal agreement and commitment to key good governance principles, including meritocratic staff hiring, reducing corruption, and promoting transparency. Protecting and restoring natural resources under increasing stress from climate change requires strong trust between stakeholders, and competent people guiding and implementing policies. Clarifying institutional mandates, roles, and responsibilities for climate action is important, while drafting and adopting climate change-relevant sectoral laws to legally underpin existing policies would strengthen the legal framework for climate action. This commitment to legal accountability may enhance trust and increase buy-in among relevant stakeholders, including the international donor community, aiding the mobilization of additional climate finance. Enhancing transparency may aid the mobilization of concessional climate financing, as many donors and climate funds require clear reporting on climate-related spending.

Somalia would benefit from continued technical and implementation capacity development at both federal and subnational levels. The MoECC needs to expand its permanent technical staff team to enhance its implementation capacity. In the short term, FMS capacities could be enhanced through targeted training programs for local government officials, federal staff secondments to FMS institutions, and twinning arrangements between lagging and better-resourced states (as in Kenya). The government should seek donor resources to build district-level government expertise in community engagement and climate adaptation planning. Leveraging the upcoming World Bank-supported *Bulsho* operation, which aims to identify and build the capacity of community-based institutions to deliver essential services, could enhance climate resilience in relevant sectors.

By maintaining macroeconomic stability, making steady progress in domestic revenue mobilization, and introducing climate-informed PFM, Somalia will be able to take responsibility for financing its own resilient development. Preserving public debt sustainability and sound fiscal policies is crucial for maintaining macroeconomic stability as a foundation for the broad-based economic development—including enhancing human capital and employment—which is vital for the country's general resilience.

3.4.3 Inclusivity and equity

All climate-related interventions in Somalia must be delivered in a way that is sensitive to the FCV-related dynamics in the country. Poorly designed climate action can exacerbate the root causes of FCV and amplify the vulnerability of marginalized groups or regions, so the principles of FCV sensitivity and Do No Harm must be actively promoted. This includes making rigorous efforts to assess the impacts of proposed interventions on social inequalities, cohesion, and conflict dynamics, while taking proactive steps to minimize any potential for negative spillovers that could exacerbate underlying tensions, especially in regions that are already exposed to high levels of FCV-related threats.

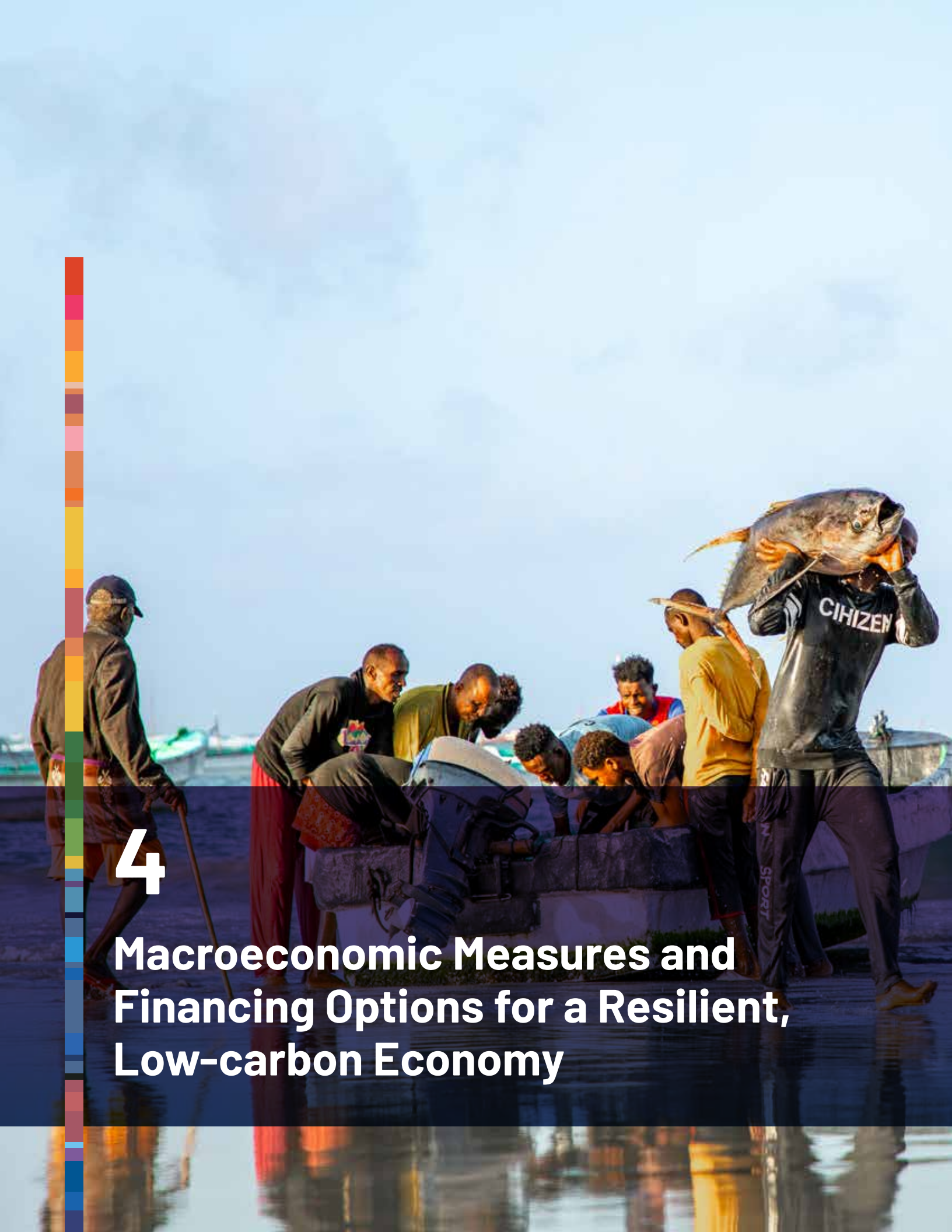
Projects can unintentionally harm vulnerable populations. For example, efforts to commercialize livestock or improve agricultural productivity may disproportionately benefit wealthy elites while displacing subsistence herders and farmers, exacerbating inequalities and creating additional challenges for marginalized groups, including IDPs. Projects perceived as favoring specific groups can deepen existing divisions and reinforce patronage networks that link political elites with local communities. Transparent communication and equitable resource distribution are necessary to prevent such outcomes and foster trust between diverse groups.

Intervention design and execution must be anchored in adaptive management frameworks. Taking an adaptive management approach ensures activities can respond to changing FCV dynamics, including the potential escalation of threats. Incorporating mechanisms for rapid course correction and ensuring flexibility in intervention design ensures they remain effective and contextually appropriate in the face of evolving sociopolitical conditions.

Approaches must be inclusive, localized, and actively engage the most marginalized communities. Resilient development efforts should respect and build on traditional structures—such as the *Xeer* system for rangeland management—where possible, while also complementing them with transparent systems for targeting and supporting excluded and particularly vulnerable groups. Adopting decentralized systems that involve local communities in planning, implementation, and monitoring can also enhance transparency and mitigate risks of elite capture.

Fostering horizontal trust between communities and vertical trust between citizens and government is crucial for resilience-building in Somalia. When climate projects offer opportunities to convene forums where conflicting groups can address shared challenges, it reduces misunderstandings and improves representation of women, minority clans, and other marginalized populations.

Effective public engagement is vital for increasing community involvement in climate adaptation decision-making. Religious institutions, like mosques, also provide platforms for raising awareness about climate issues through sermons that reach diverse community members. Traditional leadership structures, often led by male elders, can be made more inclusive by involving women, youth, and minority clans. Women-led organizations can play a pivotal role in ensuring equitable resource distribution and providing employment opportunities for women. Radio remains an effective tool for engaging rural communities and nomadic pastoralists, while social media platforms like TikTok are popular among urban youth.



4

Macroeconomic Measures and Financing Options for a Resilient, Low-carbon Economy

4. Macroeconomic Measures and Financing Options for a Resilient, Low-carbon Economy

Despite multiple shocks, the economy continues to grow, albeit at a rate that is lower than the population growth rate. Completing the HIPC process in December 2023 and acceding to the East African Community in March 2024 is boosting investors' confidence and supporting regional integration. De facto dollarization brings price stability in the context of limited capacity for monetary policy. The FGS is carefully managing spending within expected levels of domestic and external financing. As it develops its core functions and systems, the FGS will continue to rely on external grants to finance basic service delivery and support resilience of the economy to climate change. But these are set to decline as Somalia shifts from grants to loans, and mobilizing domestic revenues is likely to be gradual in the context of continued fragility. Improving domestic revenue mobilization, expenditure management, debt management, and growth-enhancing reforms should help ensure debt sustainability.

Somalia's growth performance over the last two decades has been marked by significant challenges, including political instability, conflicts, recurrent droughts, and other climate-related shocks. The country is highly vulnerable to climate shocks that hurt growth and hinder poverty reduction. Repeated climate-related events—such as cycles of droughts, floods, and locust infestations—and other shocks have interrupted the country's economic trajectory, leading to low and volatile growth, exacerbating the country's high levels of poverty. Acute climate disasters, especially prolonged droughts and inland flooding, have had wide-ranging social and economic consequences on production and exports, food security, and social vulnerability and cohesion. Climate has shaped Somalia's human geography and economy, and climate change and variability are major contributors to ongoing fragility. The interplay between climate impacts and Somalia's social and political fragilities amplifies the risks. There is some overlap in climate risk and poverty rates, with the poor remain vulnerable to climate change—particularly in the Shabelle River Basin (floods) and the northeast (heat)—but also across the country as a whole (three risks).

The structure of Somalia's economy remains vulnerable. The country faces increasing vulnerabilities that threaten its comparative advantages—fertile land, Africa's longest coastline, livestock, fisheries, and a strategic location for regional and global trade—which have historically driven growth. These vulnerabilities pose a significant threat to overall growth and could jeopardize efforts to reverse the trend of a weakening link between economic growth and poverty reduction. Somalia is also grappling with severe fiscal constraints, which further complicate its path to sustainable development. In response to these challenges, the government is updating its long-term development vision to address the underlying issues and create a more stable and resilient economic environment, capable of withstanding both internal and external shocks.

This chapter delves into how climate change and related impacts affect Somalia's economy, poverty, and inequality, stressing the need for fiscal reforms for a climate-resilient future. It highlights the macroeconomic impact of climate change and the net benefits of adaptation and mitigation commitments to help inform Somalia's Vision 2060 and guide the country toward achieving its development goals. By focusing on macroeconomic implications, this analysis aims to better integrate climate-related policy and investment considerations into the broader dialogue on Somalia's development agenda.

4.1 Main model features: estimating future macroeconomic impacts of climate change

The analysis modeled eight channels through which climate change impacts GDP under dry/hot and wet/warm climate scenarios (Box 4.1). These impact channels are crucial for understanding how Somalia can manage climate-related risks and vulnerabilities to support sustainable development. The main impact channels identified for Somalia are described here.

1. **Crops:** Climate change significantly impacts crop production through changes in yields and topsoil erosion. Crop production is sensitive to water availability and heat stress, with specific yield response functions determining the impact. Variations in rainfall can lead to topsoil erosion, affecting productivity. Changes in temperature and precipitation patterns cause crop stress, reducing yields. This is critical for Somalia, where agriculture is a major livelihood source. Climate change can also increase agricultural pests and diseases, further diminishing yields and threatening food security.

2. **Livestock:** Climate change poses significant challenges to Somalia's livestock production and export capacity. Rising temperatures cause heat stress in livestock, affecting their health and productivity. Reduced fodder availability, due to climate change, leads to lower productivity and higher mortality rates. Climate change also exacerbates pests and diseases, threatening livestock health and sector stability.

3. **Fisheries:** Changes in sea temperature and acidification affect marine biodiversity, leading to fluctuations in fish populations. This disrupts marine ecosystems, reducing fish availability for local consumption and export, threatening the sustainability and growth of Somalia's fisheries sector, and impacting the livelihoods.

4. **Health impacts:** Climate change poses significant challenges to Somalia's health sector. Increased temperatures cause heat stress, affecting health and productivity, especially among outdoor workers and vulnerable populations. It also alters the distribution of vector-borne diseases like malaria and dengue fever, and affects water quality, increasing gastrointestinal diseases.

5. **Labor productivity:** Climate change significantly impacts Somalia's labor productivity and human development. Increased temperatures cause heat stress, reducing work hours and productivity, especially for outdoor workers. Changes in water, sanitation, and hygiene increase diarrheal diseases, affecting labor supply and productivity.

6. **Inland flooding:** Climate change intensifies inland flooding, increasing the risk of floods that damage infrastructure, displace populations, and disrupt economic activities. Effective flood management and resilient infrastructure are vital to mitigate these risks, protect communities, and support stability and development.

7. **Sea level rise (SLR) and coastal flooding:** Sea levels are projected to rise by 8–39 centimeters by 2060 compared to 1990 levels, which will exacerbate coastal flooding risks, causing up to $650 million in annual urban damage, affecting approximately 14,000 people, and accounting for 0.09 percent of GDP by 2050–60.

8. **Roads and bridges:** Climate change accelerates the degradation of Somalia's roads and bridges through extreme weather events, such as flooding and SLR. This disrupts transportation networks, affecting trade and access to services, and increasing repair costs. Coastal infrastructure is especially vulnerable, leading to asset damage and delays. Addressing these challenges is crucial for maintaining Somalia's transportation infrastructure.

Box 4.1: Scenarios used in this report

We used a climate change macrofiscal model, CC-MFMod, to examine the implications of future climate change for Somalia's growth[a] and the potential benefits of both structural reforms and adaptation investments. Three main policy scenarios were modeled. In reading these policy scenarios, it is helpful to remember that the transition out of fragility is a long-term, nonlinear endeavor, as detailed in the 2011 World Development Report and the World Bank Group FCV Strategy.

CF scenario

This business-as-usual scenario with little institutional or development progress is the baseline policy scenario assuming growth is modest and not sufficient to improve living standards as security remains precarious. The outlook will continue to be anchored on the agriculture and services sectors, with limited industrialization. Real GDP growth is assumed to follow the historical average of 2.1 percent per year to 2060. Private consumption is the key driver of growth, supported mostly by steady remittances. Rural-urban migration is expected to continue, mostly due to conflict and climate shocks, increasing the number of IDPs. Exports improvement is very low and reliance on imports is significant, with continuing high trade deficits. Poverty levels are expected to worsen and the government's ability to mitigate impacts of climate and other shocks on the poor will remain limited.

Fiscal space to support climate resilience will remain severely limited. With continuing high security costs and marginal improvement in revenue mobilization, there will be limited room to invest in human capital and infrastructure. External aid will continue to finance humanitarian assistance but is likely to decline significantly as Somalia starts borrowing. The outlook is subject to significant downside risks, including climate shocks, intensified domestic insecurity and regional geopolitical pressures, and a sharp reduction in external aid. Reforms that would mitigate climate challenges and risks are only partially implemented, leading to low sustainable economic growth. The authorities will continue to pursue political stability and reduce security risks.

SG scenario

This is the aspirational policy scenario, with sustained implementation of broad structural reforms aimed at economic development that integrates some aspects of climate action and are expected to help Somalia converge to middle-income country status. Annual growth is projected to rise to 8.0 percent per year, in line with Somalia's Vision 2060. While agriculture productivity is expected to increase markedly, its contribution to the economy will decline, as structural transformation increases the role of services and industry in supporting growth. Private investment is projected to expand as the country transitions out of fragility and implements sweeping economic reforms, with planned investments in fisheries, electricity, telecommunications, tourism, and infrastructure expected to support growth and job creation. As the economy diversifies, Somalia's exports will reach new markets and include more higher-value-added products. Imports will shift to predominantly consumer and capital goods. The government's ability to mobilize revenue will expand significantly as formal jobs increase, security and political challenges are resolved, and the tax system is modernized. With domestic revenue aligned to other middle-income countries, the government will be able to invest in human capital and infrastructure upgrade. Poverty reduction will be accelerated and gender imbalances in labor force participation will be narrowed.

Climate-smart scenario

The CS scenario involves integrating structural reforms with targeted climate action to foster sustainable growth and resilience. Building on the SG policy scenario, this approach adds proactive investments in climate adaptation interventions. The CS scenario aims to address vulnerabilities to climate change by adopting CSA practices, improving water management, and enhancing infrastructure to withstand climate shocks, including coastal and inland flooding. It includes measures to diversify crops, improve soil and water management, and introduce farmer-led irrigation systems, particularly in areas that are prone to flooding, such as Jubba and Shabelle. The scenario also focuses on enhancing productivity and value addition in agriculture and livestock sectors, improving access to markets and finance, and adopting digital agricultural technologies. It also considers the impacts of SLR on fisheries, health, and labor productivity, while focusing on strengthening roads and bridges to ensure resilience against climate-related disruptions.

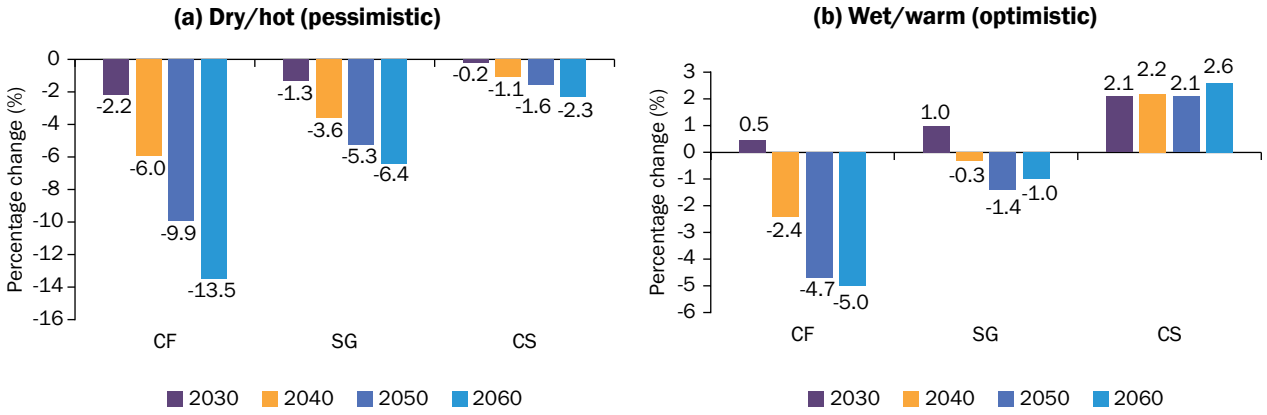
[a] It is important to note that the estimated impacts on GDP are partial, and not to be confused with the total costs of climate change.

4.2 Estimates of macro impacts of climate change

The CF and SG economic policy scenarios outlined above were combined with climate projections to 2060. The climate scenarios, categorized as either hot/dry (pessimistic) or warm/wet (optimistic), were analyzed for effects on the economy according to the impact channels listed above.

The model simulations indicate that climate change will impose economic costs under all scenarios, though these are significantly reduced under the SG scenario. In the pessimistic CF policy scenario, GDP losses increase over time, reaching 13.5 percent compared to the baseline with no climate change in 2060 (Figure 4.1), severely affecting livestock, labor productivity, roads, and bridges, and exacerbating fragility and poverty. In the optimistic CF scenario, GDP loss is smaller but still significant (5 percent in 2060). The structural reforms underpinning the SG scenario significantly reduce GDP losses to 1 and 6.4 percent, respectively, under the optimistic and pessimistic climate scenarios, and against much higher GDP by 2060. Nevertheless, these impacts are notably higher than the average global GDP loss projected at 0.3 percent by 2050 under a 2°C warming scenario. In comparison, many African countries, particularly fragile states, are expected to experience GDP losses of 2–5 percent due to climate-related impacts. In the near term (to 2030), average losses are lower, but still significant coming on top of existing severe climate impacts and against a background of extreme vulnerability.[31]

Figure 4.1: GDP losses from climate change under three scenarios (2030–60)



Source: World Bank staff estimates, using CC-MFMod.

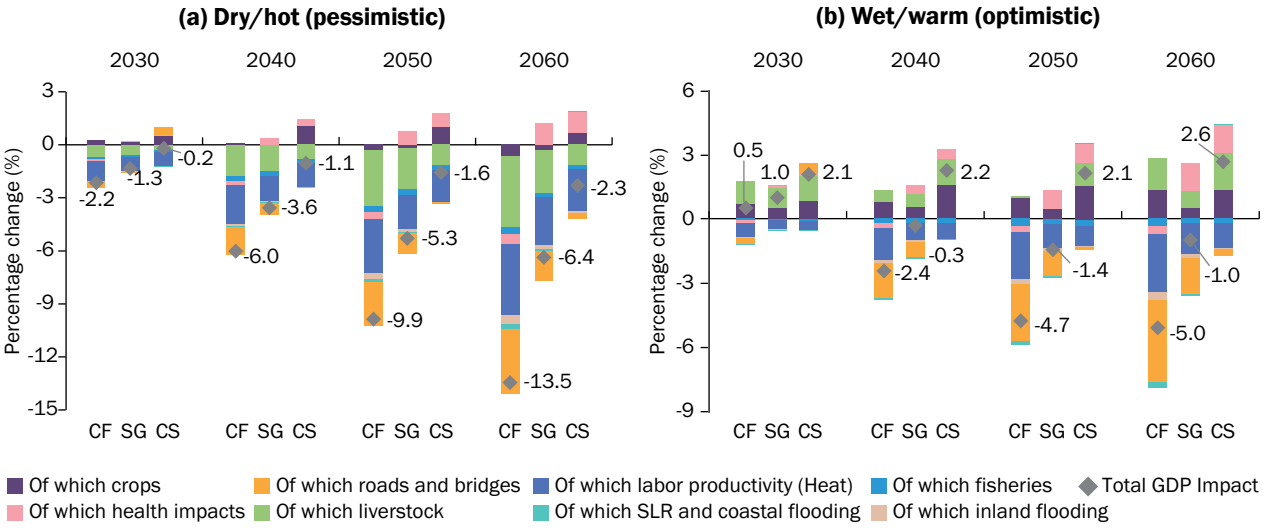
Note: All damage channels are combined.

The main drivers of climate impacts in Somalia are primarily linked to the country's heavy reliance on agriculture and livestock, sectors that are highly sensitive to climate variability and extreme weather events (Figure 4.2). In the pessimistic climate scenario, reductions in agriculture and livestock output are significant, exacerbated by heat impacts on labor productivity. This contributes to substantial GDP declines, directly affecting food security and economic stability, while infrastructure challenges, particularly in roads and bridges, further compound the economic vulnerabilities by hindering market access and mobility. Under the optimistic climate scenario, GDP still drops but the impacts are less severe, indicating potential benefits from improved climate resilience and adaptation measures. The SG scenario, which incorporates structural reforms, shows even more promising outcomes, with GDP decline significantly reduced while climate-smart development is estimated even to deliver GDP gains in the optimistic scenario. This suggests that structural

31 Somalia's GDP losses, while significant, do not encapsulate the full spectrum of costs associated with climate change impacts. The economic metrics often fail to account for the broader, more nuanced repercussions that global warming imposes on the nation. Beyond the immediate financial setbacks, climate change exacerbates food insecurity, displaces communities, and strains already fragile infrastructures. These challenges contribute to social and environmental costs that are not reflected in GDP figures.

reforms aimed at enhancing economic diversification, improving human capital and infrastructure, and strengthening adaptive capacity in the economy can help mitigate the adverse effects of climate change. By focusing on these areas, Somalia can better manage its climate risks and foster a more resilient economic environment.

Figure 4.2: Climate change impacts on GDP under three scenarios, by damage channel (2030–60)



Source: Industrial Economics estimates; World Bank staff estimates using CC-MFMod.

4.3 Benefits of climate action

While the SG scenario incorporates important structural reforms, additional adaptation efforts could significantly reduce the cost of climate change. The CS scenario represents the SG scenario with additional climate action. In both climate scenarios, the costs in the CS scenario relative to the baseline are notably lower than in the CF and SG scenarios (Figure 4.1), while in the optimistic climate scenario, GDP is projected to increase by 2.6 percent compared to the baseline as adaptation interventions offsets the costs of estimated damages. These findings underscore the importance and benefits of implementing early and targeted climate adaptation measures.

Structural reforms and adaptation strategies can mitigate the effects of climate change across various impact areas. Under the CS scenario, labor productivity impacts are much more subdued compared to the CF and SG scenarios in both the pessimistic and optimistic climate scenarios (Figure 4.2). The benefits of adaptation are more pronounced under the optimistic scenario, where productivity gains are expected to exceed damages incurred in the baseline, especially in livestock, crops, and health impacts. In optimistic/wet scenarios, livestock production is estimated to increase by 1.7 percent under the CS scenario by 2060, due to increased mechanization. GDP losses due to the destruction of roads and bridges are similar under both pessimistic and optimistic scenarios, with losses projected to be 0.3 percent. For crops, while a GDP loss of 0.3 percent is anticipated in pessimistic/dry scenarios, a productivity gain of 0.7 percent is expected under optimistic/wet scenarios. Small economic losses are also predicted in the analysis of inland flooding, SLR, and coastal flooding, and fisheries under the pessimistic scenario. Adaptation measures could mitigate these losses. Under the optimistic scenario, productivity gains are expected for SLR and coastal flooding, and health, showing that both structural reforms and targeted climate adaptation measures are essential.

4.4 Managing the costs of adaptation

Billions of dollars of investment from public and private sources will be needed to support Somalia's resilient development over the coming decades. Estimates indicate that approximately $5.5 billion will be needed for climate resilience investments over the coming decades, on top of investments to support sustainable development more broadly. The CS scenario includes around $5.3 billion in incremental climate adaptation costs over 35 years (Table 4.1), the bulk of which would be spent on additional resilience measures for crops, livestock, and infrastructure. This is in addition to the $50 billion required in the SG scenario, much of which also contributes to resilience. Approximate costs of the measures recommended in chapter 3 (and summarized in Appendix 1) are similar, with agriculture and related water infrastructure comprising the largest share. NDC 3.0 envisages adaptation investment costs of around $6.3 billion over 10 years: with about one-third on agriculture and irrigation, one-quarter on infrastructure, and approximately $1 billion each on health care and water supply and sanitation. The NAP requires investments of around $2.4 billion in the first five years: $850 million for agriculture and livestock, $600 million for water resource management including irrigation, $450 million for infrastructure resilience, $300 million for health care, and $150 million for ecological management.

Substantial incremental resilience investments in agriculture under the CS scenario account for $1.7 billion while investment to prevent loss of labor productivity remains low, at $0.24 billion. Adaptation investments for climate-proofing infrastructure—including road and bridges—and addressing inland flooding, SLR, and coastal flooding amount to $3.3 billion.

Table 4.1: Adaptation costs under the CS scenario ($, millions)

	Agriculture	Labor heat stress	Infrastructure, inland flooding, SLR, and coastal flooding	Total
2025–30	50.1	4.0	135.8	189.8
2031–60	1,650.6	237.0	3,190.2	5,077.9
Total	**1,700.7**	**241.0**	**3,326.0**	**5,267.7**

Note: Base is 2023. Costs include capital and operational expenditure.

The global delivery of concessional climate finance has increased in recent years but remains insufficient to meet global climate goals (CPI 2024). Between 2019 and 2022, international concessional climate finance grew by 50 percent, reaching $81 billion in 2022, with Sub-Saharan Africa receiving the largest share (30 percent), followed by South Asia and Latin America (16 percent each). But concessional climate finance remains significantly lower than global fossil fuel subsidies, which reached $1.3 trillion in 2022. The main sources of concessional climate finance include bilateral development finance institutions (33 percent), multilateral development banks (30 percent), and direct government contributions (26 percent), while multilateral climate funds contributed only 5 percent. Concessional loans mainly target climate mitigation projects while grants mainly focus on adaptation and resilience efforts. Current global economic and political trends do not suggest a major increase in concessional financing is likely, even after the international climate change conference in 2024, COP29, also known as the "finance COP".

4.4.1 Public finance

Somalia faces significant fiscal sustainability challenges. Reaching the HIPC completion point provided an opportunity to restore fiscal and debt sustainability, with external debt reduced to sustainable levels.

But maintaining fiscal sustainability will continue to be a challenge, given the country's very low domestic resource mobilization, heavy reliance on external support, including on grant terms, and high development needs for decades to come. These constraints are expected to only gradually improve, as Somalia continues to rely on external assistance and reform domestic resource mobilization to allow incremental increases in public spending on services and investments under prudent and sustainable borrowing levels. Advancing the fiscal federalism agenda, creating an enabling environment for accelerated private sector growth and jobs, and addressing domestic security challenges are also important enablers for mobilizing domestic resources.

The government will not be able to finance the additional adaptation costs alone and will require significant external climate finance and private sector support. Although its ability to finance additional adaptation is almost nonexistent in the CF scenario, in SG and CS scenarios, it should be better positioned to take on additional spending and debt over time. But to preserve macroeconomic stability and fiscal sustainability, the government will play a more limited role in overall adaptation financing than other sources of financing. The additional adaptation spending will require the private sector to play a strong role and the government will have to leverage climate finance to ensure it can expand public goods provision and of essential service delivery where private sector support is weak or absent. This underscores the importance of mobilizing private investment and external climate finance.

ODA is by far the largest source of climate finance now and in the immediate future, but in the longer term, domestic revenue generation has to play an increasing part. Of the roughly $3 billion per year in ODA provided in recent years, around 14 percent has been directly oriented toward climate action. The World Bank alone has committed almost $1.6 billion of climate financing to the government over the last four years.[32] ODA climate financing of several hundreds of millions of dollars per year is likely to continue in the near future, but there is considerable longer-term potential for enhancing the share of ODA that responds to climate priorities, including by reorienting humanitarian and security spending toward climate-smart development. Total domestic revenue collection in 2024 was $369 million (3 percent of GDP), much of which was used for security and wage bill expenditures. But with continuing steady growth, domestic revenue could become a significant source of climate finance.

Vertical climate funds and other innovative climate finance mechanisms are likely to remain helpful supplements, rather than the backbone of climate finance. Vertical climate funds have provided or pledged over $200 million to Somalia over recent years, including a recent GCF commitment of an additional $100 million grant. However, these are unlikely to provide more than a few tens of millions of dollars per year in the foreseeable future.

4.4.2 Private finance

While there are no formal estimates of private climate finance in Somalia, private capital is flowing into sectors that are central to climate resilience and could scale rapidly with well-targeted blended finance. In the energy sector, private off-grid solar companies are the main drivers of investment, financing mini-grids, solar home systems, and pay-as-you-go platforms that reduce reliance on diesel and charcoal while enhancing energy reliability. In agriculture and livestock, traders, processors, and input suppliers are investing in cold storage, animal health services, and limited water-saving technologies, helping stabilize production amid increasingly erratic weather patterns. Funded through private capital, mobile money operators and remittance platforms play a growing role in household-level financial resilience, enabling liquidity during droughts and floods. Although these investments are not captured under formal climate finance metrics, they already contribute to both adaptation and mitigation outcomes. Their scale remains small relative to need; but given the private sector's reach across essential services and rural value chains,

32 Under Somalia projects approved during FY21–24, as assessed under the multilateral development banks' joint climate cofinance methodology.

it represents a critical, if underleveraged, source of resilience-oriented finance. To unlock this potential, the World Bank and development partners can leverage targeted blended finance, lines of credit, and partial-credit guarantees—for example, through a climate-dedicated window inside the Gargaara wholesale facility and a risk-sharing mechanism to incentivize lending to targeted areas and segments. Layering performance-based grants and International Finance Corporation/Multilateral Investment Guarantee Agency risk-mitigation products onto the same platform could also crowd in commercial capital. Together, these measures could transform today's nascent private investment into the backbone of Somalia's climate finance within the next decade.

At around 60 percent of ODA in 2024, remittances also represent a large volume of private financial inflow into Somalia. Although there are no figures on the use of these funds, they undoubtedly contribute significantly to resilience in many households, and to private investment in small enterprises. There is potential for increasing the contribution of remittances to building climate resilience by linking them to climate-resilient, community-driven development programs, providing additional information to the diaspora on available community resilience investments, and encouraging their use in community projects through matched fund mechanisms.

In the longer term, there is potential to mobilize international money markets. Although carbon markets and other sources of innovative finance, such as debt-for-nature swaps or blue bonds, are currently aspirational in Somalia, they could become significant in future.

4.4.3 Coordinating and mobilizing climate finance

Somalia needs to take a coordinated whole-of-government approach to climate finance, with clear roles aligned with existing mandates. As such, it will be important to harmonize parallel initiatives and clarify the roles of the MoF, MoECC, the prospective National Climate Fund, and line agencies responsible for implementation. Ideally, there should be separation of funding, implementation, and oversight responsibilities. Although they can be effective where conditions are right, successfully establishing and operating a national climate fund is challenging, for various reasons. First, the fund itself may not have much to do if it focuses solely on accessing and deploying international concessional resources, due to the constraints on these resources. Second, in the absence of a regular source of cash inflow, an existing state-owned financial institution or national development bank may be able to perform functions around prioritizing and monitoring investments while incurring lower transaction costs. And third, facilitative functions, such as capacity building and information dissemination, are more constructive than gatekeeping functions, such as limiting access to the GCF or other funds to a single entity, which could restrict overall flow of finances (World Bank 2025b).

It is also important to take a holistic approach to climate finance by addressing multiple dimensions of funding and collaboration to effectively respond to climate risks and challenges. This means tracking climate-relevant public and donor funding to ensure transparency and accountability while also strengthening engagement with the private sector, which plays a crucial role in mobilizing resources and fostering innovation. Pursuing increased allocations and more direct financing arrangements from international vertical climate funds, such as the GCF and GEF, can also help bridge funding gaps. By integrating these efforts, governments and stakeholders can build a more comprehensive and sustainable financial framework for combating climate change.

As ODA is likely to remain the primary source of climate finance in the near term, it is important to improve monitoring, targeting, coordination, and capacity-building for direct implementation to enhance its impact. While collaboration with international climate funds, such as the GCF, GEF, and Adaptation Fund, is a worthwhile endeavor, the government must recognize that accreditation is a lengthy

process and significant increases in financing will not be immediately forthcoming. Demonstrating a strong track record of success and measurable impact is the most effective way to attract additional funding from donors and investors, as they prioritize returns on their investments. So, focusing on maximizing the efficiency and impact of existing resources remains a critical priority for expanding access to concessional climate finance in the long term. There is currently no systematic monitoring of climate finance contributions from either ODA or domestic revenues. Adopting standard categorizations of climate-responsive expenditure, possibly linked to climate risk screening of public investments, could help address this. Somalia could incorporate this into its emerging PFM system, integrating a climate tag into the budget process and combining it with annual reporting to determine accurate levels and status of climate-related investments.

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Appendixes

Appendix 1: Proposed Priorities, Policies, Timeframe, and Prioritization Criteria

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
DRM and finance										
Update national DRM policy and implementation roadmap	3.1.1 3.1.6	Clarify overlapping functions and arrangements (e.g. interfiscal transfers for disaster response and qualifying emergency declarations) Incorporate drought cycle and flood risk management into DRM strategy and implementation, including integrating disaster contingency planning	Whole of government	ST	H	L	H	L	M	M
Strengthen and expand the reach of FMS disaster preparedness authorities	2	All FMS have disaster preparedness authorities and functional in place, but there is a need to localize their influence or capacity beyond the state capital cities Harmonize state policies and strategies across FMS and align these with national policies to strengthen and formalize coordination between DRM actors at all levels and enhance aid accountability	FMS SoDMA	ST	H	L	H	L	M	M
Establish operational response plans for all emergency management agencies	3.1	Ensure plans create clarity on roles and responsibilities, are interagency aligned, establish linkages across all government levels (federal, state, district, and municipality) and build on the NEOC institutional framework Developed plans with a clear understanding of existing primary response infrastructure and capacities across Somalia, including emergency medical care personnel, equipment, and facilities, local airstrip conditions; and shelter and warehouse facilities, and include steps to address essential gaps where these are identified Establish effective vertical coordination between government institutions through which information generated at local levels can be effectively integrated into national-level strategic planning processes—in particular, SoDMA should ensure preparedness and response plans encompass pre, during, and postdisaster phases from prevention to recovery and rehabilitation Ensure plans are context specific and different for high and lowland areas	Whole of government	ST	H	L	H	L	M	M
Approve Hydromet Law Establish legislation on critical infrastructure	3.1 3.1.2	Ensure legislation clarifies the roles and responsibilities of relevant agencies critical to monitoring and forecasting weather-related events (e.g. rainfall, river water levels and flows, and cyclones) Ensure legislation identifies critical infrastructure and resilient standards and forms the basis for agreements with important DRM partners (e.g. telecom companies and energy suppliers)	SoDMA MoECC MoEWR MoAI SWALIM	ST	H	L	H	L	L	M

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
Develop a digital national disaster database Complete SoDMA's baseline survey of risks and hazard mapping	3.1.6	Develop an information management system to facilitate interagency, national, and international operational awareness during early needs assessment and response, focusing on the occurrence and impact of disasters, as well as expenditures in response to disasters across public and development sectors Foster specific mechanisms for lessons learned at community, regional, and national levels to feed into the database Ensure the mechanisms envisage gathering relevant stakeholders after each event to analyze the successes and challenges encountered during the hazard response Accelerate plans to populate a comprehensive database of risks and hazards, integrating existing data and information, including georeferenced data layers	NEOC Other agencies	ST	H	L	H	M	M	M
Develop a DRF strategy and implementation plan	3.1.3 3.1.5	Define the overarching financial protection objectives and prioritize the risk finance instruments to establish and strengthen over the next five years Include climate as an integral component of the broader DRF strategy to support DRM plans Scale up risk financing instruments at both federal and state levels to strengthen the development, activation, and implementation of contingency plans for rapid actions with clear early warning trigger indicators	MoF	ST	H	L	H	H	H	H
Support shock-responsive safety nets to offset postdisaster human capital losses	3.1.3	Develop a shock response safety net strategy that details climate triggers and the threshold at which social protection measures will be rolled out Establish a data-sharing agreement between SoDMA and MoLSA to improve coordination in event of shock Approve the Social Protection Policy 2025 and develop of a national emergency cash response operation plan	MoF SoDMA MoLSA	ST	H	L	H	H	H	H
Agricultural governance, productivity, and resilience										
Strengthen federal and state agricultural institutions, especially the MoLFR, and SARIS, to deliver CSA-aligned services, regulatory coherence and enforcement, and policy coordination, and enhance collaboration among public and private institutions	3.2.3	All public offices, and especially those at the FMS and district levels, have major capacity, resource gaps, and unclear division of jurisdictions which inhibit their ability to deliver even the most basic services, let alone advanced ones like research, leaving the delivery of virtually all critical basic services, including (limited) extension services, to the private sector Develop a co-management framework, based on collaboration between public and private institutions, under a coherent and enforceable regulatory framework to strengthen the sector's governance, fill knowledge gaps, improve rangeland management, deliver core animal health services, rebuild and expand production and trade infrastructure, and promote investment in processing and value addition	MoAI MoLFR All agricultural agencies	MT	H	M	H	M	M	H

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe		Benefits			Challenges		
						Adaptation	Mitigation	Development	Institutional	Policy	Financial
Rehabilitate and develop small water infrastructure, including for rainwater use Promote community water governance and enhance water use efficiency	3.2.3	Repair and build small-scale water storage and supply points to tide over dry spells; fix broken wells, boreholes, and pumps, and expand storage with communal *berkads* and sand dams Scale-up small-scale irrigation technologies to reduce reliance on rainfall and support diversified cropping and livestock production Strengthen watershed and flood management to protect farms from seasonal floods and soil erosion Re-establish local water management committees and clear water-sharing agreements to ensure equitable and sustainable water allocation Train farmers in water-saving techniques (e.g. drip or furrow irrigation) and promote better scheduling to reduce waste In livestock management, improve the upkeep of water troughs and optimize grazing to conserve water and boost productivity	MoAI MoEWR	ST		H	L	H	H	L	H
Promote community-led soil and water conservation, and CSA practices	3.2.3	Promote water conservation practices (e.g. contour bunds, swales, terracing, and small earthen pits to enhance rainwater infiltration for crops and pasture) Promote rainwater collection tanks and rainwater harvesting Promote soil conservation practices to enhance productivity and ecosystem resilience and address soil erosion	MoAI MoEWR	ST	MT	H	H	H	H	L	H
Rehabilitate, modernize, and expand major irrigation infrastructure and improve irrigation efficiency	3.2.3	Reconstruct and modernize major irrigation systems along the Shabelle and Jubba rivers, aligning with NAP targets to increase percentage of irrigated arable land from 3% to 15%	MoAI MoEWR	MT	LT	H	L	H	H	L	H
Finalize and implement land tenure reforms to clarify ownership and improve investment security	3.2.3	Update and enforce a tenure law and related regulations to clarify land tenure arrangements and to protect natural resources Build and reach consensus with local communities over related policies and their implementation to improve communities' capacity to manage their natural resources in a sustainable manner	MoECC MoPIED FMS Local governments Traditional authorities	ST	MT	H	M	H	H	H	H
Promote practices and improve access to agricultural inputs for CSA	3.2.3	Establish farmer field schools and tailored extension programs, mechanization hubs, and e-voucher schemes for subsidized input to improve access to certified climate-resilient seed varieties and improved livestock breeds and promote legume intercropping, mulching, crop rotation, and other CSA practices	MoAI	ST	MT	H	H	H	H	L	H

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
Strengthen postharvest management and value addition Establish aggregation and processing centers	3.2.3	Invest in climate-proof storage solutions—including hermetic silos, Purdue Improved Crop Storage bags, and solar-powered cold storage—to reduce losses, especially during the Gu and Deyr seasons Rebuild agroprocessing industries for sugar and vegetable oils to reduce import dependency and add domestic value to key crops (e.g. sesame, sunflower, maize, and cassava) Establish aggregation and processing centers near production zones, coupled with quality control infrastructure for food safety and export readiness	MoAI	MT	M	L	H	H	L	H
Expand feed and fodder availability for climate resilience and growth sustainability	3.2.3	There is a high and growing, but still unmet, demand for quality feed and fodder along trading routes, in market centers, and at export terminal ports, even though the predominant pastoral production system still relies on natural pastures on the country's vast rangelands. Invest in feed and fodder production and conservation to reduce seasonality in availability of feed and fodder, including investing in production promotion of local feed ingredients and fodder conservation infrastructure Rehabilitate and improve rangeland management to increase fodder availability in grazing areas Foster integrated crop-livestock systems to promote the use of crop residues for animal feed Establish capacity-building programs for communities and farmers on sustainable, community-based rangeland management, fodder conservation techniques, and use of crop residues for animal feeding	MoLFR	MT LT	H	L	H	H	L	H
Improve market access, trade, competitiveness, and foster trading platforms and digital market information systems	3.2.3	Rehabilitate rural road networks and climate-resilient feeder roads to ensure reliable connectivity between farms and markets, especially in the flood-prone south Strengthen market institutions, including structured trading platforms and digital market information systems, to connect producers with buyers, processors, and exporters	MoAI	LT	H	L	H	H	L	H
Modernize livestock production, trading and processing Improve breeding practices	3.2.3	Facilitate the adoption of modern production systems by traditional pastoralists to modernize the sector, improve productivity, and adapt to the rapidly changing climate Establish a functioning and integrated cold chain for animal-derived foods to reduce risk and increase regulatory compliance for domestic and trading partners' markets Invest in animal identification and traceability, and selected certification schemes to enhance the value of livestock-derived products Create awareness and capacity among producers, especially pastoral-based ones, on good animal husbandry practices and the market opportunities their adoption could open Assess the establishment of producers' associations for marketing selected livestock-derived products	MoAI	LT	H	M	H	H	L	H

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe		Benefits			Challenges		
						Adaptation	Mitigation	Development	Institutional	Policy	Financial
Expand programs to enhance access to finance in the agrifood sector Develop innovative schemes to support financial access for livestock producers, farmers, and businesses	3.2.3	Expand the de-risking of private investment in more resilient, inclusive, sustainable and profitable marketing and processing ventures	MoAI MoLFR MoF	ST	MT	H	M	H	H	L	M
Reverse the environmental degradation of the rangelands Implement land restoration and reforestation programs, prioritizing degraded rangelands and charcoal-affected areas, and building on local institutions	3.2.3	Promote sustainable grazing practices, improved pasture management, and soil conservation measures to enhance productivity and ecosystem resilience Support community efforts through reseeding and controlled grazing Implement land restoration and reforestation programs, prioritizing degraded rangelands, wetlands, and charcoal-affected areas Promote Acacia replanting and agroforestry to rebuild ecological buffers Enhance access to improved Indigenous seeds for rangeland restoration and conservation	MoAI MoEWR MoECC	**MT**	**LT**	H	H	H	H	M	H
Enhance sustainable and effective natural resource management, particularly in the fisheries, forestry, and livestock sectors,	3.2.3	Protect key natural habitats, including coastal ecosystems Create awareness and capacity in communities of sustainable rangeland management and traditional grazing systems that foster rangeland restoration and conservation to reduce competition (and conflict) over natural resources and increase livestock productivity Support communities in designing rotational agriculture models and sustainable grazing systems to reduce degradation and foster rehabilitation of rangelands	MoAI MoEWR MoECC MoFBE	**MT**	**LT**	H	H	H	H	M	H

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
Climate-smart urban development and energy and transport solutions										
Develop and enforce urban planning regulations Strengthen building codes and permits for climate resilience	3.3	Urban regulations need to steer growth away from hazard-prone areas and align development with climate considerations to prevent unregulated sprawl and protect critical ecosystems Collect hazard exposure data at the urban level and ensure consistent and effective enforcement of land use planning Ensure the national building permit policy (currently under development) standardizes building regulations, introduces risk-based permit classifications, and clearly defines administrative roles at federal, state, and municipal levels Adopt a unified building code aligned with international best practices, clearly outlining technical requirements for climate resilience, especially flood and heat resistance Develop permit processes that require municipalities and state authorities to adopt transparent, time-bound procedures with explicit climate-risk disclosure obligations for developers	FMS	LT	H	H	H	H	H	H
Embed nature-based solutions in urban planning	3.3	Integrate nature-based solutions into land-use strategies by protecting wetlands, restoring vegetation, and creating green corridors to manage flooding and regulate microclimates to preserve biodiversity, reduce water-related hazards, and promote healthier urban environments	FMS MoPW	ST	H	M	H	M	H	H
Reinforce and upgrade the energy distribution networks and integrate variable renewable energy	3.3	Reinforce and upgrade the distribution network to reduce network losses and increase the capacity to connect new customers, including last-mile connections for low-income households Integrate renewable energy sources and energy storage solutions with the existing diesel-based generation to improve the overall performance of the existing grid, reduce reliance on fossil fuel, and increase the reliability and affordability of electricity supply	MoEWR FMS	ST MT	H	M	H	M	M	H
Use decentralized renewable energy solutions to increase electricity access in rural areas	3.3	Rural Somalia, with limited electricity access and high vulnerability to climate change, would significantly benefit from DRE (e.g solar and wind power) Currently reliant on polluting biomass and diesel, these communities face escalating droughts, floods, and extreme heat	MoEWR FMS	ST MT	H	M	H	M	M	H
Develop transmission network	3.3	Integrating isolated distribution networks into a transmission network would create bulk off-takers for larger centralized renewable energy generation as well as power imports, improving the reliability and stability of the electricity supply and allowing access to lower-cost electricity	MoEWR FMS	LT	H	M	H	M	H	H
Promote the use of clean energy resources for clean cooking	2.3.1 3.3	Enforcing the charcoal export ban and investing in alternative energy solutions can also reduce pressure on forest resources	MoF	MT	H	H	H	H	H	H

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
Promote waste segregation and recycling Develop modern waste treatment facilities	3.3	Encourage waste segregation and establish recycling programs Educate the public on the importance of recycling and waste management practices Modern waste treatment and disposal facilities are urgently needed to ensure more climate-resilient urban sanitation systems	MoECC	MT	M	H	H	H	H	H
Invest in water infrastructure, governance, and regulation improvement	3.3	Enhanced water storage facilities can mitigate drought impacts, while a strengthened water distribution network and improved governance and regulatory frameworks can help achieve efficient and reliable access to clean and safe water	MoEWR	MT	H	M	H	H	H	H
Invest in resilient transport infrastructure and public transportation systems	3.3	Improve urban and intercity transport by investing in reliable, climate-resilient infrastructure (e.g. rehabilitated roads, efficient public transit systems, and green corridors) Enhance the condition and resilience of airport infrastructure to ensure connectivity for people, high-value goods, and emergency response	FMS MoTCA	MT	M	H	H	M	M	H
Crosscutting measures										
Preserve public debt sustainability for macroeconomic stability and sound fiscal policies	4	Policy interventions that support high-quality growth (i.e. increasing human capital, creating jobs, and strengthening climate resilience especially for rural and nomadic livelihoods) can help implement macroeconomic stability	MoF	Ongoing	M	M	H	H	H	L
Commit to and promote good governance and greater transparency in resource use, including meritocratic staffing to enable better governance of the commons	2	A patronage-based system of government creates inefficiencies in financial and staffing resource use (e.g. due to excessive costs in procurement, hiring staff with limited competency or motivation) and reduce citizen compliance with restrictions (e.g. preventing settlements in flood-prone areas or reducing overuse of soils, forests, and other natural resources) Government and social leaders will need to commit more strongly to constrain inefficient resource use and to transparency	Whole-of-government Political and social leadership across levels	Ongoing	H	M	H	M	H	M

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe		Benefits			Challenges		
						Adaptation	Mitigation	Development	Institutional	Policy	Financial
Make optimal use of externally provided climate finance, though coordination, transparency, and strong monitoring and reporting [Climate Platform]	2	For the coming 3–5 years, externally provided resources will remain the main source of funding for addressing climate resilience in Somalia But these can be used more efficiently with clearer and coordinated prioritization, by gradually increasing domestically led and staffed implementation, while strong transparency can minimize leakage and mismanagement Effective monitoring and reporting will also support adaptive management and, in a context of declining external aid, justify the mobilization or continuation of funding	To be decided (TBD)	ST	MT	H	M	H	H	M	L
Involve the center of government in coordinating climate action and finance	2	While MoECC has been designated as the lead line ministry, a highly crosscutting agenda like climate change needs continued leadership from the center of government to promote cross-sectoral coordination, incentivize a functioning National Climate Change Council, and implement a comprehensive climate finance strategy, including domestic revenue and private investment	TBD	ongoing		H	M	H	H	M	L
Develop a strategy for gradually scaling up policy and implementation capacities across government	2	Increasing public sector capacity is crucial for pursuing many of the objectives proposed because, while donors can provide emergency relief and physical investments, regulatory enforcement requires national implementation capacity Increasingly country-led implementation of externally provided climate finance and gradual scaling up of domestic resources mobilization are both critical for long-term sustainability, and requires greater implementation capacity across government	TBD	ST	MT	H	M	H	H	L	M
Develop a basic PIM system that includes climate considerations and covers prioritization and preparation of donor-funded investments, PPPs, and concessions	2	Considerations for establishing a basic PIM system are under way Prioritizing and preparing public investments will need to be informed by climate resilience from the start and should apply to investments funded by development partners, PPPs, and concessions to minimize risks of investments funded from scarce resources being damaged or destroyed by weather events	FGS FMS	ST	MT	H	M	H	M	M	M
Create a simple and flexible legal and regulatory framework, supporting, among other things, environmental and social sustainability and community-based action	2	Given limited capacities and an evolving state-building process, simple, coherent, accessible rules can help to guide external and domestic stakeholders, and clarify mandates of FGS, FMS and districts Somalia should steer away from simply copying best practice legal frameworks, and instead focus on simple rules Critical areas for regulatory framework development include environment and social risk management systems that support climate and conflict risk screening and consultation, especially in high-risk sectors (e.g. land management and rural livelihoods, and urban development planning)	Whole-of-government	MT		H	H	H	H	H	M

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe	Benefits			Challenges		
					Adaptation	Mitigation	Development	Institutional	Policy	Financial
Strengthen locally led approaches at district and community level for participatory planning and implementation of climate resilience interventions – building on projects (e.g. *Bulsho* and *Barwaqo*)	2	Borrow lessons from Financing Locally Led Climate Action and other locally led climate action approaches to layer on participatory climate risk assessments Involve local communities at all stages, from planning through to implementing and monitoring local climate action to mitigate elite capture and other adverse impacts (e.g. perceptions of unequal build community institutions and capacity)	Whole-of-government	ST	H	H	H	H	M	M
Enhance crowd-funding mechanisms that help mobilize the use of remittances to support climate action	2	Promote the use of remittances for community resilience investment (e.g. the *Bulsho* crowdfunding and matching grant platform), including by strengthening climate considerations in community planning and providing more information to the diaspora on potential investments and results	MoIFAR	ST	H	H	M	M	L	L
Develop a national green finance taxonomy and integrate it into CBS reporting templates	2	A uniform taxonomy will allow banks to tag and monitor climate-aligned lending without creating new systems CBS's quarterly reporting templates already capture loan-level data, so adding a single taxonomy code is administratively light External spot reviews, financed by existing technical assistance, could mitigate greenwashing risk and build confidence	CBS MoECC	ST MT	H	H	H	M	L	L
Improve access to climate risk information for businesses	2	A unified open-data portal could be delivered and supported by a small data integration team Sector associations can receive focused training on risk analytics, enabling companies to integrate risk analytics and design resilient business models	MoECC CBS MoCI	ST	H	M	H	M	L	M

Priority area and policy recommendations	Chapter/ section	Enabling conditions and actions	Lead agency/ies	Timeframe		Benefits			Challenges		
						Adaptation	Mitigation	Development	Institutional	Policy	Financial
Develop de-risking instruments to incentivize the scaling of climate finance	2	Inject additional first-loss capital into risk sharing mechanisms with a dedicated climate window to enable banks to lend several dollars of protected climate lending for every invested dollar, incentivizing the scaling of climate finance in Somalia This program could be complemented by policy measures (e.g. prudential incentives) that are feasible within existing fiscal limits	MoF Gargaara	ST	MT	H	H	H	M	L	M
Develop a credit information-sharing system to widen small and medium enterprise access to finance and, by extension, enable the scaling of climate finance	2	Banks in Somalia lend mainly on personal networks because there is no credit bureau to verify a borrower's track record Creating a basic credit database that initially focuses on recording defaults or late payments would be a fast and effective way to help banks reduce risks and offer cheaper loans to rural businesses and women entrepreneurs, allowing them to invest in climate-resilient solutions	CBS	ST	MT	H	M	H	H	M	M
Develop a basic PIM system that includes climate considerations and covers prioritization and preparation of donor-funded investments, PPPs, and concessions	2	Considerations for establishing a basic PIM system are under way Prioritizing and preparing public investments will need to be informed by climate resilience from the start and should also apply to investments funded by development partners, PPPs and concessions to minimize risks that investments funded from very scarce resources are damaged or destroyed by weather events	FGS FMS	ST	MT	H	M	H	M	M	M
Expand access to green skills training and climate-smart business development services	2, 3	Businesses report critical shortages in green skills (e.g., CSA), compounded by the limited integration of climate risks within existing business-development services Targeted financing of training vouchers could offer an effective mechanism to address these gaps Strategically linking successful trainees to tailored micro-finance products will further ensure that acquired skills translate concretely into bankable, climate-resilient business opportunities	MoCI MoLSA	Ongoing		H	M	H	M	M	M
Enhance public-private dialogue for climate action	2	Establish regular forum for public-private dialogue targeting key (sub)sectors for private section contribution to climate action (e.g. energy, water, CSA, and related financial services) to support better understanding of risks, opportunities, and constraints to private investment and action	MoF	Ongoing		H	H	H	M	M	L

Note: Color coding and abbreviations: for urgency: short-term (ST) actions (within the next 5 years) are coded red; medium-term (MT) actions (5-10 years) are yellow; longer-term (LT) actions (10+ years) are green; for benefits and challenges: H = high; M = medium; L = low. Development benefits are defined as the average of the ratings in three areas: human and social development, growth and jobs, and natural capital and conservation.

Appendix 2: CCDR Private Sector Fragility Considerations

Table A2.1: Key fragility factors

Security and conflict	Terrorism Security forces Criminal violence Internal conflict
Health and population	Natural disasters and humanitarian crises Food security and health epidemics Rural-urban disparities (population, sanitation, and water)
Gender	Gender-based violence and protections Gender representation in the workforce, education, and politics
Labor and workforce	Labor policies and supply chain risks
Political risk, governance, and civil liberties	Access to basic services and infrastructure Access to formal justice systems and conflict resolution mechanisms Weak governance structures
Biodiversity, ecosystem services, and climate change	Climate change vulnerability and resilience Government capacity in natural resource and protected area management

Source: World Bank staff, derived from the International Finance Corporation's Contextual Risk Framework.

Somalia faces significant security challenges, after decades of conflict and wide territorial control of Al-Shabaab outside of the capital. One of the main drivers of conflict is competition for land, particularly clan-based land disputes. Extreme levels of vulnerability that feed into the cyclical fragility issues in Somalia include high levels of insecurity and conflict, famine conditions, forced displacement, poverty, and lack of human development. The country's fragility (Table A2.1) is further exacerbated by natural and climatic shocks, compounded by the government's lack of capacity and reach to manage and respond effectively to crises. Al-Shabaab exploits both the government's limited capacity and severe humanitarian crises to carry out indiscriminate attacks on government forces, foreigners, and civilians, as evidenced by the assault on a luxury hotel in Mogadishu in March 2024. Armed groups are central to the complex network of fragility drivers in Somalia, contributing to conflict-induced displacements and business closures, which are linked to an increase in sexual violence, intimate partner violence, and female genital mutilation. Unprecedented droughts, locust outbreaks, and poor rainfall are also causing crop failures, livestock depletion, and extreme food insecurity for at least a quarter of the population.

The private sector plays a central role to countering fragility in Somalia by providing livelihood opportunities, services, and emergency response, and by bringing new technological solutions and innovations for climate mitigation and adaptation. Further private sector investment can significantly contribute to mitigating Somalia's fragility by enabling financial institutions to expand small and medium enterprise lending to stimulate local entrepreneurship, particularly initiatives that enhance climate resilience in vulnerable agricultural communities, create job opportunities, and reduce the country's reliance on humanitarian aid.

Recommendations for private sector on climate fragility issues

Opportunities for private sector investment focused on climate mitigation and adaptation

Agriculture: Considering Somalia's agricultural potential, particularly in the south, where fertile land and abundant riverine irrigation are available, private sector investments should focus on the following areas for climate mitigation.

Crops with high export potential: Somalia's primary agricultural products—which include coarse grains, oil crops, and horticultural crops such as fruits and vegetables—can enhance domestic food security and generate export revenues that can be strategically reinvested into climate mitigation efforts. The once-thriving banana export sector presents a promising investment opportunity with a potential market in the Middle East. Other major agricultural exports include sesame, dried lemons, and forestry products. Adopting CSA practices in these high export-potential crops will create a spin-off effect in value chains, helping to combat domestic food insecurity and contributing to climate mitigation. Increasing the participation of displaced communities and those otherwise affected by climate change in commercial agriculture and related value chains is vital.

Climate-resilient agriculture: The demand for quality seeds is projected to grow annually due to an increase in production area and the impact of climate change, offering substantial investment opportunities—for instance, by introducing new hybrid or improved high-yielding and drought-tolerant varieties. Introducing climate-smart farm production through innovative, inclusive private sector engagement models (such as share farming and outgrower models) can build farmers' resilience, scale up outputs, increase yields, reduce wastage, and contribute to climate mitigation. Given Somalia's predominantly unmechanized agriculture and frequent droughts, there is a niche market opportunity in smart water techniques—such as affordable irrigation systems and solar-powered water systems—and other innovative climate-adaptive solutions that can help farmers implement efficient and climate-smart irrigation methods, such as drip or sprinkler systems for water conservation.

Livestock: Pastoralism is the predominant source of livelihood in Somalia. The country's high-quality livestock meat is in high demand in the Middle East, establishing a nearby market for exporting goats, sheep, cattle, and camels. The sector also offers private sector investment opportunities in supplying animal health products and services. Providing farmers with extension services in integrated crop-livestock farming systems can help them diversify their revenue sources and prevent overdependence on a single agricultural income, while building livestock supply chains can improve the procurement of animals, improved feeding, animal health and breeding practices, and food/animal feed safety management systems, in line with the International Finance Corporation's Sustainable Livestock Principles. This also helps build climate-resilient companies with lower energy costs and GHG footprints that implement green energy solutions for thermal and/or electrical energy and wastewater management.

Financial inclusion of climate-affected populations: The humanitarian crisis in Somalia highlights the urgent need for enhanced financial support, particularly for vulnerable groups such as women, IDPs, and refugees. This can be achieved through technological innovations, such as digital financial solutions (mobile money), organizational support for income-generating activities, and adapted insurance services to mitigate risks associated with climate change. Financial inclusion can be promoted through local crowdfunding and partnerships to help these groups initiate or expand businesses, increasing their resilience to climate shocks. Financial products that support low-income farmers in adapting to climate realities are also needed. This includes capital for sustainable farming practices and climate-resilient agricultural infrastructure, which could empower farmers in drought-stricken regions to access financial services and enhance their resilience to climate change. Platforms that directly link agricultural exporters, retailers, and other private companies

with farmers can enable risk-resilient prefunding arrangements. This ensures farmers have access to capital before the planting season, leading to timely access to farming inputs, improved crop management, and increased yields. It could also facilitate traceability and certification of exported agricultural products, benefiting all stakeholders.

Transportation and energy infrastructure: Modernizing existing transportation and energy infrastructure using environmentally friendly technologies and practices will enhance international trade, streamline logistics, and reduce carbon emissions.

Sustainable road networks: Investments to improve and expand the country's road networks using materials and techniques that are resilient to climate change will strengthen connectivity between cities and rural areas, minimize environmental impacts, and facilitate the movement of people and agricultural exports.

Renewable energy: Investments in renewable energy sources, such as solar and wind power, will help address energy shortages, reduce reliance on fossil fuels, and contribute to climate change mitigation.

Opportunities for project risk mitigation and building resilience

Company management systems: Strengthening management systems will help companies understand, mitigate, and monitor risks in a highly volatile environment with limited government capacity, allowing them to manage environmental and social considerations such as land, environmental performance, and biodiversity. This includes adopting specialized frameworks and tools to assess and manage climate risk. Thorough due diligence should be conducted on potential partners to reduce integrity risks. Prioritizing engagement and enhanced stakeholder management within projects should also be a key focus, particularly in conflict-affected areas with vulnerable populations and in land-intensive sectors such as agriculture.

Financial management capacity: To strengthen their financial management capabilities, companies operating in high-risk, fragile climates can restructure and optimize the organization of their finance departments to enhance their efficiency; enhance working capital management practices to ensure better handling of financial risks; review and upgrade client management information systems; and ensure compliance with international financial reporting standards and/or local standards.

Natural disaster (especially drought) management: With droughts occurring on a more frequent basis, both the population and businesses are exposed to this climate-related risk. Establishing emergency response and business continuity plans can help minimize disruption after a natural disaster. This includes considering complex protection strategies, such as forming robust partnerships or sharing risks among companies through reinsurance. Close collaboration with local communities, government bodies, aid organizations, and the academic community specializing in drought monitoring is also crucial for risk assessment, implementing preventative measures, and developing response plans for projects.

Gender: Gender-based violence and representation in society and the workforce feeds into the complex fragility landscape and is exacerbated by the climate-conflict nexus where women and girls are often disproportionately affected—for example, through increased food insecurity, water scarcity, and displacement. Business should therefore seek out culturally appropriate avenues to engage women, particularly those who are divorced, living with disabilities, or at risk of exclusion, in their stakeholder engagement plans and grievance mechanisms. Providing training in income-generating activities also empowers women and enhances their abilities to cope with climate fragility.

Forced displacement: Integrating forced displaced persons, including IDPs and refugees, into private sector investment strategies can serve as a strategic and effective measure at the nexus of conflict and climate change. This is particularly relevant as these groups are highly vulnerable to the impacts of climate change.

For example, directing investments toward sectors that offer employment opportunities for IDPs and refugees can help alleviate their hardships. Incorporating forced displaced persons into corporate value chains as suppliers, distributors, or retailers can also stimulate local economies and provide stable income sources for these populations.

Appendix 3: Entry Points for DRM, and Resilience

Recommendation	Steps to take	Priority level/timescale
Legal and institutional foundations		
Update existing national DRM policy and implementation roadmap	Review and consolidate the NDMP (2017) and National Disaster Risk Management Policy (2020) into a single policy endorsed by all relevant actors to guide DRM countrywide, with clear roles and responsibilities outlined and assigned, reflective of current structures Within the policy, clarify overlapping functions and arrangements, such as interfiscal transfer of funds for DRM and emergency declarations, between national and international institutions Incorporate a drought cycle management approach into DRM strategy and implementation, including integrating disaster contingency planning with drought cycle management	High
Approve a river flood and drought risk management and infrastructure policy	The policy should aim to mitigate flood- and drought-induced disasters in the Shabelle and Juba River Basins and their impact on urban and rural facilities, livelihoods, and food security Based on the forthcoming needs assessment conducted by FAO-SWALIM in close cooperation with MoEWR and MoAI, the policy should include technical regulations to standardize the design of all new or to-be-rehabilitated enhanced river embankments and primary and secondary canals	Medium
Create a policy or directive on women's representation and participation in the DRM system	Apply guidelines to all relevant agencies and actors to help ensure that women hold positions as civil service staff and in decision-making bodies	Long-term
Strengthen and expand the reach of FMS disaster preparedness authorities	All FMS have disaster preparedness authorities in place, but their influence or capacity may not extend beyond the state capital cities, so there is a need to localize their presence State policies and procedures have evolved independently, partly because some FMS authorities have bilateral agreements with humanitarian actors To strengthen and formalize coordination between DRM actors at all levels and enhance aid accountability, state policies and strategies should be harmonized across FMS and aligned with national policies	High
Establish operational response plans for all emergency management agencies	Plans should create clarity on roles and responsibilities, be interagency aligned, and establish linkages across government levels: federal, state, district, and municipality Establish effective vertical coordination between government institutions to effectively integrate information generated at local levels into national-level strategic planning processes In particular, SoDMA should ensure preparedness and response plans encompass pre, during, and postdisaster phases—from prevention to recovery and rehabilitation—and are context specific and different for high and lowland areas This project should be aligned with and build on the NEOC institutional framework	High
Approve Hydromet Law	Legislation should clarify the roles and responsibilities of the relevant agencies that are critical to the monitoring and forecast of weather-related events such as rainfall, river water levels and flows, and cyclones, including SoDMA, MoECC, MoEWR, MoAI, and SWALIM	High
Establish legislation on critical infrastructure	Legislation should identify critical infrastructure, articulate plans for protecting and accessing key structures and systems in an emergency Legislation should form the basis for agreements with important DRM partners, such as telecom companies and energy suppliers	Medium

Recommendation	Steps to take	Priority level/timescale
Understanding and monitoring risks		
Develop a digital national disaster database	In the context of the NEOC, develop an information management system to facilitate interagency, national, and international operational awareness during early needs assessment and response Documentation should focus on the occurrence and impact of disasters, as well as expenditures in response to disasters across public and development sectors Specific mechanisms for lessons learned should be fostered at community, regional, and national levels to feed into the database, and should envisage gathering relevant stakeholders after each event to analyze the successes and challenges encountered during the hazard response	High (underway)
Complete SoDMA's baseline survey of risks and hazard mapping	Accelerate plans to populate a comprehensive database of risks and hazards, integrating existing data and information, including georeferenced data layers The baseline survey should include: flood risk assessment for inland and coastal flooding, including along major rivers; mapping of drought regions and resultant displacement trends; landslide and wildfire susceptibility; and climate-induced urbanization trends To acquire better knowledge of the impacts of a risk, the process of populating the database should include people-centered and participatory risk assessments involving community members from high-risk areas to support data collection and enable the integration of traditional knowledge into the process By populating the hazard database, build capacities in relevant organizations for adequate DRM data governance, collection, analyses and sharing of data Build capacities for data analysis and active participation in international data collection and warning mechanisms, such as for early locust swarm detection and the World Meteorological Organization's Global Telecommunication System	High (underway)
Develop risk-informed preparedness and emergency response plans at national and FMS level	Ensure operational response plans for emergency management agencies and line ministries at national and FMS-level align with updated national-level DRM policy and clarify roles and responsibilities Ensure the findings of SoDMA's baseline survey of risks and hazard mapping inform plans Ensure plans include the development of readiness guidelines with a set of prevention and mitigation actions linked with EWS Prioritize strong collaboration and coordination with: key government stakeholders at subnational (state and district) levels; DRM professionals—including critical infrastructure operators—communities; information producers, researchers, and users to improve the availability, accuracy, timeliness, and usefulness of early warning messages Gradually plan for a decreasing dependency on international support and move from a reactive emergency response to a proactive and strategic preparedness response Regularly test preparedness and emergency plans through exercises based on anticipated risk scenarios, ensuring response drills and exercises test the effectiveness of warnings and the actions taken to mitigate the impacts of climate change on different sectors, as well as recipients' comprehension of the messages communicated by the respective authorities	Medium
Strengthen community-based DRM capacity	Organize a survey to prepare a baseline of community awareness and the state of EWS thematic indicators Organize capacity building and awareness-raising activities at subnational (state and district) levels focused on EWS and climate change to highlight the vital role of communities in risk management (such as early flood risk warnings)	Medium

Recommendation	Steps to take	Priority level/timescale
	Develop and incorporate disaster risk reduction curriculums for all levels of the education system to mainstream disaster risk knowledge, to cultivate more resilient generations and communities versed in EWS and the challenges posed by climate change Roll out a nationwide training program for all relevant DRM functions to foster a generation of in-country humanitarian experts and trainers	
Prioritize hydromet service provision	Upgrade and modernize national hydromet monitoring and EWS by expanding the network of weather stations in strategic areas, including automatic stations Improve data management, forecasting, and communication systems, enhancing the use of information and communications technology and remote sensing Build institutional capacity to provide and effectively share both general and sector-specific hydromet forecasts (short-term and long-term seasonal), including EWS	Medium (underway, with need to transition to government)
Repair and enhance flood prevention infrastructure along Juba and Shabelle Rivers	Prepare a flood risk management strategy and masterplan Prioritize structural and non-structural flood risk prevention measures for Beledweyne Create an operational maintenance plan for water management infrastructure	Medium
Financing disaster response		
Develop a DRF strategy and implementation plan	The strategy, led by the MoF, should define the overarching financial protection objectives and prioritize the risk finance instruments Somalia will establish and strengthen over the next five years Include climate as an integral component of a broader DRF strategy to support DRM plans Develop the strategy and use its implementation to strengthen the FGS's capacity to take informed decisions on DRF, based on sound financial and actuarial analysis Scale up risk financing instruments at both federal and state levels linked to preidentified delivery channels for early response with rapid disbursement supported by objective early warning trigger indicators	High
Adopt a regulation that establishes a systematic approach for transferring funds for DRM activities	The regulation, developed by the MoF, should be in line with the PFM law and cover activities related to preparedness, mitigation, and recovery The regulation should offer clear allocation guidelines, ensuring transfers are directly linked to defined DRM priorities and targets Include disaster financing in the new cycle of the PFM Action Plan	Medium
Foster the development of the domestic risk finance and insurance markets	Following the enactment of the *Takaful* Law and the new Financial Institutions Law in May 2025, FGS and CBS should roll out implementation of the *takaful* roadmap, and consider establishment of a co-insurance pool to ensure a sustainable agriculture and livestock insurance market in the long term	Long-term
Increase investments in preparedness to enhance the capacities of exposed populations	Establish a financial risk pooling program for farmers, to mitigate related production losses and to enable rapid recovery of livelihoods Such a pool would maximize diversification and build volume which is essential to increase private sector participation FGS should embed insurance (*takaful*) in its national financial inclusion strategy and ongoing financial literacy and awareness campaigns	Long-term

Recommendation	Steps to take	Priority level/timescale
Strengthen public asset management and expand sovereign insurance to cover floods	Develop and implement a public asset and infrastructure management policy and build a national public asset registry to track exposure, vulnerability, and replacement value Issue guidelines and templates for line ministries to take up insurance for their assets and infrastructures. This should be complemented by ongoing flood risk reduction and risk monitoring Expand use of sovereign insurance to cover excess rainfall or floods with the payout linked to pre-identified delivery systems and pre agreed expenditures	Medium
Operationalize the national disaster response fund	The fund should be linked to pre-identified delivery channels (e.g., Baxnaano, FMS, or local governments), with funds released based on objective trigger mechanisms (e.g., JMR under FSCPP). Protocols for emergency transfers to FMS and local government would need to be developed in collaboration with the Fiscal Federalism Technical Committee. The fund would need a dedicated fundraising strategy to access global climate and disaster risk funds, available through entities like the Loss & Damage Fund, the Global Shield	Medium
Primary response		
Map existing, functional response stations across Somalia	Develop a clear overview of available emergency medical care and social service capacities by all actors involved and establish a framework for coordination between actors providing emergency social services, including harmonization of services and protocols Develop a holistic capacity development plan for all response personnel, response equipment, and response stations Develop protocols to manage mass casualties	Medium
Establish a network of warehouses for storing and distributing prepositioned aid	In close cooperation with the UN humanitarian coordination structures, contribute to expanding strategically located warehouses to speed up response times and address access constraints Assess the needs and potential locations across the country, focusing on known vulnerable locations, including urban settings and areas of displacement Pre-stock essential hygiene supplies in cholera/acute watery diarrhea hotspot locations Support a long-term capacity-building process for Somali-owned and operated warehouses	Medium
Establish framework contracts with existing facilities that can be used as training facilities	Make arrangements with private schools, hotels, and other facilities that can be programmatically used as interagency training centers, strategically distributed across Somalia	Long-term
Establish improved shelter facilities across Somalia	To accommodate IDPs, expand the identification of disaster-resilient areas to house displaced persons, with a focus on known exposed locations Review legislation on land tenure as part of identifying these locations Pre-position shelter materials to speed up response times and address access constraints	Long-term
Assess transportation and equipment needs to support emergency response	Review transportation and equipment needs for emergency health care responders, victims, and corpses Where feasible, purchase vehicles, medical and communications equipment, and personal safety equipment for emergency health care responders in the most exposed urban and rural areas Improve the condition and climate resilience of local airstrips, especially in hard-to-reach areas, and those with particular climate vulnerability In more stable regions, ensure primary road corridors are resilient to flooding and other disruptions Alternatively, establish a contingency fund for transport and pre-establish memoranda of understanding with private operators	Medium

Recommendation	Steps to take	Priority level/timescale
Strengthen local NGO capacities to engage with DRM	Support nongovernmental actors, including the Somali Red Crescent Society, in becoming involved and integrated in the standard incident organization structure Engage NGOs to assist the NEOC in establishing common rosters and databases and facilitating exchanges between DRM actors Roll out an exercise and drill program to maintain adequate levels of response readiness in an interagency manner to allow for regular testing of SOPs and response plans that facilitate learning and strengthen the country's response culture Strengthen data collection on citizen perceptions and increase engagement with civil society to deepen understanding of localized fragility, conflict, and violence dynamics	Long-term
Social protection		
Support shock-responsive safety nets to offset postdisaster human capital losses	Develop a shock response safety net strategy that details climate triggers and the threshold at which social protection measures will be rolled out Establish a data-sharing agreement between SoDMA and MoLSA to improve coordination in event of shock Continue to support Baxnaano as it develops and expands its targeted interventions triggered by climate shocks to reach the most vulnerable groups Strengthen and expand the outreach of existing community resilience programs and mitigation throughout Somalia, focusing on vulnerable populations, including women, children, the elderly, and persons with disabilities Focus safety net initiatives on activities that build resilience to future climate-linked disasters	High
Adopt the Social Protection Policy 2025	Update the Social Protection Policy—developed in 2019, before the establishment of the Unified Social Registry and Baxnaano—to align it with evolved priorities and realities and the improve resilience of the poor and vulnerable to climate shocks	Medium
Develop a NECROP	Develop streamlined approval processes and coordination mechanisms through a NECROP to ensure immediate and coordinated actions across systems, sectors, and stakeholders, guided by defined leadership, and an efficient response to climate crises	Medium
Integrate resilience into humanitarian assistance	Focus on durable solutions; inclusive, government-led processes; the humanitarian-development nexus; an integrated multisector response; strategic partnerships; and flexible project design When managing displacement, find dignified pathways for IDPs/migrants/refugees to return to their places of origin, stay where they fled, or resettle elsewhere, based on their informed consent (i.e., using intention surveys) Provide integrated packages of support, including the provision of government-led services that benefit displaced and host communities	Long-term

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