



GOVERNMENT OF **SIERRA LEONE**



Photo: Tommy Trenchard, UNEP

2021 NATIONAL
ADAPTATION PLAN



Acknowledgements

This initial National Adaptation Plan (NAP) is a product of an intense and complex process of literature review, consultations and compilation of information. The process has involved stakeholders from Ministries, departments, agencies, civil society groups, community members, the private sector, development partners and other stakeholders.

The Government of Sierra Leone is grateful for all contributions to the development of this plan. Heartfelt appreciation goes to the consultant and technical team tasked to develop this NAP.

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Finally, we express our appreciation to all individuals and institutions who continue to take climate change action in Sierra Leone. We hope that the strategies laid out in this NAP process build Sierra Leone's resilience to the impact of climate change.

GOVERNMENT OF
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FOREWORD

Climate change has adverse impacts on Sierra Leone's economic development and poses a fundamental threat to the realization of the Medium-Term National Development Plan 2019-2023. The country's economy is highly dependent on natural resources and fragile ecosystems and is already experiencing erratic rainfall patterns and rising temperatures leading to seasonal and flash floods water shortages low crop yield and mudslides and will continue to have adverse impacts on sustainable livelihoods and assets of vulnerable communities. The Government of Sierra Leone recognizes the threats posed by climate change and has taken necessary steps and actions to minimize the potential for further damage. This initial National Adaptation Plan (iNAP) marks yet another landmark in our efforts to address the country's vulnerability and resilience to climate change.

With the launch of the NAP process in 2018, Sierra Leone has undertaken several steps to push the NAP process forward. Starting with the development of the NAP framework in 2019 which provided insights for the formulation and implementation of the NAP, The NAP communication strategy and now the initial NAP. These actions demonstrate Sierra Leone's commitment to achieving the Global Goal on Adaptation by reducing vulnerability through integrating adaptation considerations into all relevant plans, policies and strategies and aligning long-term national development priorities with the SDG framework.

This iNAP has been developed by the Government of Sierra Leone through the Environment Protection Agency with strong collaboration with the Sierra Leone meteorological agency and a broad-based consultative process and participation of other relevant stakeholders and the private sector under the supervision of the ministry of the environment.

The iNAP responds to the overall objectives of the UNFCCC's National Adaptation Plan Guidelines for reducing vulnerability to the impacts of climate change by building adaptive capacity and resilience of the country and facilitating the integration of climate change adaptation into relevant existing and new policies, programmes and activities.

The country's iNAP also gives guidance and provides information on actions to reduce climate change vulnerability regarding water resources, agriculture and food security, public health, coastal zones, and communities across the country. The range of adaptation options has been well-defined through systemic and bottom-up national-level consultative processes. What the process itself has been a significant achievement in raising awareness, building technical and institutional capacities, and integrating adaptation concerns into national development dialogues.

This document is an integral part of the components of the updated nationally determined contribution (NDC) of the country for the effective implementation of the Paris Agreement. It will further help identify and address key adaptation issues, gaps, priorities, and resource requirements for more effective planning, implementation, and monitoring of adaptation in support of the NDCs and the Paris Agreement. The government of Sierra Leone has begun to integrate climate change adaptation measures into national development processes, strategies, climate-smart policies, programmes, and budgeting. It will, therefore, facilitate the integration process of climate change adaptation measures at different levels, as appropriate.

The preparation of this iNAP is consistent with the National Climate Change Policy, Strategy and Action Plan, and the Medium-Term National Development Plan (2019-2023) which includes a cluster on addressing vulnerabilities and building resilience. The iNAP covers five priority sectors of Agriculture and Food Security, Water Resources and Energy, Coastal Zone Management, Environment, and Disaster Management, and two identified cross cutting priorities of Gender Equality and Social Inclusion and, Hard and Soft Infrastructure. This document can therefore provide an opportunity to catalyze both national and international funding for the implementation of climate change adaptation strategies and actions.

As a nation, we strongly believe that through effective implementation of this iNAP, Sierra Leone will reduce its vulnerability by half by 2030 through increased risk awareness, improved regulatory compliance, increased institutional capacity, and an integrated approach to addressing adaptation in development policy and programs across climate-sensitive sectors and scales. Finally, I wish to implore all relevant stakeholders to work together and implement this initial adaptation plan to achieve its objectives in reducing vulnerability to the impacts of climate change in the country.



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Table of Contents

EXECUTIVE SUMMARY	8
CHAPTER 1	10
Introduction	10
1.1 NAP vision.....	10
1.2 NAP mandate.....	10
1.3 NAP process in Sierra Leone	10
1.4 Functions	12
1.5 Guiding principles.....	12
1.6 Goals	12
1.7 Overview of the NAP.....	12
CHAPTER 2	14
National circumstances	14
2.1. Introduction.....	14
2.2 Geography	14
2.3 Socio-economic context	16
2.4 Urbanization and infrastructure	17
2.5 Gender issues.....	17
2.6 Environmental issues.....	18
CHAPTER 3	19
Climate impacts, vulnerabilities and risks	19
3.1 Introduction	19
3.2 General climate characteristics.....	21
3.3. Historical observations to assess variability, trends and extremes	21
3.4 Climate change overview: projected changes of key climate characteristics.....	23
3.5. Current and future sectoral vulnerabilities	27
3.6 Vulnerability assessments.....	31
3.7 Vulnerability and climate data opportunities, challenges and needs.....	32
CHAPTER 4	35
Adaptation related policies, plans and programmes	35
4.1 Introduction	35
4.2 Climate change adaptation plans and policies.....	35
4.3 Other relevant documents and policies.....	38
4.4 Climate change adaptation projects and programmes	40
4.5 Policy opportunities, challenges and needs.....	43

CHAPTER 5	45
Priority adaptation actions	45
5.1 Introduction	45
5.2 Key Government stakeholders by priority.....	47
5.3 Priority adaptation programmes	48
5.4 Priority actions by sector, programme and type	49
5.5 Sector needs and opportunities.....	56
 CHAPTER 6	57
Institutional arrangements for the NAP process	57
6.1 Introduction.....	57
6.2 Linking NAP priorities to the Medium-term National Development Plan.....	57
6.3 Linking NAP to sector and local planning.....	59
6.4 NAP entry points at each stage of the policy process	60
6.5 Non-governmental stakeholders and their roles.....	61
6.6 Institutional framework coordination mechanisms.....	61
6.7 Recommendations.....	66
 CHAPTER 7	67
Next steps	67
7.1 Introduction	67
7.2 NAP process roadmap.....	67
7.3 Implementation strategy: actions and needs	68
 REFERENCES	35
 ANNEX 1: Stakeholder Consultation and Reviewer List	73
ANNEX 2: Priority sector SWOT analysis	75

List of figures

Figure 1:	Map of Sierra Leone	15
Figure 2:	Normal precipitation and temperature for Sierra Leone (1981-2010)	20
Figure 3:	Monthly climatology of both precipitation and temperature for 4 provinces	20
Figure 4:	Annual temperature anomalies (C) for Sierra Leone (1950-2019) in relation to the 1961-1990 mean, calculated from the Climate Research Unit CRU.CY.4.04 dataset.....	21
Figure 5:	Annual temperature anomalies (C) for Sierra Leone (1950-2019) in relation to the 1981-2010 mean, calculated from the Climatic Research Unit CRU.CY.4.04 dataset.....	21
Figure 6:	Regional timeseries of climate indices for Sierra Leone 1981-2029 in relation to the 1981 -2010 mean.....	22
Figure 7:	Map of deadliest and most costly weather, water and climate related hazards for each country.....	23
Figure 8:	Mean temperature change (C) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the medium emissions scenario (RCP 4.5). Model ensemble median from CORDEX Africa	24
Figure 9:	Mean temperature change (C) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the high emissions scenario (RCP 8.5). Model ensemble median from CORDEX Africa	24
Figure 10:	Precipitation (annual mean) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the low emissions scenario (RCP 2.6). Model ensemble median from CORDEX Africa	25
Figure 11:	Precipitation (annual mean) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the moderate emissions scenario (RCP 4.5). Model ensemble median from CORDEX Africa	26
Figure 12:	Precipitation (annual mean) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the high emissions scenario (RCP 8.5). Model ensemble median from CORDEX Africa	26
Figure 13:	Map of the proportion of households in each of the five quintiles of vulnerability, defined over the total sample of households.....	32
Figure 14:	NAP process linkages to sector planning processes.....	59
Figure 15:	NAP process implementation arrangements.....	62

Acronyms

ACDI VOCA	Agricultural Cooperative Development International/ Volunteers in Overseas Cooperative Assistance (ACDI/VOCA)	NAP	National Adaptation Plan
AfDB	African Development Bank	NAPA	National Adaptation Programme of Action
AR5	Fifth Assessment Report of the IPCC	NBSAP	National Biodiversity Strategy and Action Plan
AR6	Sixth Assessment Report of the IPCC	NCCPF	National Climate Change Policy Framework
CBA	Cost benefit analysis	NCCSAP	National Climate Change Strategy and Action Plan
CCCAP	Coastal Climate Change Adaptation Plan	NDC	Nationally Determined Contribution
CIFOR	Centre for International Forestry Research	NDMC	National DMD Council
COOP	Cooperazione Internazionale	NEAP	National Environmental Action Plan
CSO	Civil society organizations	NEP	National Environmental Policy
DMA	Disaster Management Agency	NFCS	National Framework for Climate Services
DMD	Disaster Management Department	NSC	National Steering Committee (for NAP process)
DRR	Disaster risk reduction	NWRMA	National Water Resources Management agency
FAO	United Nations Food and Agriculture Organization	OGSES	Off-grid Solar Energy Strategy
FDI	Foreign direct investment	OPEC	Organization of the Petroleum Exporting Countries
GCF	Green Climate Fund	PC	Parliamentary Committee (for NAP process)
GEF	Global Environment Facility	PRSP	Poverty Reduction Strategy Paper
GCM	General circulation model	REDD	Reduced emissions from deforestation and forest degradation
GoSL	Government of Sierra Leone	SDG	Sustainable development goals
IC	Inter-ministerial Committee (for NAP process)	SFDRR	Sendai Framework for Disaster Risk Reduction
ICT	Information and communications technology	EPA-SL-	Environment Protection Agency Sierra Leone
ICZMP	Integrated Coastal Zone Management Plan	SL-MET	Sierra Leone Meteorological Agency
IFAD	International Fund for Agricultural Development	SNC	Second National Communication (to the UNFCCC)
IFC	International Finance Corporation	SWOT	Strengths, weaknesses, opportunities, threats
INC	Initial National Communication (to the UNFCCC)	TNC	Third National Communication (to the UNFCCC)
IPCC	Intergovernmental Panel on Climate Change	UNDP	United Nations Development Programme
ITCZ	Inter-Tropical Convergence Zone	UNFCCC	United Nations Framework Convention on Climate Change
LCCRDS	Low-Carbon Climate-Resilient Development Strategy	UNOPS	The United Nations Office for Project Services
LDC	Least developed country	USAID	United States Agency for International Development
LDN	Land degradation neutrality	V&A	Vulnerability and adaptation
LEG	UNFCCC Least Developed Countries Expert Group	WMO	World Meteorological Organization
M&E	Monitoring and evaluation	WA BiCC	The West Africa Biodiversity and Climate Change Program
MAF	Ministry of Agriculture and Forestry	WHH	Welthungerhilfe
MCA	Multi-criteria analysis		
MDA	Multilateral Development Agency		
MTNDP	Medium-Term National Development Plan (2019-2023)		



Photo: Caroline Thomas, UNEP

EXECUTIVE SUMMARY

This document serves as Sierra Leone's initial National Adaptation Plan (NAP) submission to the United Nations Framework Convention on Climate Change (UNFCCC). The NAP process was established under the UNFCCC in 2010 as part of the Cancun Adaptation Framework. The process enables Parties to the UNFCCC to formulate and implement NAPs as a means of identifying medium- and long-term adaptation needs and for developing and implementing strategies and programmes to address those needs. The NAP is a continuous, progressive, and iterative process that follows a country-driven, gender-responsive, participatory, and fully transparent approach. The objectives of the NAP process are:

- To reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience; and
- To facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programs and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate.

The Government of Sierra Leone (GoSL) views its NAP as a process to ensure a systematic and strategic approach to climate change adaptation in all government decision making, which will facilitate institutional coordination, resource mobilization, technology transfer and, ultimately, effective adaptation actions. This document is, therefore, a step forward in building a more resilient Sierra Leone. Ultimately, the NAP vision is to reduce vulnerability by half by 2030 through increased risk awareness, improvements in rule compliance, increased institutional capacity and an integrated gender-responsive approach to adaptation in development policies and programmes across sectors and scales.

Five priority sectors and two cross-cutting priorities were identified during the NAP's development. These priorities are the central pillars used to guide the document and are directly connected to the Medium-Term National Development Plan (MTNDP 2019-2023). They are:

1. agriculture and food security
2. water resources and energy
3. coastal zone management
4. environment
5. disaster management
6. gender equality and social inclusion
7. hard and soft infrastructure

Drawing on existing climate policies, the NAP develops programmes across these priorities that can be implemented using additional resources. Additionally, it provides an institutional framework for the NAP process moving forward, as well as ways in which the NAP can be integrated into the MTNDP process. Finally, the NAP provides recommendations for next steps moving forward. It is expected that this Initial NAP will pave the way for the formulation of a full NAP, which is expected to be completed in 2023.



Photo: Tommy Trenchard, UNEP



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Introduction

1.1 NAP vision

Sierra Leone reduces vulnerability by half by 2030 through increased risk awareness, improvements in rule compliance, increased institutional capacity and an integrated gender-responsive approach to adaptation in development policy and programmes across sectors and scales.

1.2 NAP mandate

The mandate for Sierra Leone's NAP is grounded in its National Climate Change Strategy and Action Plan (NCCSAP) and its latest Medium-Term National Development Plan (MTNDP 2019-2023), which includes a cluster on addressing vulnerabilities and building resilience. The NAP builds on these existing policies and supports their implementation. Additionally, the NAP is aligned with the National Climate Change Policy Framework (NCCPF, 2012), the updated Nationally Determined Contribution (NDC, 2021), National Communications to the UNFCCC and National Adaptation Programme of Action (NAPA). The NAP process supports the implementation of these policies and the forthcoming updated NDC.

1.3 NAP process in Sierra Leone

The Government of Sierra Leone (GoSL) views its NAP as a continuous, progressive and iterative process to ensure a systematic and strategic approach to climate change adaptation in all government decision making. This will facilitate institutional coordination, resource mobilization, technology transfer and, ultimately, effective adaptation actions (GoSL, 2019).

The GoSL officially launched its NAP process in 2018. Representatives of the government attended the training workshop on NAP formulation organized by the UNFCCC Least Developed Countries Expert Group (LEG) in Nairobi. Following this, the country developed a NAP framework in January 2019 and a climate change communications strategy under the

NAP in 2020. This initial NAP continues the process of developing the institutional framework for medium- and long-term adaptation planning.

In summer 2020, the Environment Protection Agency Sierra Leone (EPA-SL) and the Sierra Leone Meteorological Agency (SL-MET) convened several meetings to discuss the NAP, its process and priorities. In October 2020, an inception workshop with representatives from the national and subnational government, private sector and civil society across all identified priorities was held. This workshop raised awareness about the NAP process, engaged key stakeholders in the planning and decision-making process and collected relevant data to inform the initial NAP. During the workshop, stakeholders discussed all the key elements that are integrated into this document. This convening, along with subsequent consultations, and a policy and literature review, has informed the development of the initial NAP as a collaborative planning process.

The initial NAP draft was shared with internal and external stakeholders for comment, input and feedback. Following this, a validation workshop was held in April 2021 to finalize the NAP and integrate further comments. A list of all those consulted throughout this process and the organizations that reviewed the document are included in Annex 1.

The NAP process helps the GoSL to further identify and address key adaptation issues, gaps, priorities and resource requirements for more effective planning, implementation and monitoring of adaptation in support of the NDCs and the Paris Agreement. Sierra Leone recognizes that establishing synergies and linkages between the NAP and those other key processes is essential to:

- contributing to achieving the Global Goal on Adaptation by reducing vulnerability through integrating adaptation considerations into all relevant plans, policies, and strategies, and prioritizing and planning for adaptation;
- ensuring that the adaptation component of the NDCs becomes a strategic and ambitious vehicle for capturing, reporting and updating commitments and progress; and
- aligning long-term national development priorities with the sustainable development goals (SDGs) framework.

Through the process to develop this NAP, five priority sectors and two cross-cutting priorities were identified. These are central pillars that are used to guide the document and are directly connected to the MTNDP. They are:

-
1. **agriculture and food security**
 2. **water resources and energy**
 3. **coastal zone management (including fisheries, coastal ecosystems etc.)**
 4. **environment (including tourism, land, mineral resources, forestry, etc.)**
 5. **disaster management**
 6. **cross-cutting priority 1: gender equality and social inclusion (focusing on youth, women, elderly and persons with disabilities)**
 7. **cross-cutting priority 2: hard and soft infrastructure (including health, water and sanitation, transportation etc.)**
-

1.4 Functions

The initial NAP includes a stock take of adaptation priorities, vulnerabilities and measures across identified priority sectors.

The functions of this are to:

- support the development of vulnerability assessments that inform new policies, projects and programmes, and guide monitoring and learning;
- effectively communicate adaptation priorities and ambitions for the country;
- guide investments in climate change adaptation for the short- and long-term;
- provide guidance for stakeholder engagement and strategic partnerships for climate change adaptation across sectors;
- identify entry points for information gathering, analysis, and dissemination;
- serve as a basis for resource mobilization; and
- support mainstreaming of gender equality and social inclusion.

1.5 Guiding principles

The guiding principles of the NAP are:

- **Inclusivity** (ownership and shared responsibility). The NAP process will be inclusive in its process and implementation, while considering the needs of all stakeholders, in order to foster collaboration, coordination and networking during the NAP process and climate change adaptation initiatives;
- **Participation**. Development and implementation will include participation of state and non-state stakeholders including vulnerable groups;
- **Data generation**. The NAP process will be part of a data collection effort incorporating the best available information into planning;
- **Transparency**. Decision-making processes, development and implementation will be open to the public;
- **Accountability**. Development and implementation will be guided transparently and by systems that allow the continual assessment of practice and performance;
- **Learning/reflexivity**. The NAP will build capacity for reflecting on national adaptation actions to foster engagement in a process of continuous policy and community learning;
- **Adaptability**. This NAP is the first step in a continuous process of planning, implementation, monitoring and evaluation. It should be revised in consultation with all stakeholders as new climate, vulnerability and socioeconomic information, implementation lessons and best practices arise;
- **Religious and cultural leadership**. The NAP will support activities that build climate-relevant religious and cultural knowledge; this will help leverage positive influences of religion and culture in roles local leaders play in achieving climate change adaptation outcomes at local level;
- **Ethical citizenship**. NAP implementation is likely to be improved with increased public awareness and citizen buy-in; how do individuals conceive their rights and responsibilities and the implications of their assumptions in a changing climate;

- Integrate gender equality and social inclusion in the NAP objectives and in its prioritized actions. This will promote an inclusive environment by ensuring institutions promote gender equality and equal opportunity for women, children and persons with disabilities; and
- Capacity development. Achieving NAP goals will require strengthening human, financial, and technical capacities among all relevant stakeholders and institutions.

1.6 Goals

The NAP goals are to:

-
- **increase resilience capacity at all levels**
 - **support an integrated approach to climate change adaptation programming and policymaking**
 - **allocate 10 percent of the annual national budget to climate change adaptation across sectors**
 - **harmonize climate-relevant policies and regulations to improve coordination and cross-sector linkages**
 - **mainstream adaptation within all local councils local development plans by 2025**
 - **institutionalize NAP implementation through laws, policies, and regulations**
 - **establish a national trust fund for channelling adaptation support across sectors**
 - **direct 40 percent of international development funding toward adaptation priorities across different sectors**
-

1.7 Overview of the NAP

The plan includes eight chapters. Chapter 2 describes the national circumstances in Sierra Leone to provide a background in understanding how climate risks interact with the existing development context. Chapter 3 provides the climate science basis to inform adaptation planning in Sierra Leone, including impacts and vulnerabilities on priority sectors. Chapter 4 presents the existing climate policy landscape, and policies and plans that are related to the NAP. Chapter 5 analyzes existing adaptation priorities in Sierra Leone's current policies. Chapter 6 provides the institutional arrangements for the NAP including the links between the NAP and the MTNDP, the process to integrate adaptation into development planning and the proposed coordination mechanisms. Chapter 7 presents the next steps in the NAP process including a timeline and implementation strategy.



Photo: Government of Sierra Leone

National circumstances

2.1. Introduction

Climate vulnerability is a function of exposure, sensitivity and adaptive capacity (McCarthy et al., 2001). Vulnerability to climate change is structured by economic, social, geographic, demographic, cultural, institutional, governance and environmental factors (IPCC, 2012). Multiple factors shape vulnerability to climate risk. These include social inequality, unequal access to resources, poverty, poor infrastructure, lack of representation, lack of social networks, and inadequate systems of social security, early warning, and planning (Yohe and Tol, 2002; Brooks, Adger and Kelly, 2005; Ribot, 2009). This chapter presents the underlying conditions that shape sensitivity and adaptive capacity, including the geography and the socio-economic context of the country.

2.2 Geography

Sierra Leone is located in the south-western part of West Africa. It sits between latitudes 7N and 10N of the equator and between longitude 10W and 13W of the prime meridian. The country has a total area of 71,740 sq. km, divided into a land area of 71,620 sq. km and water of 120 sq. km. The country is divided into four main ecological regions: coastal mangroves, the wooded hill country, an upland plateau and the eastern mountains.

Sierra Leone is divided into five administrative regions: the Northern Province, Northwest Province, Eastern Province, Southern Province and the Western Area. It is further subdivided into 16 districts. Freetown is the capital.

Sierra Leone has high levels of biodiversity with lowland rainforests, mountain forests, freshwater swamps, coastal ecosystems and marine ecosystems. The coastline covers 506 km and includes sandy beaches, cliffs, lagoons, estuaries, mudflats, creeks, bays and mangrove swamps. According to the West Africa Biodiversity and Climate Change program (WA BiCC,

2019), there are about 105,200 ha of mangroves along this coastline. The eight major river systems include the Great Scarcies, Little Scarcies, Rokel/Seli, Bankasoka, Jong, Sewa, Moa and Mano. The highest peak on the Loma Mountains is Bintumani, which rises to 1945 m while Sankan Biriwa in the Tingi Hills rises to 805m (GoSL, 2015a).

Figure 1: map of Sierra Leone



Source: (UN, 2014)

2.3 Socio-economic context

Sierra Leone has an unstable modern history marked by a civil war from 1991-2002 and the two-year Ebola crisis (2014-2016). These events and political instability have led to severe socio-economic repercussions and contributed to underlying vulnerabilities which persist today.

It is one of the poorest countries in sub-Saharan Africa and globally, with a GDP per capita of US\$499 in 2017. It ranked 182 out of 188 countries on the United Nations 2020 Human Development Index, below the average for countries with similar GDP per capita (UNDP, 2020a). The overall poverty rate in Sierra Leone is 57 percent, with 10.8 percent of the population living in extreme poverty (GoSL, 2019). 72.4 percent live in poverty in rural areas, while in Freetown, it sits at 18.5 percent. Poverty is spatial as the north is the poorest, followed by the south and the east. The Comprehensive Food Security and Vulnerability Analysis (CFSVA 2015) reported that 49 percent (3,475,135.37) of people in Sierra Leone are food insecure, of which the majority are poor smallholder farmers that are living in the rural areas of the country (GoSL, 2018).

The population is approximately 7.4 million (2018). Its growth rate has increased rapidly from 1.8 percent between 1985 and 2004 to 3.2 percent between 2004 and 2015. This has led to a 40 percent increase from about 5 million in 2004 to more than 7 million today. At the current rate of growth, the population will reach 10 million people by 2026 (GoSL, 2019). 40 percent of Sierra Leone's population are youth. There is high unemployment among low and semi-skilled youth, most of whom were unable to complete their education due to the civil war.

Sierra Leone's economy is small and undiversified. The country has a mixed economic system with prominent state enterprises and a private sector. The major sectors of the economy are minerals (diamonds, iron ore, rutile, bauxite), fisheries, tourism, agriculture and manufacturing. The economy has grown since the end of the civil war, driven by agriculture and then mining.

Two recent economic shocks - the Ebola epidemic and the collapse of iron ore commodity prices - lead to shrinking GDP growth. Since then, economic growth has fluctuated. Real GDP growth was weak in 2018 at 3.5 percent but improved slightly to an estimated 5.0 percent in 2019, driven by agriculture and services, and in the first half of 2019 by extractives (AfDB, 2019).

Sierra Leone is especially vulnerable to external shocks. The country does not have any control over the price of its major imported goods, such as rice and fuel, which account for over 50 percent of total import value. Additionally, its dependence on primary commodity exports makes it more susceptible to global fluctuations in commodity prices. The African Development Bank (AfDB) projects that international iron ore prices are projected to decrease from \$77.70 per dry metric ton in 2019 to \$72.40 in 2022. This is more evidence for the need for economic diversification away from extractive industries (AfDB, 2019). Covid-19 has added additional shocks and GDP growth is expected to fall to 1.7 percent. This is primarily due to the decline in commodity prices and depressed trade, foreign direct investment (FDI) inflows, tourism revenue following travel restrictions and declines in remittances.

Agriculture plays a crucial role in ensuring food security, poverty reduction and improving public health. As a women-dominated sector, it employs more than half of the country's formal and informal workforce and accounts for about half of GDP (GoSL, 2019). Although 75 percent of its land is arable, only about 10 percent is cultivated, mainly for food crops such as rice, cassava, yams and other root crops (GoSL, 2018). Farmers, however, have limited access to improved varieties of seeds, equipment and fertilizers. Additionally, farming is mostly rainfed,

making it more vulnerable to climate impacts (GoSL, 2018). Fishery activities which currently contribute about 10 percent of GDP, is a primary livelihood for 500,000 people and a main source of animal protein for over 80 percent of the population. Additionally, fish processing and marketing is a sector led primarily by women, similar to agriculture, making women's work more climate sensitive (GoSL, 2018).

2.4 Urbanization and infrastructure

According to the AfDB, Sierra Leone ranked 46 out of 54 countries on the Bank's Africa Infrastructure Development Index in 2020. Significant infrastructure investment is needed across all sectors, including water and sanitation, health, energy, transport, and information and communications technology (ICT). The poor infrastructural landscape in Sierra Leone has had a tremendously negative impact on economic diversification, health and livelihoods. Infrastructure is a centerpiece of the MTNDP and key to Sierra Leone's long-term development goals of becoming a middle-income country.

Access to affordable and reliable electricity is essential for human development. Currently, this is severely limited in the country. Biomass from wood and charcoal is the source of energy for 80 percent of the population, with related significant environmental and public health impacts such as deforestation and respiratory illnesses. As Sierra Leone addresses its climate goals in an integrated way, renewable and reliable energy sources are an essential component.

Many of the major causes of death and disability in Sierra Leone can be traced to challenges with environmental health and sanitation. Most of the country's population obtain water from unsafe open water sources and waterborne diseases are common. Almost 30 percent of the rural population practice open defecation due to lack of sanitation facilities. Sanitation is far below the reasonable SDG target of 66 percent for the country and the budget allocation for the sector is less than .02 percent of GDP (GoSL, 2019).

In Sierra Leone, urbanization has been accelerating since the civil war, compounding infrastructure issues. The urban population has almost doubled from 21 percent in 1967 to just under 40 percent in 2015. Freetown, which has grown to a population of more than 1 million, is rapidly increasing. From 2004 to 2015 the country's population increased 43 percent from approximately 5 million to 7 million (Statistics, Sierra Leone, 2016). Urbanization has not been met with sufficient resources to manage this fast growth and cities have lacked the financing to make the necessary investments to cope with the accelerated demand for infrastructure and services. This increases climate-risk vulnerability for an already vulnerable population, especially those in informal settlements or working in the informal sector.

2.5 Gender issues

Women are 51 percent of the population and suffer from gender inequality and discrimination. Sierra Leone stands historically in the bottom 10 of the Gender Development Index (UNDP, 2020b). Inequalities are apparent in terms of literacy rates, per capita GDP, access to land, and legal protection. Increased poverty among women in Sierra Leone results from a combination of factors, including limited skills and knowledge, unfriendly market structures that concentrate women in lower-paying work and restrict their access to capital and credit, traditional family structures perpetuating gender inequality through patriarchal norms of property ownership and inheritance, discrimination in the public domain, and weak and unequal trade and economic patterns (USAID, 2019).

Over the past decade, the government has developed and enacted a range of national laws, policies, and strategies to address gender inequalities. This included the passage of the three

'gender justice' laws, which address domestic violence, improve women's access to land through inheritance, and strengthen women's rights in marriage and divorce through a registration process. Several government entities have also been established to support gender equality including the Ministry of Social Welfare, Gender and Children's Affairs, the Human Rights Commission, the Family Support Unit in the Sierra Leone Police and the Legal Aid Board. This institutional development, however, has been insufficient. For example, women occupy less than 20 percent of elected positions although the Gender Equality and Women's Empowerment Bill, which establishes a minimum of 30 percent representation of women in governance at all levels. The MTNDP seeks to address this issue and includes empowering women as a key focus including supporting implementation of current legislation.

2.6 Environmental issues

Unregulated development has intensified overexploitation of land and marine environments which has resulted in substantial environmental degradation, loss of habitat and biodiversity, air and water pollution and their related social and public health impacts. In 2017, the Forestry Division of the Ministry of Agriculture and Forestry (MAF) calculated that less than five percent of the country's original cover in 1990 was still intact. This has continued to decrease at a rate of around 100,000 ha every year, mainly through large-scale and subsistence agriculture, commercial logging and logging for charcoal for energy (Office of the Chief Minister, GoSL, 2019).

Mining operations have also contributed to the high rates of deforestation, land degradation and destruction of farmlands, inadequate availability of clean water, poor air quality and noise pollution (Mabey et al., 2020). There are 48 forest reserves and conservation areas in Sierra Leone, representing about 4 percent of the land area (180,250 ha), although most of them are inadequately protected and managed.

Mangrove coverage in Sierra Leone is estimated to have decreased by approximately 25 percent since 1990 (WA BiCC, 2017). About 300,000 ha of wetlands and marine ecosystems are mangrove forests that are a critical source of livelihoods and ecological support along the coastal plains of the Western Area and other riverine areas across the country. Coastal ecosystems have been severely threatened by pollution, physical alteration and destruction of habitats, over-exploitation of resources, uncontrolled development, coastal erosion and climate change (EPA-SL, 2015). Environmental issues are due to a host of challenges, including a weak regulatory and legal framework, policy incoherence, conflicting government mandates, low management capacity, inadequate coordination, and limited public awareness and education, data, and finance.



Photo: Government of Sierra Leone

Climate impacts, vulnerabilities and risks

3.1 Introduction

This chapter provides the climate science basis to inform adaptation planning in Sierra Leone. The Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) indicates that Sierra Leone is among the most vulnerable African countries to the increasing frequency of climate change impacts and has been ranked third most vulnerable after Bangladesh and Guinea Bissau. (GoSL, 2015a).

Chapter 3 links the physical process of climate change and its impacts in order to understand how climate change will intersect with the existing development context presented in the previous chapter. The chapter is based on a review of currently available literature and analysis on climate phenomena and change in Sierra Leone. This review was supplemented by information provided by the World Meteorological Organization (WMO).

Actions to improve the overall climate analysis during the 2021-2023 development of the NAP will include:

- additional analysis on climate change processes and impacts affecting the agricultural sector, conducted by the Food and Agriculture Organization (FAO);
- additional projections based on the Sixth Assessment Report (AR6) of the IPCC, utilized to update the analysis.

3.2 General climate characteristics

Temperature

Sierra Leone's climate is characterized as tropical. The rainy season runs from May to November with an average temperature of 22-25°C. The dry season is from December to May with temperatures reaching 25-27°C, accompanied by dry, cool winds from the Sahara Desert. Humidity during the rainy season can reach 93 percent. It decreases inland to about

47 percent as the rainfall declines. There is little variation in the day length due to the country's proximity to the equator. It should be noted that prior to 2005, there were no automatic weather stations for the collection of data in Sierra Leone, although standard meteorological data was collected.

Precipitation

The rainy season is largely controlled by the movement of the tropical rain belt, also called the Inter-Tropical Convergence Zone (ITCZ), which oscillates between the northern and southern tropics over the course of a year. During this period, the average rainfall is 2,746 mm. Rainfall is highest along the coast, reaching 3,000 mm to 5,000 mm per year. Decreasing as it moves inland, it reaches 2,000 mm – 2,500 mm on the eastern border of the country (GoSL, 2018). Average monthly rainfall peaks in July and August with an average of 27 rainy days (GoSL, 2018). Weather stations were vandalized during the civil conflict, creating huge gaps in the precipitation record. There have been cases of water scarcity due to the delayed onset of the monsoon rains, and when the heavy rain has arrived, there has been extensive flooding (UNDP, 2012).

Figure 2: Normal precipitation and temperature for Sierra Leone (1981-2010).

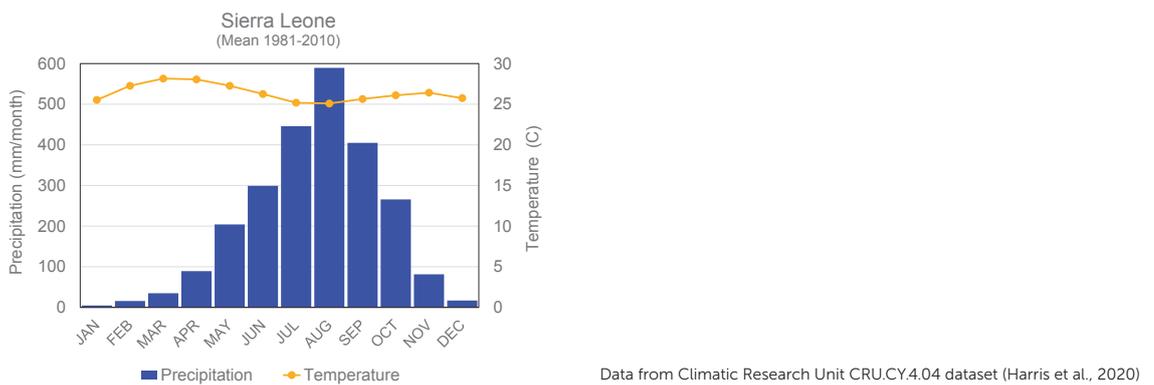
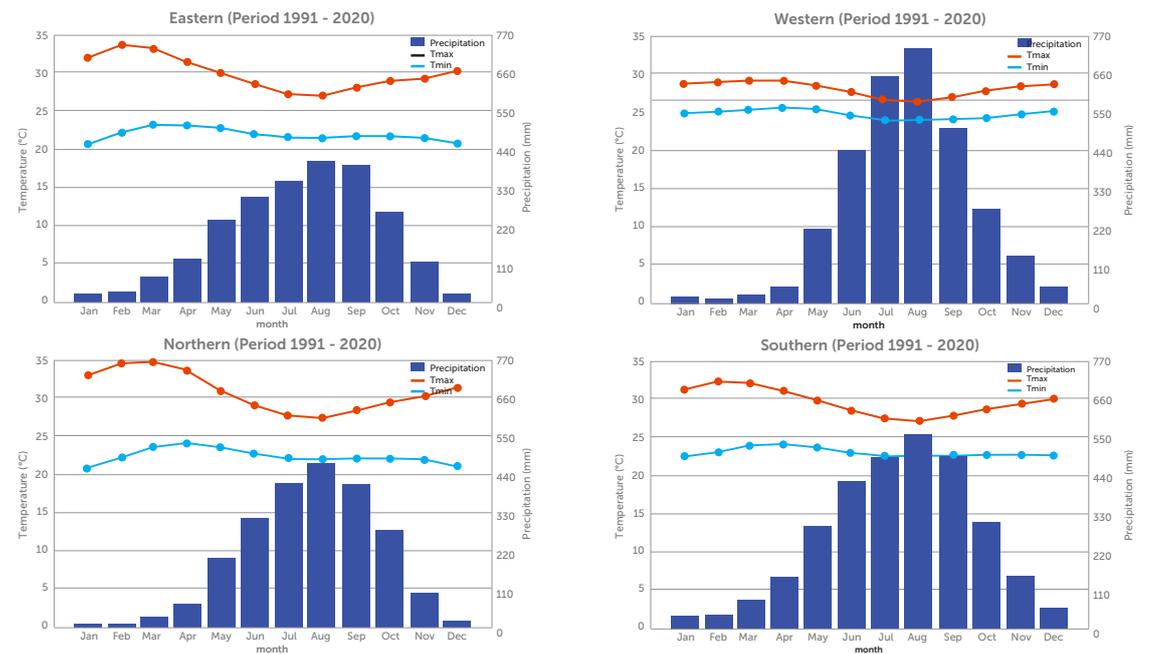


Figure 3: Monthly climatology of both precipitation and temperature for 4 provinces.



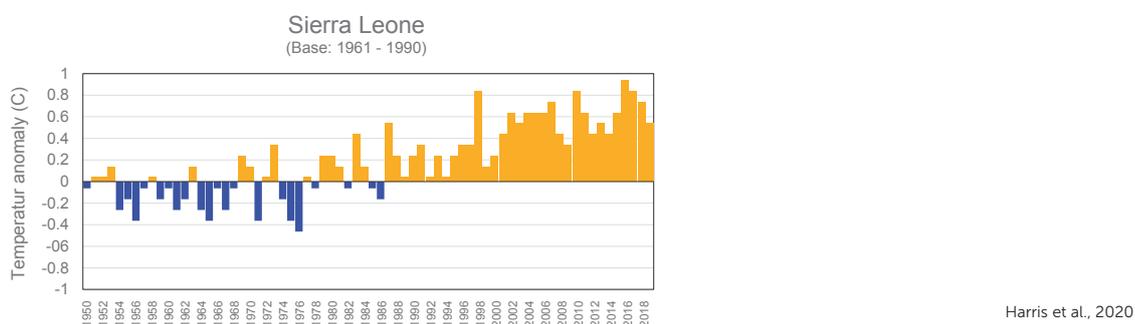
Source: SL-MET, 2021

3.3. Historical observations to assess variability, trends and extremes

Temperature

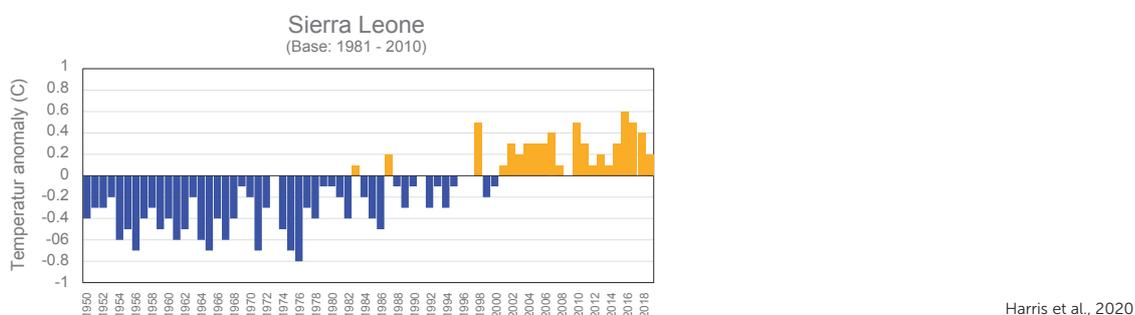
Mean temperature in Sierra Leone has been above normal in recent decades (figures 4 and 5). A signal of warming in Sierra Leone is found in relation to base periods 1961-1990 and 1981-2010. Overall warming of the country is more evident when anomalies are calculated using 1961-1990 as a base period, with increasing positive anomalies since the late 1980s. On the other hand, when anomalies are calculated using the base period 1981-2010, constant warming is observed in at least the last two decades.

Figure 4: Annual temperature anomalies (C) for Sierra Leone (1950-2019) in relation to the 1961-1990 mean, calculated from the Climate Research Unit CRU.CY.4.04 dataset.



Harris et al., 2020

Figure 5: Annual temperature anomalies (C) for Sierra Leone (1950-2019) in relation to the 1981-2010 mean, calculated from the Climatic Research Unit CRU.CY.4.04 dataset (Harris et al., 2020).



Harris et al., 2020

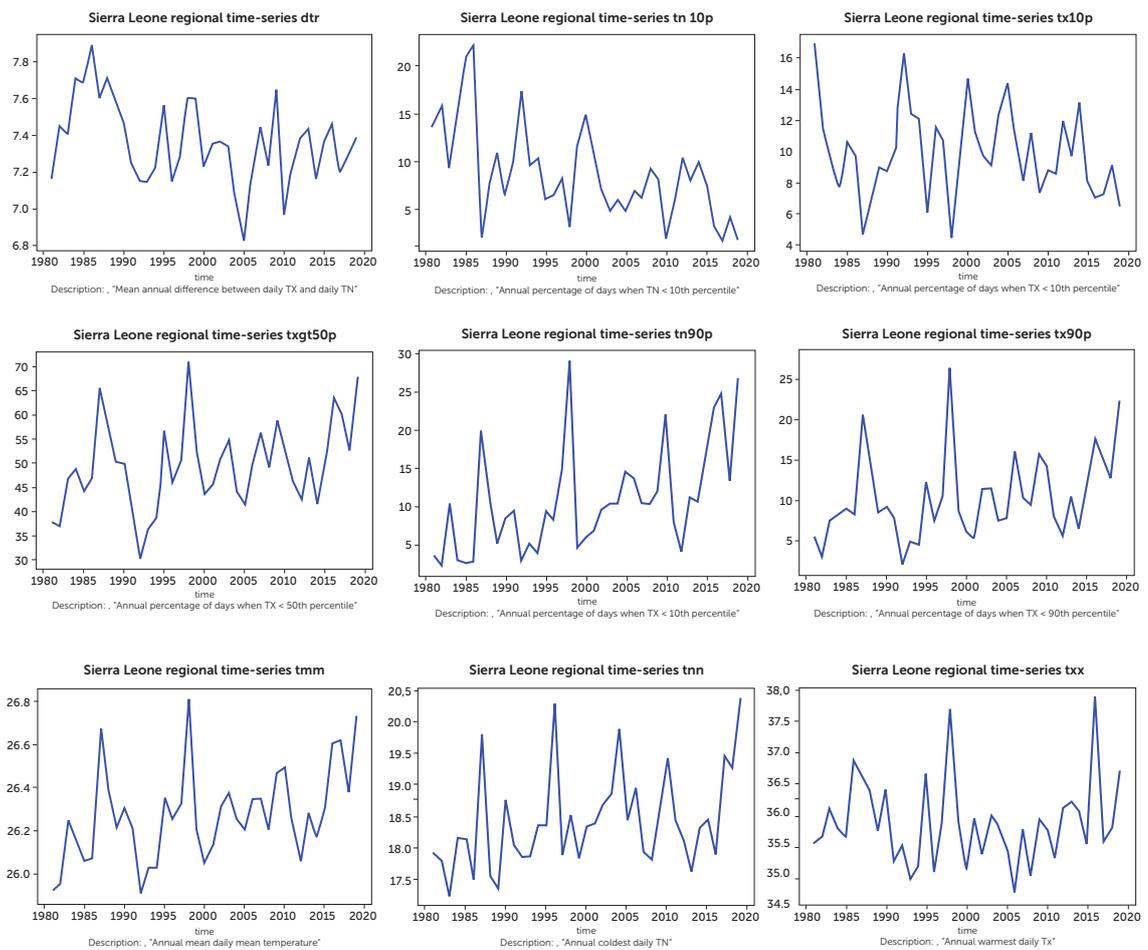
Based on the European reanalysis (ERA5; C3S, 2017), using 98 ERA5 daily temperature grid points over Sierra Leone, climate change indices and sector-specific climate indices reveal how climate change has impacted temperature in recent years at country level. Climate indices (figure 6) have been produced with Climpact3 - a software that allows calculation of climate indices from daily precipitation and temperature data (Alexander and Herold, 2015).

Between base period 1981-2019 (in relation to base period 1981-2010), evidence is found of a decrease in the diurnal temperature range (i.e. the difference between maximum and minimum temperature is decreasing). In addition, the annual percentage of cold nights (Tx10p, days when $T_n < 10$ th percentile) versus cold days (Tx10p, days when $T_x < 10$ th percentile) presents a decreasing trend for the last 40 years (figure 6; a,b,c).

On the other hand, for the same period, increasing trends are evident in the frequency of days, with maximum temperatures above the median (Txgt50p) as they are in the indices of warm nights (Tn90p, days when $T_n > 90$ th percentile) and warm days (Tx90p, days when $T_x > 90$ th

percentile), (figure 6; d, e, f). These changes are found in all temperatures - the annual mean, daily mean, the annual coldest daily minimum and the annual warmest daily temperature (figure 6; g, h, i). It is important to note that, other than general trends detected, inter-annual variability exists in the background of these climate changes, making it imperative to develop adaptation strategies for both positive and negative anomalies.

Figure 6: Figure 6: Regional timeseries of climate indices for Sierra Leone 1981-2029 in relation to the 1981 -2010 mean. From left to right: (a) DTR (-); (b) Tn10p (-); (c) Tx10p (-); (d) Txgt50p (+); (e) Tn90p (+); (f) Tx90p (+); (g) Tmm (+); (h) Tnn (+); (i) Txx (+) where (+/-) denote (positive/negative) trends.



Vazquez-Aguirre et al., 2021

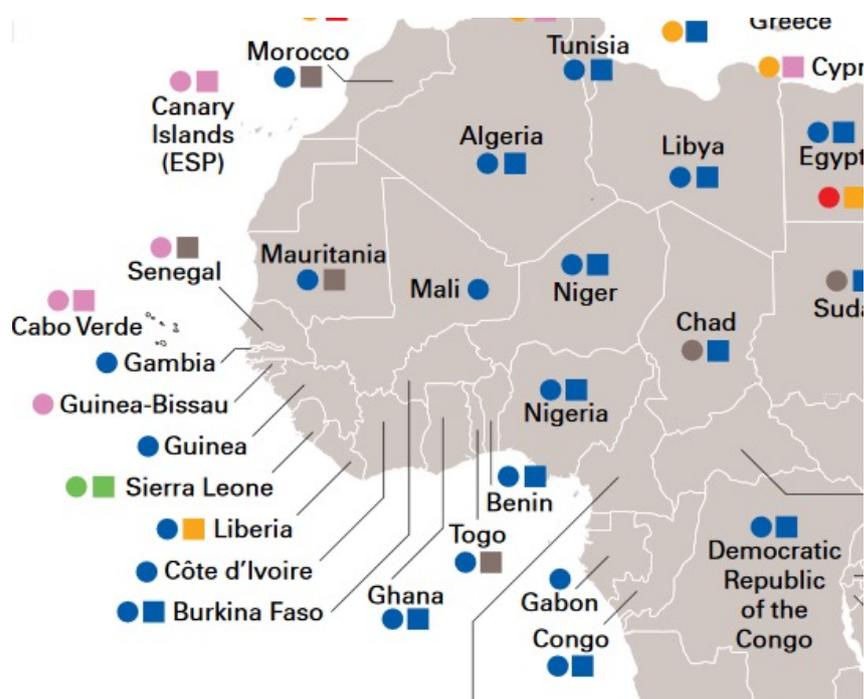
Precipitation

Assessment of long-term (1960-2003) rainfall conditions (McSweeney et al., 2010), demonstrates changes in rainfall patterns with average annual rainfall decreasing since 1960. There are, however, year to year fluctuations, with rotating periods of wetter and drier conditions. The 1960s and late 1970s were particularly wet, while the early 1970s and 1980s were very dry. In 2005 and 2006, rainfall was low. There are also seasonal precipitation changes. From September to November, there is now calmer and dryer weather where previously the period was characterized by frequent thunderstorms and short, heavy rainfall (GoSL, 2018). However, year to year variations could also result in heavy precipitation events. For example, most of west tropical Africa was affected by floods due to above normal precipitation during some months of the year (WMO, 2020).

Extreme events

Sierra Leone has been experiencing strong winds, thunderstorms, landslides, heat waves, floods and seasonal drought (GoSL, 2018). The pre-monsoon period (April-June) has stronger winds and more frequent rainstorms. Extreme weather-induced floods accounted for 90 percent of people affected by disaster in Sierra Leone (GoSL, 2018). From 1980 to 2010, floods affected 221,204 people, killing 145. This represents about 11 percent of people killed by disaster in the country (GoSL, 2018). While the whole country is vulnerable, the most heavily affected areas during recent years include: Kroo Bay, Susan's Bay, Granville Brook, Lumley area in Western Area, Port Loko and Kambia Districts, the Newton catchment area, Pujehun and Bo areas, Kenema and Moyamba Districts and the coastal beaches of the Western Area Peninsular (UNDP, 2012). More recently, in August 2017, flooding and mudslides in Freetown killed more than 500 people.

Figure 7: Map of deadliest and most costly weather, water and climate-related hazards for each country (Source: WMO analysis of 1970-2019 data from the Emergency Events Database of the Centre for Research on the Epidemiology of Disasters, CRED).



Source: WMO analysis of 1970-2019 data from the Emergency Events Database of the Centre for Research on the Epidemiology of Disasters, CRED)

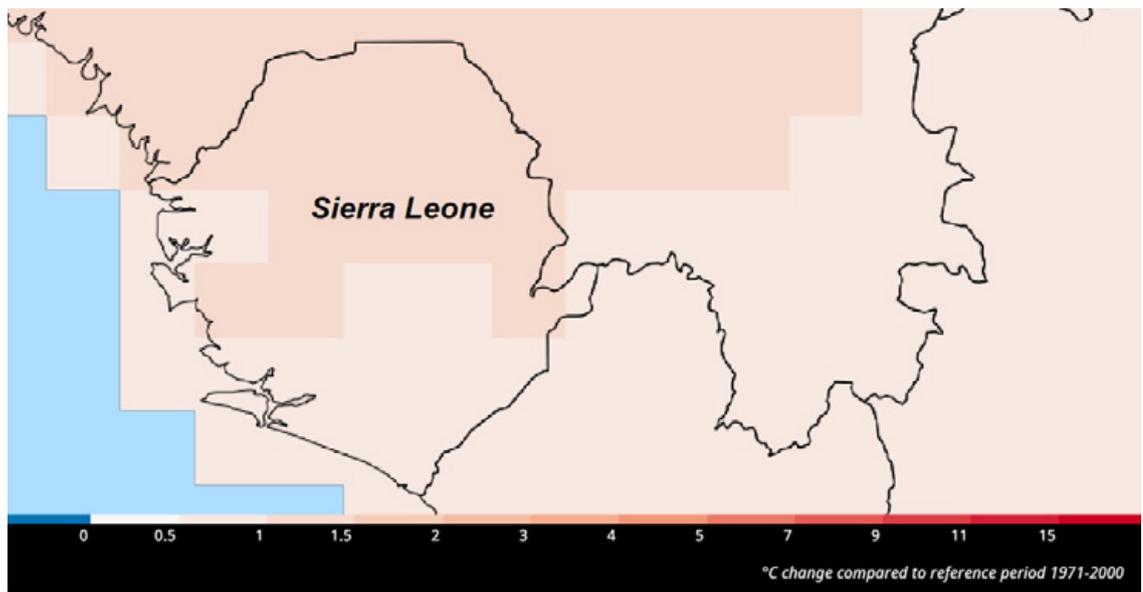
3.4 Climate change overview: projected changes of key climate characteristics

Temperature

Various general circulation models (GCMs) have been used to develop climate change scenarios for Sierra Leone. The climate models (HADCM2, UKTR, CSIRO, ECHAM and UKMOEQ) indicate a steady increase in temperature with little inter-model variance. There is an estimated 1°C - 2.5°C increase in average temperatures by 2060, with more rapid warming inland (USAID, 2016). The models predict an increase in temperature of about 5°C by 2100 (GoSL, 2018). Specifically for Freetown, there is a median change of 0.61°C from 2011-2040 compared to 1981-2010 (RCP 4.5). For the time period 2011-2040 compared to 1981-2010 (RCP 4.5), the monthly mean change lies between 0.26°C and 1.3°C (SMHI, 2021).

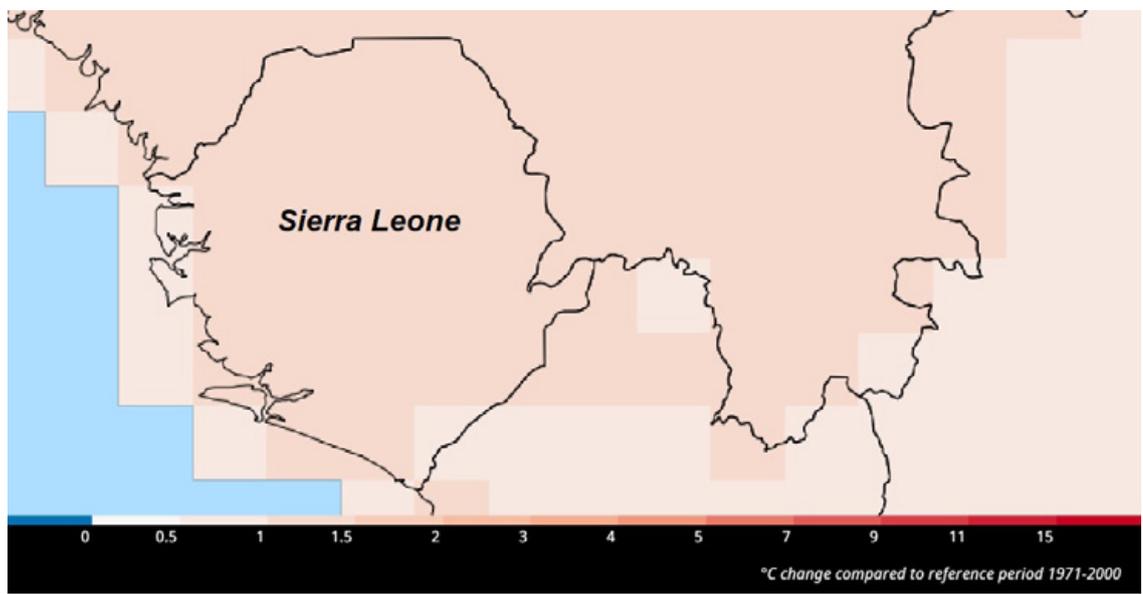
For the near-term future (2011-2040), climate indicators (SMHI, 2021), derived from the ensemble mean of bias-corrected models in CORDEX Africa, indicate that temperature in Sierra Leone, relative to the recent past (1971 – 2000), will increase in at least 1°C (medium emissions, RCP 4.5, figure 8) and up to 1.5 C (high emissions, RCP 8.5, figure 9) in the near future (2011 - 2040). The northern half of the country will have the highest increase in temperature in both cases.

Figure 8: Mean temperature change (C) for Sierra Leone for 2011-2040 compared to reference period 1971-2000 for the medium emissions scenario (RCP 4.5). Model ensemble median from CORDEX Africa (SMHI, 2021).



SMHI, 2021

Figure 9: Mean temperature change (C) for Sierra Leone for 2011-2040 compared to reference period 1971-2000 for the high emissions scenario (RCP 8.5). Model ensemble median from CORDEX Africa (SMHI 2021).



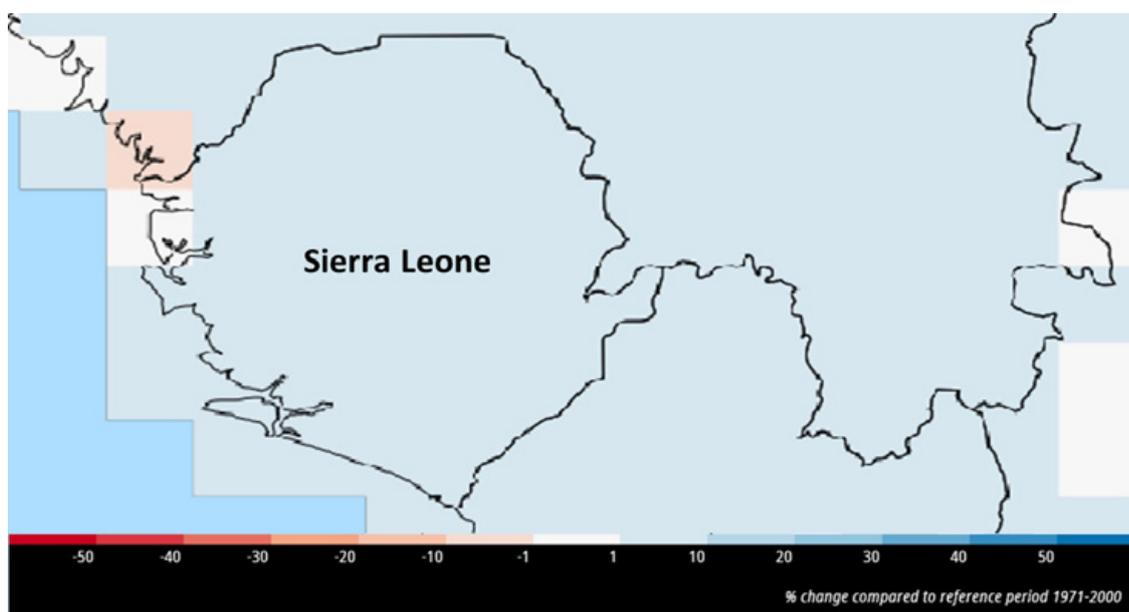
SMHI, 2021

Precipitation

According to an analysis by McSweeney et al., (2010) using various GCMs, by the 2090s, rainfall in July, August and September is projected to change by -27 percent to +29 percent and by -19 percent to +33 percent in October, November and December. The proportion of total annual rainfall that falls in heavy events is projected to increase. Seasonally, this varies between tendencies to decrease in January, February, March and to increase in July to December.

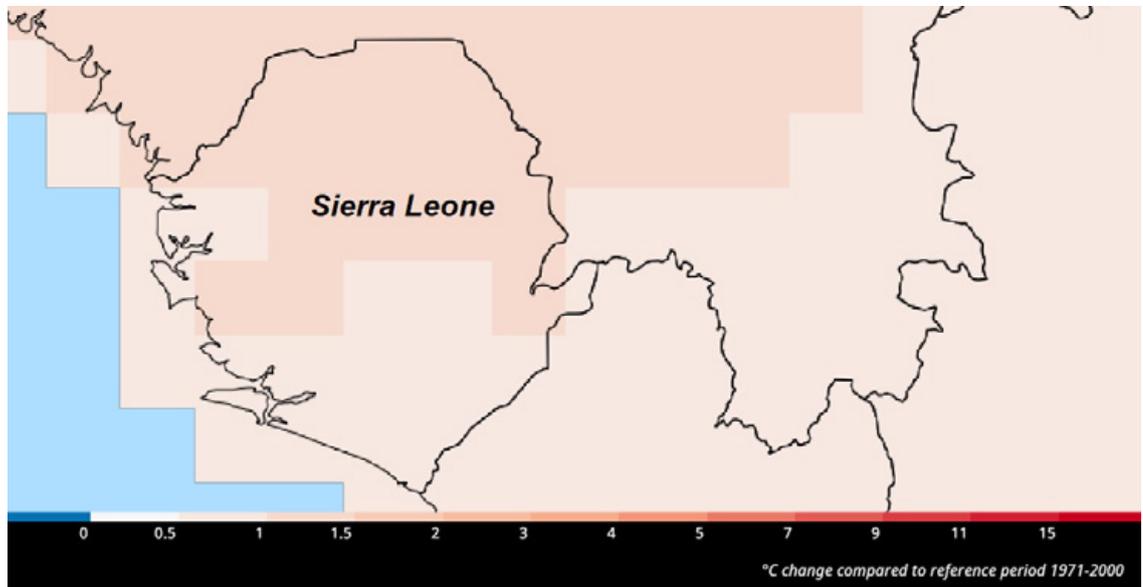
Precipitation projections from the ensemble mean of bias-corrected models in CORDEX Africa, indicate for the near-term future (2011-2040) and the entirety of Sierra Leone, a potential increase (up to 10 percent) in annual total precipitation, regardless of the emissions scenario (SMHI, 2021, figures 10, 11 and 12 below). However, increments in annual total precipitation do not necessarily mean that more precipitation is expected to occur constantly, but rather in the form of exacerbated extreme weather. Hence, urgent implementation or enhancement of weather and climate observation networks is needed, which will enable monitoring, prediction and assessment of extreme events. This will, in turn, feed climate actions.

Figure 10: Precipitation (annual mean) for Sierra Leone for 2011 – 2040 compared to reference period 197-2000 for the low emissions scenario (RCP 2.6). Model ensemble median from CORDEX Africa (SMHI, 2021).



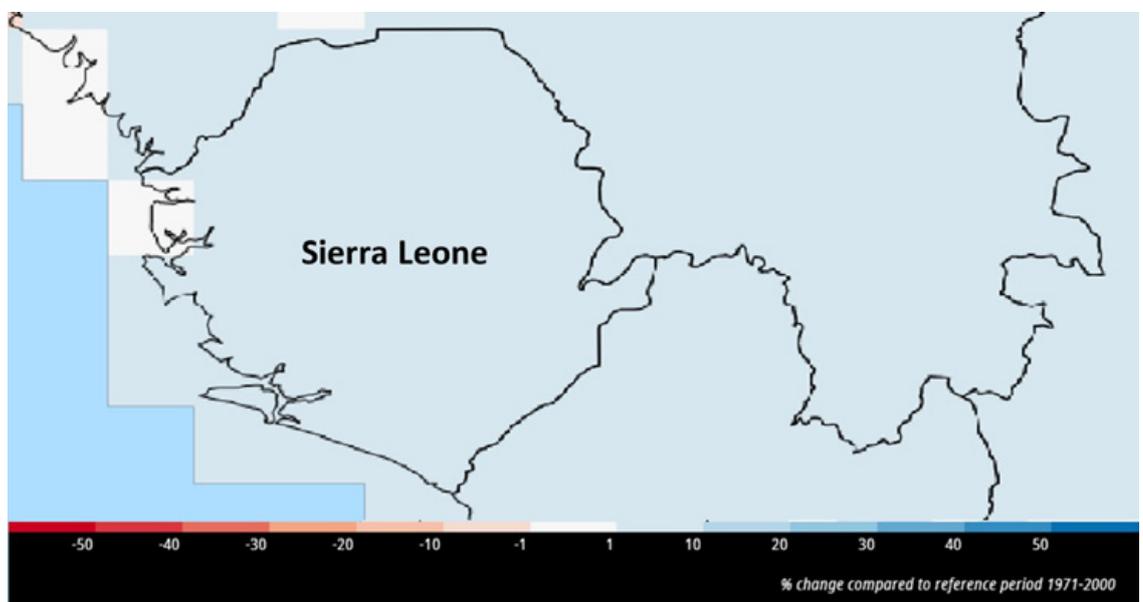
SMHI, 2021

Figure 11: Precipitation (annual mean) for Sierra Leone for 2011-2040 compared to reference period 1971-2000 for the moderate emissions scenario (RCP 4.5). Model ensemble median from CORDEX Africa (SMHI, 2021).



SMHI, 2021

Figure 12: Precipitation (annual mean) for Sierra Leone for 2011 – 2040 compared to reference period 1971 – 2000 for the high emissions scenario (RCP 8.5). Model ensemble median from CORDEX Africa (SMHI, 2021).



SMHI, 2021

Table 1: Projected precipitation and temperature changes under different scenarios

Country/Region	Scenarios							
	RCP 4.5				RCP 8.5			
	2021-2050		2051-2080		2021-2050		2051-2080	
	Mean	range	Mean	range	Mean	range	Mean	range
Precipitation	-5% to 5%	-20% to 30%	-5% to 10%	-30% to 30%	-5% to 10%	-20% to 30%	0% to 10%	-20% to 40%
Temperature	1°C to 1.8°C	0.5°C to 2.5°C	1.5°C to 2.5°C	1°C to 3°C	1°C to 2.3°C	0.5°C to 3°C	2°C to 3.5°C	1°C to 14.5°C

Extreme events

It is likely that climate change will magnify the intensity and frequency of natural disasters in the country. Climate variability and climate change-induced extreme weather events will continue to affect the incidence of existing socio-natural hazards. All projections indicate substantial increases in the frequency of days and nights that are considered hot in the current climate. Annual projections indicate that hot days will occur on 26-63 percent of days by the 2060s, and 37-84 percent of days by the 2090s, with these increases being more rapid along the coast than inland (McSweeney et al., 2010). Additionally, the proportion of annual heavy rainfall is projected to increase, especially from July to December. This increase, coupled with alternating periods of wet and dry years, is likely to increase the occurrence of extreme weather events.

Sea level rise

Sierra Leone does not yet have a fully functional marine meteorological station, which is vital for sea level assessment. It is generally accepted that it is rising and will continue to do so into the foreseeable future. The IPCC suggests that the rise between the present (1980-99) and the end of this century (2090-99) will be about 0.35m (0.21-0.48m) for the A1B scenario and 0.26-0.59m for the A1F1 scenario (IPCC, 2007).

3.5. Current and future sectoral vulnerabilities

The United Nations identifies Sierra Leone as one of the 46 least developed countries (LDCs). Its economic and social development factor poses a major challenge to development, making the country vulnerable to the impact of climate change. Efforts to improve the quality of life of its people have been hampered by extreme poverty, structural weakness in the economy, civil conflict, the Ebola disease outbreak of 2014 and the lack of capacity related to growth and development. All these are further aggravated by the negative impacts of climate change. The Notre Dame Global Adaptation Index ranked Sierra Leone 151 out of 181 countries in terms of vulnerability to climate change with high vulnerability and low readiness (ND-GAIN, 2018). A study has found that the mortality from multiple climate-induced hazards is high and getting worse as exposure is expected to increase (World Bank, 2017). The coast is particularly vulnerable to climate change because of the extent of mangrove forest loss, exposure of the coastal populace to the effects of sea-level rise and winds, and high poverty levels (WA BiCC, 2019).

This section provides current and potential climate vulnerabilities and impacts for all the priority sectors identified by the GoSL for the NAP process. Much of the information is based on the Third National Communication (to the IPCC) (TNC, 2018). As part of this effort, vulnerability and adaptation assessments were undertaken for agriculture, water resources,

human health and coastal zones. This was based on climate change impacts for years 2005 to 2035 and 2050. These do not include social vulnerability and are based on limited available data. More detailed vulnerability assessments that look at interconnected risks are necessary to develop robust adaptation plans, while also expanding the assessment to include all the NAP priority sectors. This is a priority for the next stages in the NAP process. While this section reviews existing information by sector, it is important to note that these impacts will interact with one another along with existing development stressors. It is therefore critical to link these analyses and understand the interactions between climate and development activities.

Agriculture and food security

Agriculture is an important livelihood, primary food source and large component of the economy. Current climatic conditions are ideal for the production of Sierra Leone's primary crops: rice, sugar cane, banana, coconut, citrus, cocoa, pineapple, yam and cassava. With climate modelling projections for 2050 demonstrating increased temperatures (approximately +1.30°C) and reduced rainfall (approximately -6 percent), this is likely to change. For instance, rice is the staple food crop in Sierra Leone and is grown mainly by small-scale farmers under rain-fed conditions. This makes agriculture and farmers' livelihoods especially vulnerable to changes in precipitation. This is compounded by persistent rural poverty and farmers without insurance or resources to invest in irrigation and other agricultural technologies. These climate impacts are likely to increase water requirements for crops, competition for water resources and the incidence of pest and disease outbreaks.

Increasing temperatures, changing precipitation patterns and increased intensity and frequency of extreme events such as droughts, threaten agricultural production and food security, which could lead to food shortages, hunger and malnutrition. Water shortages could also lead to the loss of food production and the necessity to import. Compounded by fluctuating world commodity prices and poverty, these climate impacts could further increase vulnerability, hunger and malnutrition (GoSL, 2018). These impacts are even more pronounced for vulnerable groups such as women and the disabled, particularly in rural communities.

Water resources and energy

Water quality and availability are highly vulnerable to climate impacts. Major water uses include domestic (drinking, cooking, hygiene), agriculture (irrigation), industrial (beer, spirits, soft drinks, cooling and waste disposal) and hydroelectric power production. Additionally, rural migration to Freetown during and since the civil conflict has increased pressure on urban water resources. Reliable access to clean water is essential for these multiple uses and for populations with implications for social vulnerability and poverty.

Shifting rainfall patterns have created water supply problems. This has led to decreasing access to water and reduced stream flow of rivers and streams. Stream flow has decreased as there has been a decrease in rainfall since the 1970s. For example, the stream flow of the Mano River fell by 30 percent between 1971 and 1989. This has large impacts on access to water since about 80 percent of the rural population receives water from surface sources, including many streams and ponds. These streams dry up during severe droughts which is likely to become more common. There are also seasonal variations where 40 percent of the protected water points suffer water shortages in the dry season (USAID, 2016), demonstrating that existing vulnerability is already acute.

While sources of water have decreased, consumption by industry and mining has increased. These water uses also lead to decreases in water quality, further lowering the overall clean water available for drinking. While irrigation is the primary non-industrial use of water, fewer than 30,000 ha of farmland is currently irrigated. A large percentage of the population has no access to clean water. This will be further exacerbated by climate change. Urban water is also vulnerable as the Guma Valley reservoir supplies 90 percent of the water for Freetown. It was designed for 300,000 people, while over 1.5 million people live in Freetown.

Hydropower, which supplies 60-70 percent of energy is also impacted by climate change as precipitation levels are less predictable and therefore more difficult to manage. Given that only 20.3 percent of the country has electricity, climate change policy needs to consider access to energy that can withstand future climate risks. The challenges facing the water and energy sector are aggravated by rapid population growth, climate change, deforestation, natural disasters, and uncoordinated urban planning.

Coastal zone management

Climate change is having impacts on coastal communities, fisheries, and coastal environments which are important ecosystems that support livelihoods, such as tourism. The coast is densely populated. It is home to 1,347,000 people and growing at about 2.5 percent annually. Fishing is central to the coastal economy, providing a source of income and livelihoods for fishers, fish processors and fish traders. It has led to a large secondary economy of boat building, wood cutting, fish transportation, basket weaving, fishing gear sales, and trading. It is believed that approximately 40,000 artisanal fishers and their families operate more than 12,000 fishing boats that create up to 50,000 jobs in the fisheries sector (WA BiCC, 2019). Decreasing river flows, rising salinity of estuaries, loss of fish and aquatic plant species and reduction in coastal sediments are likely to damage coastal economies and food security for coastal and riverside populations. As part of the TNC, local vulnerability assessments were conducted. These demonstrated the gendered vulnerability evident in coastal communities, indicating a need for adaptation measures to be targeted to women.

With rising sea levels, loss of coastal ecosystems, inundation from major rivers, flash floods during the rainy season and saline intrusions due to decreased low water flows in the dry season, there are increasing challenges to livelihoods. Coastal erosion is already a significant challenge in some coastal areas in Sierra Leone (such as Konakridee, Lakka, Hamilton and Plantain Island) where the coastline is shifting by about 4 to 6 meters a year (WA BiCC, 2019). Sea level rise has the effect of augmenting a decrease in the quality and quantity of ground water resources otherwise caused by human activities. If no action is taken, a total of 26.4 km sq is estimated to be lost to the sea. It is estimated that by 2050, the rising sea level will lead to \$46.8 million in building losses with 1,881 buildings affected (World Bank, 2018).

Infrastructure

Infrastructure in Sierra Leone is vulnerable to climate impacts across the country. This is especially true as the current infrastructure is non-existent or degraded due to the war and deferred maintenance. Roads are the primary mode of transport with limited or non-existent rail. River transport systems are often impassable during the rainy season. The coast which will be impacted by sea level rise, beach erosion and coastal flooding, is densely populated and is an important economic center with ports and tourist facilities. Coastal communities such as Kroobay and Moa Wharf lack flood escape routes due to the low elevation of roads. Other

roads also flood during the rainy season, making it difficult for farmers to transport their agricultural goods. Additionally, as future infrastructure investment occurs, construction materials and design should be climate sensitive and consider heat stress and flood risk.

Water and sanitation infrastructure are sensitive to storm surge, sea level rise and flooding. Wastewater collection and treatment facilities will easily be inundated by rising water levels as they are often situated at the lowest point possible, being dependent on gravity flow to operate. Climate-sensitive, innovative designs of sanitation infrastructure are therefore critical in adapting to climate change.

Health

Sierra Leone has one of the highest malnutrition and child mortality rates in the world, making the country's population extremely vulnerable to climate shocks. Incidents of high temperature morbidity and mortality are projected to increase. Rising temperatures are also associated with increased episodes of diarrhoeal diseases, seafood poisoning and increases in dangerous pollutants. As temperatures increase above 25°C, malaria infection is expected to rise. Malaria is the most common cause of illness and death in the country, with malaria-related illnesses contributing to 38 percent of child and 25 percent of all-age mortality rates. The most vulnerable groups include children aged under 5 years and pregnant women.

Waterborne diseases are also expected to increase with more frequent and intense flooding. Currently, heavy rains have increased the likelihood of the outbreak of communicable diseases. More intense dry seasons (with increased temperatures) in the north and west have been linked to reduced water quality and disease outbreaks. The last major cholera epidemic outbreak in 2012 caused 300 deaths and affected more than 20,000 people. In Freetown, from July-August 2011 and in August 2012, warmer seas contributed to a toxic algae bloom and increased cases of food poisoning from consumption of shellfish and reef fish. The country's Ebola outbreak revealed a deficient health system, including understaffed, unavailable or unaffordable health care that will be further stressed by climate change impacts (USAID, 2016).

Environment

Climate change and existing development stressors will have severe impact on ecosystems. With increased storm surges, flash floods and high winds, these conditions will be exacerbated by pollution, landslides, coastal erosion, deforestation, biodiversity loss and invasive species which will further stress ecosystems. Land cover is expected to change, with 60 percent of the country under tropical dry forest, 24 percent under tropical very dry forest, and 12 percent under sub-tropical moist forest, particularly in the south and east of the country.

This is the reverse of the current situation and indicates a northward shift in vegetation (i.e. from tropical rain forest to tropical dry forest) and will change the flora and fauna of these areas. The major challenges of forest management include, among others, poor governance, weak law enforcement, lack of coordination among sector ministries and illegal harvesting. Deforestation also increases both landslides and floods by removing tree roots that stabilize the ground.

Disaster management

The smallest change in temperatures will increase the likelihood and intensity of extreme weather events. Although it is generally agreed that the incidence of severe weather will increase, there is no clear picture on the likelihood of a general increase in storm frequency

(GoSL, 2018). Sierra Leone is vulnerable to the increasing severity of droughts, floods and severe storms and their impacts on sectors such as agriculture, fisheries, as well as infrastructure and hydroelectric power production. Of the total number of people affected by disasters in Sierra Leone in the last 30 years, 90 percent were affected by flooding (EM-DAT, 2019). Specifically, from 2008 to 2011, floods affected 221,204 people, killing 145 (11 percent of people killed by disaster). On Monday 14th August 2017, a devastating landslide occurred in Regent, Freetown. The landslide, which occurred in multiple phases, was located in an area which was already affected by severe flooding. Approximately 6,000 people were affected with 1,141 declared dead or missing. The total economic value of the effects of the landslide and flooding is estimated at about SLL237.37 billion (US\$31.65 million) according to the 2017 World Bank Loss and Damage Assessment Report (World Bank, 2017). These impacts are the result of a combination of climate variability and unsustainable land use practices (such as building on steep slopes) (WA BiCC, 2017).

Urban and rural seasonal flooding, recurrent flash flooding and coastal flooding are commonly observed, leading to seasonal flooding of agricultural fields and low-lying areas, flooding along coastal areas with flood waters overflowing into roads and into residents' homes. The most affected areas in the recent past include: Kroo Bay, Susan's Bay, Granville Brook, Lumley area in Western Area, Port Loko and Kambia Districts, the Newton catchment area, Pujehun and Bo areas, Kenema and Moyamba Districts and coastal beaches of the Western Area Peninsular (GoSL, 2018). There are also transboundary issues as heavy rainfall in neighbouring countries may cause floods in Sierra Leone due to three overflowing rivers: the Great Scarcies and Little Scarcies rivers from Guinea and the Mano from Liberia (World Bank, 2017). There are also cascading impacts from flooding. Many communities in Sierra Leone, especially the rural poor, depend on streams and swamps, which dry up during severe droughts. Floods overwhelm existing systems, contaminating drinking water and creating sewerage overflows.

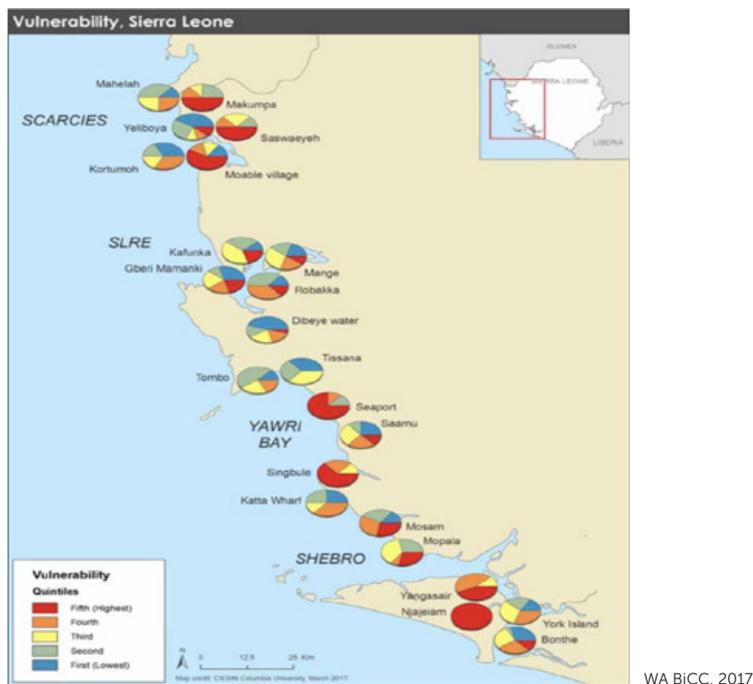
3.6 Vulnerability assessments

A comprehensive national vulnerability assessment has not been conducted in Sierra Leone. Those that exist are focused on a sector or area. Many have been produced through donor financed programmes. These small-scale assessments have not been collected in one place or reproduced nationally. There is no comprehensive assessment that has considered social and ecological interactions, urban and rural issues and the interactions between climate and non-climate risks. Additionally, there has been no gender-sensitive analysis of vulnerabilities and risks. There is also a need to explore how transboundary factors will influence vulnerability such as changes in transboundary rivers, remittances and commodity markets. A comprehensive series of gendered vulnerability assessments are a top priority for the next stages in the NAP process.

Sierra Leone's TNC includes limited analysis of vulnerability on agriculture, water resources, health, and coastal areas (GoSL, 2018). The policy states, "The UNDP Adaptation Policy framework methodology provided the overarching approach for the V&A [vulnerability and adaptation] assessments, coupled with the most appropriate existing analytical tools. Stakeholder engagement and relevant consultations were priorities for the sectoral assessments, to the extent possible under the timeframe and funding circumstances. These included various workshops in various parts of the country throughout the process to invite technical inputs on the V&A assessments and the resulting policies and measures recommended." It is mostly based on studies carried out in other countries and there are significant gaps in the analysis. The document explicitly calls for more national and regional vulnerability assessments.

The Sierra Leone Coastal Vulnerability Assessment was conducted as part of the USAID-funded WA BiCC program. It examined the vulnerability of fishing communities and ecosystems through household surveys, participatory rural appraisals and mangrove forest inventories. This study is unique for its socio-ecological approach and its coastal variation. An overall vulnerability index, which combined community and ecological vulnerability indices, demonstrated “higher vulnerability in the Scarcies and Shebro regions, linked to high exposure (Scarcies) and low adaptive capacity (Shebro), while SLRE and Yawri Bay have somewhat lower overall vulnerability, despite higher sensitivity of the communities” (WA BiCC, 2017). An image of the social vulnerability is below.

Figure 13: Map of the proportion of households in each of the five quintiles of vulnerability, defined over the total sample of households (WA BiCC, 2017).



The World Bank funded a Multi-City Hazard Review and Risk Assessment in September 2018 (World Bank, 2018). It provides an analysis of the qualitative and quantitative natural hazards and risks for three cities: Freetown, Makeni, and Bo. The coastal erosion hazard and risk assessment and the sea level rise assessment for Freetown use the IPCC global Atmosphere Ocean General Circulation Model to provide a scenario analysis for 2050. The flood and landslide assessments do not incorporate climate risks.

3.7 Vulnerability and climate data opportunities, challenges and needs

According to the National Communications and consultations there are various climate data and vulnerability assessment opportunities, challenges and needs.

Data collection, availability and research

- Current data collection for the National Communications is limited, does not include all sectors and is not compatible with current meteorological models. There is also limited downscaled information. SL-MET is collaborating with the EPA-SL to develop a template for collecting climatic and non-climatic data that follows international guidelines proposed by the UNFCCC, WMO and other supervisory bodies. This is an important first step.

- A thorough assessment of climate services capacities, including all climate-sensitive institutions, is needed to analyze and identify training, technical and financial support.
- There is limited information on local and national vulnerability, impacts and risks. Comprehensive vulnerability and risk assessments need to be conducted for all sectors and regions and made accessible. These should be gender sensitive and incorporate youth and people with disabilities. The data collection process and subsequent assessments should be used as opportunities for policy and community learning.
- Strengthen the climate database for all institutions in the country, provide up-to-date computer facilities and train experts in the input and storage of climate related data. For example, Sierra Leone has not yet implemented the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS) which respectively provides a framework for WMO observing systems and connects all National Meteorological and Hydrological Services and regions together for data exchange, management, and processing (WMO, 2019).
- Retrieval of data lost during the civil war since only a small portion has been retrieved thus far (WMO, 2019). Some of this data is in Niger and the United Kingdom and needs to be collected and integrated into the current systems for analysis.
- Intensify climate change research. Collaborate with national and international institutions that are in the field of research in climate change.
- Currently there is no access to reliable information for effective climate risk management. The lack of a climate information communication system enhances the country's vulnerability. Without appropriate information and climate risk management tools, policies will lack the right navigation to govern climate risks in all sectors.
- There is limited dissemination of available forecasts. Furthermore, these forecasts are not packaged in a format that is accessible to end-users such as district planners or policy makers.
- Consistent data availability for hydrological data is needed. For instance, Sierra Leone does not possess a quality management framework for hydrology which is based on reliable hydrological data and information as key inputs to the management of water resources (WMO, 2019).

Equipment and technical needs

- Procurement and installation of meteorological stations for the collection and monitoring of all categories of data (including aviation, agricultural, marine, and climatological data). For example, there is a need for approximately 200 agricultural stations. There are currently 8 weather stations and more are needed so that each of the 16 districts has a weather station. This will improve the ability to monitor the micro-climates within Sierra Leone and to understand climate change and its possible impacts. An increase in the amount of weather stations would also aid the provision of agricultural data so that there is better understanding of the climatic conditions. Finally, an increase in the number of automatic weather stations would also assist in providing data for ground truthing radar systems.
- Providing automatic recording equipment and instruments for continuous recording of meteorological, hydrological and climatological elements and phenomena.
- There is a need for procuring forecasting models and software.

Institutional and human capacity needs

- SL-MET has varying levels of capacity for different types of data. It has significant capacity in aviation but less capacity in hydromet, marine met, and agromet, which needs addressing.
- The EPA-SL has a Climate Change Secretariat that coordinates the development of the various convention reports. The Agency has the capacity to conduct environmental monitoring, but lacks the capacity to conduct a strong vulnerability assessment, adaptation modelling and adaptation planning. This needs to be strengthened.
- Inadequate staff and poor facilities for weather forecasting and related activities have undermined the ability of the SL-MET to provide adequate support and information to all sectors and stakeholders so that they can better adapt to the impacts of climate change. For instance, there is not enough staff to collect data from manual stations and training is needed for people to work at new stations as they are built.
- The need for capacity building and training for technical and non-technical staff in the SL-MET, National Water Resources Management Agency (NWRMA) and Disaster Management Agency (DMA) should be addressed in order to meet present and future challenges. This includes data collection, management and decision-making on climate change, natural hazards and hydrology.
- NWRMA needs capacity and technical support to revive the National Hydrological System.
- There is a need to train people to repair and maintain stations rather than relying solely on international experts.
- Strengthen and capacitate Statistics Sierra Leone so that it can respond to the data and information needs of the country through a coordinated and concerted approach with the various stakeholders.
- In the short term, there needs to be more experts trained in meteorology. Currently, this training must occur internationally as there are no WMO accredited institutions in the country. In the longer term, there needs to be an accredited university programme established in the country including a research programme on environmental modelling.
- Address gaps in technical skills for generation information on climate change. For example, downscaled or long-term forecasts are non-existent and/or not utilized.
- Facilitate collaboration with national, regional and international agencies.
- Data and information are fragmented across the various sectors and it is often difficult to ascertain their credibility and relevance.
- There are plans to tailor weather messages to the agricultural sectors next year. There still needs to be improved access to data for all stakeholders, including local councils, to inform decision-making and tailor access to information for other sectors.
- Currently, understanding of forecasts is poor as is the dissemination of information. Stakeholder and community training is needed to interpret forecasts.
- To integrate local knowledge into forecasting and understanding of climate impacts. Chiefdom and District Surveillance Groups could be formed. This would create a network of local observers and monitors that can work together to document and share observations on climate trends, impacts and consequences, using a blend of local knowledge and scientific methodologies and tools.



Photo: Government of Sierra Leone

Adaptation related policies, plans and programmes

4.1 Introduction

This chapter presents existing policies and plans related to the formulation and implementation of the NAP. It explores adaptation plans and policies, as well as plans related to formulating a comprehensive NAP. The chapter also describes a number of opportunities, challenges and gaps with respect to alignment with existing strategic, legal and regulatory frameworks.

4.2 Climate change adaptation plans and policies

Sierra Leone has rapidly increased its climate policy portfolio since its NAPA was produced in 2007. Since then, it has developed a National Climate Change Policy, NCCSAP, a National Determined Contribution (NDC) and three National Communications to the UNFCCC. It has also begun its NAP process prior to this document with a NAP Framework and a NAP Communications Plan. All these documents lay the foundation for the NAP.

Timeline

2007	NAPA, INC
2012	National Climate Change Policy Framework (NCCPF), Second National Communication to the UNFCCC (SNC)
2013	National Development Plan – the Agenda for Prosperity (2013-2018)/Third Generation Poverty Reduction Strategy Paper (2013-2018)
2015	NDC, NCCSAP
2018	TNC
2019	NAP Framework
2020	NAP Communications Strategy, Fourth Generation Poverty Reduction Strategy Paper/MTNDP

National Adaptation Programme of Action (2007)

Sierra Leone has linked adaptation with its national development planning and international development goals from the start. The NAPA document was based on the goals and objectives of the Poverty Reduction Strategy Paper (PRSP) and the Millennium Development Goals (GoSL, 2007b). The NAPA specifically linked to PRSP goals to improve public health and biodiversity in support of sustainable development, while its projects were focused on immediate needs and the most urgent adaptation concerns in six sectors.

National Climate Change Policy Framework (2012)

Developed through a participatory and iterative process, this NCCPF was developed following an assessment of climate risks based on its INC, NAPA, and SNC. One of the policy goals is to enhance national capacity to adapt to climate change. Its mission is "...to strengthen national initiatives to adapt to and mitigate climate change in a participatory manner that involves engaging all sectors of Sierra Leone's society with appropriate and adequate consideration for the women, the youth, the aged, the poor and other vulnerable groups within the overall context of advancing sustainable socio-economic development in Sierra Leone" (2012a).

The policy makes clear the need for mainstreaming of adaptation and the links between its climate change and development planning. It states, "...climate change mainstreaming is imperative, which involves the integration of policies and measures to address climate change into our sectors and development planning and decision making, so as to ensure the long-term sustainability of our investments as well as reduce the sensitivity of development activities to both today's and tomorrow's climate." Mainstreaming climate change into development is viewed as necessary for building a better developed and more resilient society.

National Climate Change Strategy and Action Plan (2015a)

The NCCSAP has moved Sierra Leone's climate policy forward. It includes adaptation actions in the agriculture sector, adaptation to sea level rise, tourism sector, fisheries, forestry, health and water resources. Also contained in the plan are projects with activities and costs, and a resource mobilization strategy. The Plan will further encompass issues such as early warning systems, flood prevention infrastructure, capacity building and livelihood support and will be updated in 2021 to be cross-sectoral and focus on vulnerable sectors and communities.

National Communications to the UNFCCC

Sierra Leone has completed three National Communications to the UNFCCC. The INC was completed in 2007, the SNC in 2012 and the TNC in 2018. The INC includes a chapter on vulnerability and adaptation (GoSL, 2007a). Adaptation measures were included for agriculture, forests, water resources and coastal zones with particular focus on public health. The policy development process produced the first vulnerability assessments for the country. The SNC focused on agriculture, forestry, water resources, human health, coastal resources and human settlements and tourism (GoSL, 2012b). The TNC focused on agriculture, water resources, human health and coastal resources and human settlements (GoSL 2018). All three include vulnerability and adaptation interventions by sector based on limited data.

Nationally Determined Contribution to the Paris Agreement

The NDC's vision is "...to create a new era for a harmonious relationship between the economy, environment, social and long-term sustainability; shifts to a green economy and provides for the identification and implementation of various mitigation and adaptation measures." (GoSL,

2015b). The NDC, which was updated in 2021, aims to enhance adaptive capacity, strengthen resilience and reduce vulnerability by half by 2030. It also seeks to mainstream climate considerations into sustainable development strategies to build resilience at local level, while promoting environmental benefits in an integrated manner at national level. The revised NDC updates and strengthens the first NDC for both mitigation and adaptation contributions, informed by improved data collection, in-depth technical analysis and extensive stakeholder engagement. It is linked to previous climate and development policies and the initial NAP, in particular the National Climate Change Plan, NCCSAP and NAPA. The NDC is iterative, and it will be reviewed to inform the MTNDP. The NDC also includes the intention to link NAP and NDC actions moving forward. It is also explicitly tied to the NAP, with actions listed in the NDC implemented through the NAP.

Additionally, the NDC makes clear that gender mainstreaming is a key component of the MTNDP and NDC. This adds to the mandate for a gender responsive NAP process.

NAP Framework

The NAP Framework (2019) was a first step in formulating and implementing the NAP. It aims to set objectives for and determine the principles, approaches and structure of the NAP process for the country. It serves as a basis for the NAP as part of an iterative and consultative policy process.

Sierra Leone's climate change communications strategy under the National Adaptation Plan (2020)

The communication strategy provides short- and mid-term direction on how the government can utilize information strategically and effectively to support the NAP process. Its goals are to: (1) improve awareness and understanding of the GoSL's climate change adaptation initiatives and the NAP process through effective communication, education and training; (2) promote an inclusive and participatory approach to adapting to climate change so that the GoSL can unite under a common vision and speak with one voice on the issue of addressing climate change impacts; (3) generate support and political commitment among key decision-makers for the NAP process and for prioritizing, managing and resourcing efforts to address climate change adaptation issues; (4) persuade the general public and the private sector of the need for a significant and timely investment in climate change adaptation from both public and private sources within and outside of Sierra Leone; and (5) encourage Sierra Leoneans to embark on activities that strengthen the country's resilience to climate change.

Coastal Climate Change Adaptation Plan

The Coastal Climate Change Adaptation Plan (CCCAP) was produced through a USAID project and designed to be integrated into the NAP process. The primary vision of CCCAP is to identify and implement measures to conserve and make the best use of Sierra Leone's coastal resources while contributing to SDGs for the benefits of present and future generations. The Plan employs an ecosystem-based approach to climate change adaptation on the coast of Sierra Leone as part of efforts to foster climate resilience in the country. This will hopefully be replicated in West Africa. The ultimate outcome is to have coastal landscapes in Sierra Leone that are organized and furnished with the tools to plan for, and adapt to, the impacts of climate change.

Strategy for the Development of a Climate Change Abatement Economy (2010)

The Strategy focuses on opportunities for earning forest carbon credits through the implementation of REDD/REDD+ programmes. It articulates government goals to develop and manage 2.5 million ha of forests in the next decade, with the aim of assisting income-generating activities of non-timber forest products, sustainable tree crops and ecotourism.

National Framework for Climate Services

The National Framework for Climate Services (NFCS) for Sierra Leone is a response to the declaration of the World Climate Conference-3 held in Geneva in 2009. It is set on the premise that a national framework is necessary for strengthening the design, delivery and application of climate services across sectors and communities. The action plan allows actors within the climate action arena to meet the Global Framework for Climate Services requirements and contribute to wider national and global efforts that seek to address the effects and impacts of climate change. It will support the integration of climate science and action into decision-making at different levels and across scale, and thus, ensure that the country is fully prepared to generate and use information on the risks and vulnerabilities that may cause severe losses and damage in the long-term. This makes the NFCS one of few unique country-level attempts to highlight the importance of a coordinated action to address requirements for engaging globally on matters of climate change.

4.3 Other relevant documents and policies

The National Environmental Policy

The first National Environmental Policy (NEP) was approved in 1990 and revised in 1994 and 2002. It is a milestone document for environmental management with important implications for climate change. This policy highlights the general principles to be considered by all activities that have potential implications for the environment, in particular outlining the main environmental goals and objectives that underlie Sierra Leone's aspirations for sustainable development. Its relevance to climate change can be viewed in terms of the restraints that it poses to the uncontrolled use of forests, along with their natural resources.

The National Environmental Action Plan (2002)

Unlike the NEP, the National Environmental Action Plan (NEAP) sought to identify specific activities that needed to be undertaken in order to protect Sierra Leone's environment. Most of these activities, which were intended to be integrated into any future National Development Plan (NDP), relate to such issues as environmental education and training, environmental information systems (EIS), and the integration of NEAPs into NDPs. Because this plan also ranks and prioritizes environmental actions with a strong emphasis on protecting security of tenure, it has serious implications for climate change.

The Environmental Protection Agency Act (2008) and Environmental Protection Agency (Amendment) Act (2010)

The Act created the Environmental Protection Agency and raised the profile of the environment within the administrative structure. This Act mandates that EPA-SL, among others, advise the President on the formulation of policies on all aspects of the environment and, in particular, make recommendations for the protection of the environment. The Act appoints EPA-SL as the environmental focal point to ensure that Sierra Leone complies with relevant Multilateral Environmental Agreements (MEAs).

Sierra Leone Meteorological Agency Act (2017)

This Act establishes the SL-MET as the sole authority on providing meteorological and climatological services across Sierra Leone.

National Disaster and Risk Management Policy (DRAFT)

Sierra Leone developed its National Disaster and Risk Management Policy to address disasters and hazards which impose serious impediments to its development. It aims at (i) decreasing vulnerability among people and communities at risk from shocks, (ii) decreasing social, economic and environmental impacts and consequences of disasters, and (iii) avoiding setbacks on the national path towards sustainable development.

National Drought Management Plan (2018)

The National Drought Management Plan is designed as a contingency plan for Sierra Leone and funded by the United Nations Convention to Combat Desertification (UNCCD). It presents general guidelines for developing drought preparedness, as well as planning and managing actions for monitoring, impact prediction and assessment, and mitigation. It promotes incentives for a more proactive, anticipatory approach to drought management, while emphasizing the need to learn from previous efforts to manage related risks and impacts while documenting, evaluating and sharing information at multiple levels.

National Land Degradation Neutrality target setting process (2018)

In the Land Degradation Neutrality (LDN) target setting process, Sierra Leone's Technical Working Group identified and established hotspots of degraded areas using three indicators: land cover, land productivity dynamics and soil organic carbon content. The hotspots provided useful guidelines for establishing baselines of land degradation from which the national voluntary targets were set.

The National Biodiversity Strategy and Action Plan

Developed in 2003, the National Biodiversity Strategy and Action Plan was formulated based on the NEAP. It highlights the condition of Sierra Leone's biological and ecological resources and the threats posed to their existence. This plan specifically identifies a range of cross-sectoral actions needed to ensure the effective protection and sustainable use of the country's resources. Several of these priority actions, which relate mainly to such thematic issues as forest management, land degradation, and soil and water management, have also been outlined among the key priority activities of the NAPA.

Integrated Coastal Zone Management Plan 2016-2020 (2015) (ICZMP)

This is the first plan of its kind for Sierra Leone and was created to implement recommendations from the State of the Marine Environment report. The goal of the Plan is to conserve the coastal and marine environment and to ensure that its resources are utilized in a sustainable manner for the benefit of coastal communities and the country as a whole.

Off-grid Solar Energy Strategy

This Strategy and monitoring mechanism reviews and consolidates the many documents, plans and policies in current use in the sector to develop deeper insights into research and debates relevant to off-grid solar energy issues. This includes Stand-Alone Systems (SAS), Solar Home Systems (SHS) and productive uses of solar power. It also identifies gaps, overlaps, and

topics that should be included in the National Electrification Plan. It serves as a benchmark for examining current off-grid SAS and SHS solutions, maps stakeholders in terms of their influence and interest in these systems and offers a reference point for assessing progress made with the implementation of any future off-grid solar strategies and action plans.

National Policy on the Advancement of Women and the National Policy on Gender Mainstreaming

These policies were adopted in 2009 and 2019 respectively. They have been reinforced by the National Gender Strategic Plan (2009-2012) and the Sierra Leone National Action Plan (SILNAP) for the full implementation of the United Nations Security Council Resolution (UNSCR) 1325 on Women, Peace and Security and the UNSCR 1820 on Sexual Violence.

4.4 Climate change adaptation projects and programmes

There have been numerous climate change adaptation (CCA) projects and programmes carried out by national and international agencies. Many of these projects have been implemented in collaboration with civil society organizations. They have had numerous positive impacts including diversification of the SL-MET's capacity for information collection, processing and advisory services, increased awareness of climate change, support for communities and civil society, and piloting of adaptation actions. This demonstrates that adaptation actions across sectors and high donor dependence of adaptation are effective in Sierra Leone.



Photo: Government of Sierra Leone

Table 2: CCA Projects and Programmes

Name of project	Objective(s)	Value	Implementer	Funder	Delivery period
National early warning system on food and nutrition security in Sierra Leone	Enhance the capacity of government and its partners to establish and operationalize a Food Security and Nutrition National Early Warning System (NEWS) both at national and district levels	€652,841	FAO	Irish Aid	2013-2017
Linking agriculture, natural resource management and nutrition	Leverage agriculture, natural resource management, income-generating activities and empowerment of women for better nutrition	€468,500	WHH	Irish Aid	
Increasing community access to, and quality of, water, sanitation and improved hygiene practices in Freetown and Kenema	Increase community access to water and water quality, and improve sanitation and hygiene practices in Freetown and Kenema	€556,404	Goal	Irish Aid	
Increasing the resilience of Freetown and Tonkolili's poor and vulnerable to hazards	Increase the resilience of the extremely poor/vulnerable to hazards	€159,150	Concern Worldwide	Irish Aid	
Strengthening climate information and early warning systems for climate-resilient development	Improve climate monitoring and early warning systems through a series of targeted interventions	\$3.9 million	UNDP	GEF	2013-2018
Energy efficient production and utilization of charcoal through innovative technologies and private sector involvement	Bring economic, social and environmental benefits through the production of charcoal from sustainably sourced feedstock and promotion of improved cookstoves to reduce fuelwood demand, improve health, and reduce GHG emissions	\$2.1 million	UNDP	UNDP and GEF	2014-2020
Building adaptive capacity of water supply services to climate change in Sierra Leone	Enhance the capacity for climate-resilient decision-making in the water sector through policy reforms, technical capacity development activities, and informed public and private sector dialogues	\$3.4 million	UNDP	UNDP and GEF	2013-2019
Adapting to climate change induced coastal risks in Sierra Leone	Strengthen the ability of government institutions and coastal communities to systematically manage climate change risks and impacts on physical infrastructure and socio-economic development	\$9.9 million	UNDP	GEF	2016 to date
Environment and natural disaster management project	Support natural resource governance in the key areas of natural resource management, environment protection, policy and legal frameworks within the extractives sector, land tenure policy and adapting to the impacts of climate change and other man-made and natural disasters	\$800,000	UNDP	UNDP	2016 to date

Table 2: CCA Projects and Programmes

Name of project	Objective(s)	Value	Implementer	Funder	Delivery period
Sustainable livelihoods through improved natural resource management	Address challenges related to poor governance of natural resources by improving transparency processes, promoting constructive dialogue between civil society and key actors from the private sector and government, as well as by supporting activities that strengthen livelihoods for vulnerable youth	\$1.5 million	UNDP and FAO	SDG Fund	2015 to 2017
Voluntary guidelines on the governance of tenure of land, fisheries, and forests (VGGT) in the context of national food security	Collaborate across all VGGT relevant sectors (land, fisheries and forests) in an institutional framework to implement the guidelines and improve responsible tenure governance in the country		FAO	Federal Republic of Germany	2014 to 2016
Agricultural Value Chain Development Project	Strengthen climate-proof rural infrastructure through the rehabilitation of feeder roads and warehouses to improve product drying and storage capacity. It will also build the capacity of smallholder farmers through farmer field schools and provide them with credit for their investments on farms	\$104.43 million	Ministry of Agriculture and Forestry	IFAD, OPEC Fund, and GoSL	2018-2025
Rural Finance and Community Improvement Programme, phase 2	Strengthen and expand the rural finance system, and support gender mainstreaming, women's empowerment and youth engagement	\$47.15 million	Ministry of Agriculture and Forestry	IFAD, IFC, and GoSL	2013-2022
Smallholder Commercialization Programme	Empower the rural poor to increase their food security and income on a sustainable basis	\$56.4 million	Ministry of Agriculture and Forestry	GAFFSP and GoSL	2011-2019
Rural Renewable Energy Project	Develop a portfolio of solar mini-grids across southern and eastern Sierra Leone. Support the energy access objectives and its renewed drive for clean energy access		UNOPS	UKAID	
Promoting Renewable Energy for Sustainable Development project (PRESSD)	Contribute to poverty alleviation through renewable energy services while promoting low-carbon development	€7 million	ENFO, OXFAM-IBIS, COOPI, and WHH	EU	2014-2018
Biodiversity Conservation Programme	Improve the management of selected priority biodiversity conservation sites and enhance its capacity for replication of best biodiversity conservation practices	\$23.8 million	National Protected Area Authority	World Bank and GEF	2010-2015
West African Peninsula Forest Conservation Project			WHH	EU	2010-2013
Freetown Emergency Recovery Project	Rehabilitate selected critical infrastructure and strengthen government capacity for managing disaster risk	\$10 million	Ministry of Finance	World Bank and GoSL	2018-2021

Table 2: CCA Projects and Programmes

Name of project	Objective(s)	Value	Implementer	Funder	Delivery period
Resilient Urban Sierra Leone Project	Improve integrated urban management, service delivery, and disaster emergency management in Freetown and select cities in Sierra Leone	\$56.7 million	Ministry of Finance and select municipal councils	World Bank and GoSL	2020-2025
Integrated Resilient Urban Mobility Project	Improve the quality of public transport, address climate resilience, improve road safety in selected areas and enhance institutional capacity in the transport sector	\$50 million	Ministry of Transport and Aviation	World Bank and GoSL	2019-2024
West Africa Biodiversity and Climate Change Programme (WA BiCC)	Improve conservation and climate-resilient, low-emissions growth across West Africa	\$46 million	Tetra Tech ARD and various international partners	USAID	2015-2020
Sustainable and Thriving Environments for West African Regional Development (STEWARD)	Promote sustainable livelihoods and forest management plans, develop climate-resilient water, sanitation and hygiene systems and services, monitor programme impact on land and improve policy and legal frameworks, develop viable payment for ecosystem service models and viable, sustainable non-timber forest product value chains	\$18 million	US Forest Service-International Programmes	USAID	2008-2016
Promoting Agriculture Governance and the Environment (PAGE)	Increase productivity while supporting sustainable natural resource management and promoting transparent and participatory democratic governance		ACDI VOCA	USAID	2008-2012
Building biocarbon and rural development in West Africa (BIODEV)			CIFOR	Govn'tof Finland	2013-2017
Supporting community-based DRR	Build the capacity of targeted communities to implement community-based DRM, and provide technical assistance to district and national institutions to integrate DRR and CCA in development planning	\$699,837	Office of National Security	World Bank and EU	

4.5 Policy opportunities, challenges and needs

This section briefly describes needs and opportunities to support adaptation policy, planning and projects:

- Review and revise the Draft Climate Policy.
- Develop a Climate Act to mandate the integration of adaptation into development planning and clarify institutional roles and create a mandate for a National Climate Steering Committee.
- Most current policies, strategies and regulatory mechanisms have limited or no consideration of climate change issues. Vulnerability and risk assessments conducted as part of the NAP process can be used to revise existing policies to integrate climate risks into plans.

- There is a lack of coordination and policy coherence across adaptation and adaptation-related policies. The Ministry of Environment should work to integrate all environmental institutions under its mandate in order to simplify policy development, coordination and monitoring and evaluation.
- The GoSL should review sector policies and legal frameworks in light of the required collaboration and coordination of the roles and functions of the Ministries, department and agencies to address adaptation. No agency can efficiently function as a standalone agency. Adaptation needs to be integrated into the daily work of each agency and their plans.
- The Ministry of Environment should engage all international convention focal points, organize quarterly meetings and ask for status reports. This will enable the leveraging of capacities within different agencies and departments and set standards for collaboration, communication and public engagement.
- All adaptation projects developed by Ministries, departments and agencies should be reviewed by the Steering Committee to ensure that institutions collaborate and coordinate adaptation actions. The Ministry of Environment could facilitate the setting up and coordination of the Steering Committee and provide regular reports on its performance.
- There is a lack of mechanisms to disseminate project information, lessons learned, and best practices to other stakeholders, including government departments. There has been no integrated assessment of adaptation projects as a whole to share lessons learned and use the assessment to create approaches that can be scaled up across the country. The NAP process can support the development of an integrated reporting and learning system. This would allow for the collection and analysis of previous projects with systematic reporting to make the information available for all stakeholders. This will effectively benefit future programmes.
- Currently, there is no specific budget allocation for adaptation in Ministry budgets, making plans difficult to implement. A certain portion of the budget should be committed for adaptation to enable national institutions involved in planning and delivering climate adaptation projects. This would enable them to have more ownership of climate finance projects, and to support their sustainability beyond the project termination.
- Increase university capacity in order to provide the expertise and services required to support effective policy implementation and develop a new generation of climate adaptation experts.
- There is a need to increase public and government awareness on (a) climate change impacts and risk (b) adaptation measures, and (c) how human interaction can either diminish (through adaptation and preparedness) or exacerbate climate change impacts. The NAP process can be used as a means to educate the public through implementing the NAP Communications Strategy.
- Policies do not incentivize private sector engagement.



Photo: Sierra Leone, UNICEF

Priority adaptation actions

5.1 Introduction

This chapter presents primary government stakeholders and adaptation priorities for Sierra Leone's initial NAP. The Government of Sierra Leone has defined the following priority sectors for its NAP:

- Agriculture and food security
- Water resources and energy
- Coastal zone management (including fisheries and coastal ecosystems)
- Environment (including tourism, land, mineral resources and forestry)
- Disaster management
- Cross-cutting priorities:
 - Infrastructure, including water and sanitation, transportation and health)
 - Gender equality and social inclusion, focusing on youth, women, elderly and persons with disabilities

Additionally, this chapter includes an analysis and compilation of existing adaptation priorities within these defined sectors. The following plans were analysed and included in the priority programmes:

- Initial National Communications (INC)
- Second National Communications (SNC)
- Third National Communications (TNC)
- Nationally Determined Contributions (NDC)
- National Adaptation Programmes of Action (NAPA)
- Coastal Climate Change Adaptation Plan (CCCAP)
- Low-Carbon Climate Resilient Development Strategy (LCCRDS)
- National Climate Change Strategy and Action Plan (NCCSAP)
- Medium-term National Development Plan (MTNDP)

- National Framework for Climate Services (NFCS)
- Integrated Coastal Zone Management Plan (ICZMP)
- Off-grid Solar Energy Strategy (OGSES)

The initial NAP stakeholder consultation workshop conducted in Freetown in October 2020 validated these priorities. Within these sectors, the priorities that are linked have been classified into programmes of adaptation. This is just a first step in this process. After additional consultations and vulnerability and risk assessments, these priorities will be modified to meet current and future needs.

A stakeholder inclusive mechanism will be developed to identify implementation approaches for the priorities. This procedure will draw on adaptation approaches applied under similar circumstances elsewhere and will take into consideration the local context shaping adaptation needs in Sierra Leone.

Once options are identified for each of the objectives, a ranking/prioritization procedure will be applied; this may include the use of multi-criteria analysis (MCA), cost-benefit analysis (CBA), or some other equivalent methodology. Best practices will inform the prioritization process, and, if prioritization criteria are used, these will be developed with inputs from a range of stakeholders.



Photo: Sierra Leone, UNICEF

5.2 Key Government stakeholders by priority

Agriculture and food security	<ul style="list-style-type: none"> • Ministry of Agriculture and Forestry, SL-Met, Planning Evaluation, Monitoring, Statistical Division (PEMSD) • Environment Protection Agency • Municipality and district councils
Water resources and energy	<ul style="list-style-type: none"> • Ministry of Water Resources • National Water Resources Management Agency (Hydrological Services Department) • Environment Protection Agency (Chemical Controls and Management Department) • Renewable Energy Association of Sierra Leone • Ministry of Energy • Municipality and district councils
Coastal zone management	<ul style="list-style-type: none"> • Ministry of Fisheries and Marine Resources • Environment Protection Agency (Natural Resources Management Department) • Coastal Chiefs Natural Resources Management Network • Sherbro River Estuary Co-management Committee • Community management associations • Municipality and district councils • National protected area authority
Environment	<ul style="list-style-type: none"> • Ministry of the Environment • Environment Protection Agency • Ministry of Tourism and Cultural Affairs • National protected area authority • National Tourist Board • Ministry of Lands and Country Planning • Municipality and district councils
Disaster management	<ul style="list-style-type: none"> • Office of National Security • Disaster Management Department • Sierra Leone Meteorological Agency • National Fire Force • Sierra Leone Red Cross • Volunteer Services Oversea • Sierra Leone Civil Aviation Authority • Community disaster management committees • Environment Protection Agency (Climate Change Secretariat) • Ministry of Local Government and Rural Development • Municipality and district councils
Cross-cutting	
Gender equality and social inclusion	<ul style="list-style-type: none"> • Ministry of Social Welfare • Gender and Children's Affairs • National Children's Commission • Human Rights Commission • Municipality and District Councils
Infrastructure (Health, water and sanitation and transportation)	<ul style="list-style-type: none"> • Ministry of Health and Sanitation • Ministry of Transport and Aviation • Environment Protection Agency • Ministry of the Environment • Sierra Leone Meteorological Agency • Ministry of Information and Communication • Sierra Leone Road Safety Authority • Sierra Leone Roads Authority • Sierra Leone Motor Drivers Union • Municipality and district councils • Road Maintenance Fund Administration

5.3 Priority adaptation programmes

The priority adaptation programmes are divided by sector and included in Table 5.4 below. The adaptation programmes have been classified into five categories:

- **Physical investments.** Priorities that involve building or construction.
- **Human capacity development.** Priorities that involve training or capacity development for individuals within the government and among non-government stakeholders (e.g., private sector, NGOs and CSOs).
- **Institutional strengthening.** Priorities that involve improving institutional capacity and other aspects of governance.
- **Regulatory modifications.** Priorities that involve modification or enhancement of sectoral and/or subnational policy, regulatory, or legal frameworks.
- **Research.** Priorities that involve enhancing available data and information as well as the associated capacities to produce, process, and utilize data and information.



Photo: Government of Sierra Leone

5.4 Priority actions by sector, programme and type

I. Agriculture and food security	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 1: Promote climate-smart agriculture and climate resilient food security practices							
Adoption and application of climate smart and conservation agriculture through best agricultural practices that enhance soil fertility and improve crop yield	NDC		●				Ministry of Agriculture and Forestry
Integrated management of crops and livestock management	NDC	●					Ministry of Agriculture and Forestry
Develop and maintain seed banks to provide a variety of seed types that preserve biological diversity and enable farmers to make informed choices	NCCSAP	●					Ministry of Agriculture and Forestry
Promote innovative and adaptive approaches such as irrigation and water harvesting to protect farmers from variability in rainfall	NDC	●					Ministry of Agriculture and Forestry
Provide appropriate infrastructure, social services and mechanization of agriculture in the rural areas to slowdown massive movements of youths into urban areas	TNC	●	●	●			Ministry of Agriculture and Forestry
Mainstream climate change into agricultural development strategies)	TNC			●	●		Environment Protection Agency
Programme 2: Improve research and knowledge management capacities to support climate smart agriculture and resilient land management							
Support the establishment of adequate weather stations around the country to provide reliable and adequate weather data to farmers	NCCSAP/TNC	●		●			Sierra Leone Meteorological Agency
Provide adequate support to the Sierra Leone Agricultural Research Institute as well as Njala University to develop appropriate crop varieties and production practices that will enhance resilience to adverse weather conditions	NCCSAP/TNC			●		●	Sierra Leone Agricultural Research Institute
Develop modelling approaches and tools to allow assessment of impacts of climate change on export and domestic crops and meat production	NCCSAP/TNC	●				●	Environment Protection Agency
Develop regional links to fund and promote plant breeding programmes for common crops	NCCSAP/TNC		●	●			Sierra Leone Agricultural Research Institute
Review approaches to integrated pest management under climate change	NCCSAP/SNC					●	Ministry of Agriculture and Forestry
Conduct a feasibility study to gather information on community perceptions of climate smart agriculture techniques	CCCAP					●	Ministry of Agriculture and Forestry

5.4 Priority actions by sector, programme and type

I. Agriculture and food security	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
II. Water resources and energy							
Programme 1: Improve institutional and functional capacities for integrated water management							
Improve planning and coordination of the use of the river basin, which may provide solutions to problems of water quality and supply	NCCSAP/INC		●	●			National Water Resources Management Agency
Increase and maintain investment in hydrological monitoring and water use through a national database	NCCSAP/SNC	●		●			National Water Resources Management Agency
Fund research on adopting a water resources and water supply planning method under climate change	NCCSAP					●	Ministry of Water Resources
Develop appropriate modelling tools to assist strategic planning of water resources	NCCSAP/TNC			●		●	National Water Resources Management Agency
Investigate shifting focus from ground water to surface water storage for water supply to reduce the reliance on vulnerable coastal aquifers	NCCSAP/TNC			●		●	National Water Resources Management Agency



5.4 Priority actions by sector, programme and type

II. Water resources and energy	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 2: Enhance universal access to energy by promoting renewables and energy efficiency							
Establish and operationalize a National Centre for Renewable Energy and Energy Efficiency (NaCREEE) to promote off-grid tand-alone solar (SAS) investments through technical advice and knowledge sharing in the areas of policy and regulation, technology development and transfer and public education	OGSES			●			Ministry of Energy
Increase awareness of off-grid SAS and strengthen market knowledge by improving market intelligence	OGSES		●	●			Ministry of Energy
Strengthen local institutions and empower the private sector through capacity, network and partnership building	OGSES		●	●			Ministry of Energy
Provide up to date market information through research and awareness raising campaigns	OGSES		●				Ministry of Energy
Align technology development and knowledge transfer goals with regional goals set for 2030	OGSES			●	●		Ministry of Energy
Technically support the Energy Planning Unit in creating a pipeline of off-grid SAS projects	OGSES		●	●			Ministry of Energy
Introduce solar technology management in school curricula and technical and vocational education at the tertiary level	OGSES		●			●	Ministry of Technical and Higher Education
Develop guidelines for the standardization of off-grid solar systems including technical equipment, design and assessment methods, operations and maintenance procedures and environmental compliance	OGSES		●	●			Standards Bureau
Mobilize financial institutions to create investment packages and counterpart funding	OGSES	●		●			Renewable Energy Association of Sierra Leone

5.4 Priority actions by sector, programme and type

II. Water resources and energy	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 3: Mainstream considerations of gender equality and social inclusion into sectoral plans and strategies							
Expand women's and youth employment opportunities and participation in the management of off-grid solar energy interventions	OGSES		●				Ministry of Energy/Ministry of Gender
Build women-led partnerships at the local level to facilitate knowledge exchange, resource mobilization and sustained quality of services	OGSES		●				Ministry of Energy/Ministry of Gender
Bridge the gap in the proportion of women to men employment as solar technicians, engineers and project managers by promoting the entry of more women into jobs delivered within the sector through information, communication, education campaigns, scholarships and job placements	OGSES		●				Ministry of Energy/Ministry of Gender
Build the capacities of youth, women, PWDs, and other disadvantaged groups in using off-grid solar energy resources safely and productively (including for livelihood and business development or improvement)	OGSES		●				Ministry of Energy/ Ministry of Gender/ Ministry of Youth Affairs/
III. Infrastructure (including WASH, transportation, and urban development)							
Programme 1: Improve climate change adaptation infrastructure across priority sectors							
Enhance waste management systems at all levels to reduce pollution and greenhouse gas emissions to improve health of both humans and animals and reduce climate change	NDC	●		●	●		Municipal Councils/ Ministry of Local Government and Rural Development
Support the construction of appropriate roads particularly feeder roads in rural areas as a climate resilience strategy	NCCSAP	●					Sierra Leone Roads Authority/ Road Maintenance Fund Administration
Diversify economic growth through a strengthened transport sector, particularly infrastructure to contribute to the reduction of greenhouse gas emissions	LCCRDS	●		●			Ministry of Transport and Aviation
Programme 2: Mainstream climate change adaptation considerations into sectoral plans and strategies							
Strengthen integration of climate change adaptation into the health sector	NDC		●	●	●		Ministry of Health and Sanitation
Monitor and control WASH activities in informal settlements	NAPA	●	●	●			Ministry of Health and Sanitation

5.4 Priority actions by sector, programme and type

III. Infrastructure (including WASH, transportation, and urban development)	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 3: Develop local institutional capacity to support coastal resources management							
Monitor academic and public news media to keep informed about changes in climate change science and adaptation tools, technologies and success stories	CCCAP		●	●			Ministry of Fisheries and Marine Resources
Operationalize a Coastal Chiefdoms Natural Resources Management Network (CCNRMN) and various co-management committees	CCCAP			●			Ministry of Fisheries and Marine Resources Sanitation
Support the development, validation and enforcement of by-laws on mangrove wood harvesting, fishing and sand mining, at local and regional levels to promote mangrove conservation and adaptation to climate change	CCCAP				●		Coastal Chiefdoms Natural Resources Management Network
Collect physical and socioeconomic data to better understand vulnerabilities and impacts	CCCAP		●			●	National Protected Area Authority/ Institute of Marine Biology and Oceanography
Train relevant coastal institutions on climate change adaptation and mangrove conservation	CCCAP		●	●			National Protected Area Authority
IV. Coastal zone management (including fisheries, marine resources, and coastal ecosystems)							
Programme 1: Management of coastal and fisheries resources							
Promotion of non-destructive fishing techniques to maintain resilience of marine ecosystems	NDC		●	●	●		Ministry of Fisheries and Marine Resources
Promotion of monitoring, control and surveillance of fishing grounds and fish stocks for sustainable exploitation	NCCSAP		●	●			Ministry of Fisheries and Marine Resources
Promotion of climate change related education and awareness programmes	NCCSAP		●				Ministry of Fisheries and Marine Resources
Improve productivity and sustainable management of fisheries and the marine sector	MTNDP		●	●	●		Ministry of Fisheries and Marine Resources
Develop and operationalize an integrated coastal zone management plan	NAPA			●	●		Environment Protection Agency
Adopt an adaptive management approach for the governance of coastal management institutions and interventions	ICZMP		●	●			Ministry of Fisheries and Marine Resources

5.4 Priority actions by sector, programme and type

IV. Coastal zone management (including fisheries, marine resources, and coastal ecosystems) (cont'd)	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 1: Management of coastal and fisheries resources (cont'd)							
Improve fisheries governance through awareness raising and law enforcement to regulate fishing practices	CCCAP		●	●	●		Ministry of Fisheries and Marine Resources
Mainstream climate change adaptation into coastal development plans, using local development funds managed by councils to build resilience	CCCAP		●	●	●		Coastal District Councils
Programme 2: Increase human (social) development through technology transfer and livelihood support							
Strengthen the adaptive capacity of the most vulnerable groups and communities through social safety nets and insurance schemes	NDC		●	●	●		Coastal Chiefdoms Natural Resources Management Network
Undertake research to assess local uptake potential of livelihood techniques and technologies	CCCAP					●	Ministry of Fisheries and Marine Resources
Promote agri-sylvicultural practices and sustainable rice cultivation in coastal landscapes	CCCAP		●				Ministry of Fisheries and Marine Resources
Programme 3: Provide information and improve knowledge on climate risks and vulnerabilities							
Delineate hazard (flood and erosion prone) areas along the coastline	NCCSAP					●	Ministry of Fisheries and Marine Resources
Improve the quality of topographic data for the coastal zone	NCCSAP					●	Ministry of Fisheries and Marine Resources
Establish robust and long-term mangrove ecosystem health surveillance, monitoring and analysis to develop insights into their current state and map future risks and vulnerabilities	CCCAP		●	●	●	●	Ministry of Fisheries and Marine Resources
V. Environment (including forestry, mining, tourism and land management)							
Programme 1: Improve natural resources management in critical biodiversity hotspots							
Manage rangelands and pastures by managing grazing systems and grazing intensity, fire management and pasture rehabilitation	NDC		●	●	●		Ministry of the Environment
Restore degraded lands with high production potential	NDC	●					Ministry of the Environment
Establish new forest reserves, national parks and protected areas	NAPA	●		●	●		National Protected Area Authority

5.4 Priority actions by sector, programme and type

V. Environment (including forestry, mining, tourism and land management) (cont'd)	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 2: Improve the resilience of environmental value chains across the sector							
Enhance the resilience of the tourism value chain	NDC		●	●			Ministry of Tourism and Culture/ National Tourist Board
Programme 3: Develop local institutional capacity to support coastal resources management							
Integrate climate change adaptation into the mining/extractive sector	NDC		●	●	●		Environment Protection Agency
Mainstream climate change adaptation into land reforms, including establishment of a land commission and revision of the land policy	NDC		●	●	●		Environment Protection Agency
Programme 4: Improve institutional and functional capacities for environmental governance							
Adopt the Draft Climate Policy into a comprehensive Climate Act	NDC			●			Environment Protection Agency
Establish the enabling legislative framework to implement the NCCS&AP actions	NDC			●			Environment Protection Agency
Establish and/or strengthen the high-level National Climate Change Council (NCCC), in the Office of the President	NDC		●	●			Ministry of the Environment
Establish a Sierra Leone Climate Fund as a financing mechanism for priority climate change actions and interventions	NDC		●	●			Ministry of the Environment
Institutionalize coordination, monitoring, reporting and verification of climate change issues by strengthening the Environment Protection Agency for effective and efficient provision of technical policy advice to the Government and people of Sierra Leone	LCCRDS		●	●			Environment Protection Agency
VI. Disaster management							
Programme 1: Establish early warning systems to improve local understanding of risks							
Promotion and facilitation of early warning and disaster preparedness system	NDC	●					Disaster Management Agency, Sierra Leone Meteorological Agency
Transformation of the National Meteorological Services of Sierra Leone	NDC		●	●	●		Sierra Leone Meteorological Agency
Build capacity in observations and monitoring of climate systems, and in developing, packaging and communicating weather and climate information	NFCS		●	●			Sierra Leone Meteorological Agency
Develop deeper insight into climate related hazards, vulnerability and risks	NFCS					●	Sierra Leone Meteorological Agency
Promote climate related research, modelling and prediction of weather and climate events	NFCS			●		●	Sierra Leone Meteorological Agency

5.4 Priority actions by sector, programme and type

VI. Disaster management (cont'd)	Source	Physical investment	Human capacity development	Institutional strengthening	Regulatory modifications	Research	Lead agency
Programme 2: Improve regulatory frameworks for disaster management							
Adopt the current disaster risk reduction policy into a comprehensive Disaster Management and Emergency Response Policy	NDC				•		National Disaster Management Agency
Establish the enabling legislative framework to implement the DMD policy and action plan	NDC				•		National Disaster Management Agency
Establish and/or strengthen the high-level National DMD Council (NDMC), in the Office of the Vice President	NDC			•			National Disaster Management Agency
Establish a national disaster management agency as the primary national government agency for disaster management response	NDC			•			National Disaster Management Agency

5.5 Sector needs and opportunities

There are clear needs for the national government to fulfill these priority programmes.

All priority sectors will require:

- Legislation to integrate adaptation into sector policy, work plans and projects, monitoring and evaluation
- Clarification of mandates related to climate change adaptation
- Increased law and regulation enforcement
- Integrated planning for adaptation across sectors and national and local government
- Establishment of technical working groups and focal points to improve coordination, collaboration and information exchange across sectors
- Capacity building at the national and local level, especially for women and other marginalized groups
- Increased incentives for private sector engagement on adaptation
- Increased number of staff and staff capacity
- Improved access to information across within and across sectors
- Increased funding for adaptation work



Photo: Sierra Leone, UNICEF

Institutional arrangements for the NAP process

6.1 Introduction

This chapter demonstrates how the NAP priorities are linked to the current medium-term development plans and how the NAP process can serve as an entry point to integrate adaptation into national and local planning processes. These policy linkages help better understand how the NAP is incorporated into the current institutional system. Additionally, this chapter presents the coordination mechanism for the NAP process.

6.2 Linking NAP priorities to the Medium-term National Development Plan

The NAP priorities have clear linkages to various clusters in Sierra Leone's Medium-Term National Development Plan (MTDP) (2019-2023) (Government of Sierra Leone 2019). While the country's vision for the environment and climate change adaptation is clearly stated in cluster 7 of Sierra Leone's Medium-term National Development Plan (2019-2023) (Government of Sierra Leone 2019), the NAP includes issues that cross sectors and therefore clusters. This provides an implicit mandate for addressing the priorities in the NAP. Additionally, since the MTDP is explicitly connected to the SDGs, this provides an alignment between the three policies. The linkages between the NAP and MTDP goals are provided in the table below.

NAP priorities	Selected MTDP goals	Linkages to SDGs/Sendai Framework
Gender equality and social inclusion, focusing on youth, women and persons with disabilities	Cluster 1.5, 5/6 <ul style="list-style-type: none"> • Empowering women • Increasing social protection • Increasing investment in children and adolescents • Increasing investment in persons with disabilities • Increasing youth employment and empowerment 	SDG1: No Poverty SDG3: Good Health and Well-being SDG4: Quality Education SDG5 Gender Equality SDG8: Decent Work and Economic Growth SDG10: Reduced Inequalities SFDRR Target 4: Substantially reduce disaster damage to critical infrastructure and disruption of basic services
Agriculture and food security	Cluster 2.1, 2.7 <ul style="list-style-type: none"> • Improving productivity and commercialization of the agricultural sector • Promoting an inclusive rural economy 	SDG2: Zero Hunger SDG8: Decent Work and Economic Growth SDG11: Sustainable Cities and Communities SFDRR Target 1: Substantially reduce global disaster mortality SFDRR Target 3: Reduce direct disaster economic loss
Water resources and energy	Accelerating the provision of energy supplies	SDG7: Affordable and Clean Energy SFDRR Target 4: Substantially reduce disaster damage to critical infrastructure and disruption of basic services
Coastal zone management, including fisheries and coastal ecosystems	Improving productivity and sustainable management of fisheries and the marine sector	SDG11: Sustainable Cities and Communities SDG12: Responsible Consumption and Production SDG14: Life Below Water SFDRR Target 1: Substantially reduce global disaster mortality SFDRR Target 3: Reduce direct disaster economic loss
Infrastructure, including health, water and sanitation and transportation	Cluster 1.3, 1.4, 3 <ul style="list-style-type: none"> • Transforming transportation systems • Accelerating healthcare delivery • Enhancing environmental sanitation and hygiene • Advancing housing and land management • Improving the water infrastructure systems • Improving information and communication technologies 	SDG3: Good Health and Well-being SDG6: Clean Water and Sanitation SDG8: Decent Work and Economic Growth SDG9: Industry, Innovation and Infrastructure SDG11: Sustainable Cities and Communities SFDRR Target 4: Substantially reduce disaster damage to critical infrastructure and disruption of basic services
Environment, including tourism, land, mineral resources and forestry	Cluster 7, Cluster 2.3 <ul style="list-style-type: none"> • Building national environmental resilience • Revitalizing the tourism sector • Strengthening forest management and wetland conservation • Revitalizing the tourism sector 	SDG8: Decent Work and Economic Growth SDG11: Sustainable Cities and Communities SDG13: Climate Action SDG15: Live on Land
Disaster management	Cluster 7.3 Improving disaster management governance	SDG3: Good Health and Well-being SDG11: Sustainable Cities and Communities SFDRR Target 5: Substantially increase the number of countries with national and local DRR Strategies

The linkages between the NAP priorities and the MTDP mean that their implementations are mutually supportive. By integrating the NAP into the MTDP activities (see the process described in 7.3), it ensures that development strategies are climate resilient. Since the MTDP directs the actions of MDAs and local councils, this also serves as a path to integrate adaptation into sector and local planning. Specifically, the MTDP is used by MDAs and councils to develop their plans and strategies. These plans and strategies are used to determine budget allocations. Through linking the NAP and the MTDP, it ensures there is budget allocations for adaptation activities and that all local investments are climate sensitive.

As the MTDP is planned to be reviewed in 2023, the NAP process and its vulnerability assessments will inform national priorities across sectors, helping to secure development and investment decisions from climate risks. The integration of the NAP into the next round of the MTDP streamlines the planning, budgeting and monitoring and evaluation process. This has many advantages for supporting implementation and ultimately in sustaining adaptation activities.

Local councils can then allocate funds for adaptation priorities presented in the NAP. This will also ensure that development finance can be channeled to the local level to address local climate vulnerabilities and climate resilient development, while also being explicitly tied to national policy and monitoring systems.

6.3 Linking NAP to sector and local planning

The NAP and its linkages to the MTDP can serve as means to integrate adaptation into existing sector and local planning processes. The current planning process is presented in the graphic below. At each stage, there are clear entry points for the NAP process.

Figure 14: NAP process linkages to sector planning processes



6.4 NAP entry points at each stage of the policy process

Strategy development

- Support the identification of information needs with agricultural, marine, aviation, hydrological and climatological data services.
- Apply risk and vulnerability assessments and socio-economic scenarios in a regular manner.
- Develop spatial planning maps incorporating climate risk, hazards, key infrastructure, social and demographic data.
- Prioritize adaptation into sector and local strategies, plans and budgets at the strategic and planning levels.
- Discuss how to link sector strategies across sectors.

Implementation planning

- Identify adaptation options to support scaling up in a systematic and structured way.
- Integrate economic appraisal of projects and programmes.
- Prioritize programmes for example, using multi-criteria and economic tools.
- Develop centralized planning/screening guidelines for climate change and disaster risk reduction and integrate into official templates.
- Develop gender checklists and gender responsive criteria.
- Identify adaptation indicators and targets.
- Develop realistic financing plans.
- Engage donors to fund adaptation priority programmes.

Approval

- Apply centralized planning/screening guidelines for climate change and disaster risk reduction.

Budgeting

- Identify costing adaptation options.
- Prioritize adaptation activities.

Implementation

- Integrate new climate information to tailor implementation strategy.
- Inform public about linkages between project and climate impacts.
- Build capacity of implementors to better understand linkages between adaptation and their work.

Monitoring and reporting

- Track national progress towards adaptation targets.
- Integrate adaptation into national M&E systems.
- Report on adaptation at national and international levels.
- Collect data for measuring adaptation baselines and performance.

- Support finance, technology transfer and capacity building.
- Contribute to systemic and iterative national adaptation planning.
- Generate climate and disaster data in real time.
- Train CSOs to monitor climate change adaptation projects implemented by MDAs.

6.5 Non-governmental stakeholders and their roles

Non-governmental stakeholders play an important role in planning, implementing and monitoring and evaluating the NAP. Through a collaborative and inclusive approach, the NAP has ownership and support across sectors and communities. More specific roles within coordination bodies and suggested organization in the next section;

- **Civil society organizations (CSOs).** The NAP process in Sierra Leone will actively engage CSOs in planning, advocacy, education, awareness raising, evidence-based research, and M&E of adaptation efforts. This will include women rights and youth organizations.
- **Academia and research institutions.** This group can conduct research on climate change adaptation, vulnerability and resilience. Research should align its focus areas with adaptation priorities, so that its impact on adaptation action is as direct as possible. This includes improving the understanding of climate change impacts on the population and the environment, as well as developing partnerships with Government entities and communities to conduct adaptation that addresses adaptation needs in Sierra Leone.
- **Private sector.** Businesses can support the case for private sector investment in adaptation and finance and incentivize adaptation actions. The private sector can also be an engine for empowering women-led enterprises and women entrepreneurs.
- **Development partners.** Sierra Leone's NAP process recognizes the role of the international community, especially development partners, as critical for resource mobilization, capacity development, technology development and transfer for current and future adaptation actions.
- **Traditional and religious leaders.** These leaders have an important role in society and can promote climate change adaptation practices.
- **Media.** Media can build awareness around adaptation and climate change, share stories of adaptation actions to spur actions and provide avenues for learning about adaptation inside and outside the country.
- **Public.** The public has a vital role to play in the planning, implementation and monitoring of the NAP and adaptation interventions to enhance their adaptive capacity and resilience to climate shocks.

6.6 Institutional framework coordination mechanisms

The institutional framework below builds on the plan from the NAP Framework. At the top, it includes a Parliamentary Committee (PC) and an Inter-ministerial Committee (IC). These two committees will be created to gain the political and legislative support needed for implementing the NAP. The IC is co-chaired by the Ministries of the Environment and Finance. Ministers or their designees will come from priority sectors. The IC will provide policy oversight, coordination and resource mobilization for the NAP.

The PC is chaired by the head of the Environment Committee in the House of Parliament. Its members comprise leaders and secretaries of the parliamentary committees identified. The PC provides legislative support and oversight, monitoring and evaluation, policy advocacy and public outreach.

The IC and PC will oversee the National Steering Committee (NSC). Chaired by the Environment Protection Agency, the NSC will include departments and agencies of government from the priority sectors. The NSC roles include overall coordination of NAP implementation, define policies and strategies, resource mobilization, ensure policy coherence, lead adaptation planning and drive the ownership of the NAP process.

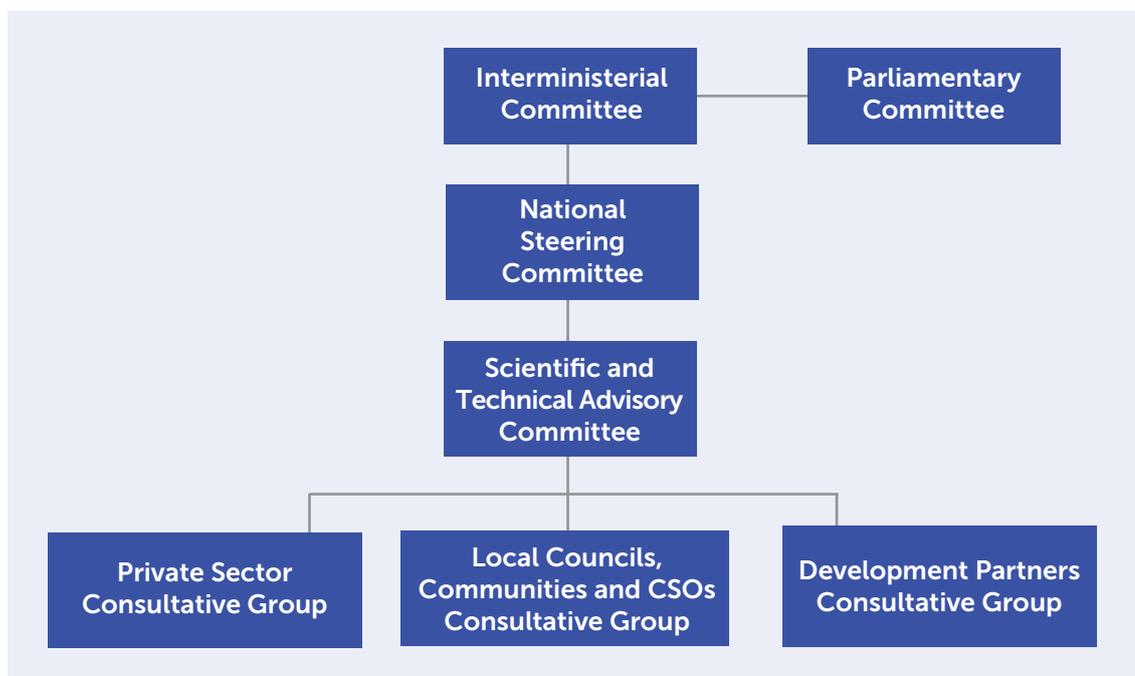
A Scientific and Technical Advisory Taskforce will provide technical support and advisory services to the NSC and the consultative committees. This includes data gathering and analysis, advising the NSC and consultative committees on data gathering and dissemination best practices, define, identify and conduct research to support adaptation actions for vulnerable groups including women, people with disabilities, children and the elderly. The Taskforce will also develop processes for information sharing and collection of lessons learned, coordinate bilateral and multilateral assistance and link with municipalities and support actions on sectoral priorities.

There are three consultative committees:

- 1) the private sector consultative group;
- 2) local councils, communities and civil society consultative group; and
- 3) development partner consultative group.

The three committees provide policy and implementation advice the steering committee on relevant issues and build support for NAP implementation through activities such as research, capacity building and awareness raising.

Figure 15: NAP process implementation arrangements



Proposed members of committees and roles

Group	Members	Roles and responsibilities
Inter-ministerial Committee	<p>All ministries covering priority sectors identified for the NAP (and those that are cross-cutting)</p> <p>Chair: Vice President Co-Chair: To be determined</p> <ul style="list-style-type: none"> • Ministry of Agriculture and Forestry • Ministry of Youth Affairs • Ministry of Gender • Ministry of Planning and Economic Development • Ministry of Finance • Ministry of Social Welfare • Ministry of the Environment • Ministry of Fisheries and Marine Resources • Ministry of Mines and Mineral Resources • Ministry of Tourism and Culture • Ministry of Transport and Aviation • Ministry of Water Resources • Ministry of Works and Public Assets • Ministry of Energy 	<p>Policy oversight</p> <p>Coordination</p> <p>Resource mobilization</p>
Parliamentary Committee	<p>Heads and Secretaries of Parliamentary Committees on:</p> <ul style="list-style-type: none"> • Environment • Transparency and accountability • Finance • Planning • Legislation • Representative of Women's Parliamentary Caucus 	<p>Legislative support and oversight</p> <p>Monitoring and evaluation</p> <p>Policy advocacy</p> <p>Public outreach</p>
National Steering Committee	<p>Environment Protection Agency</p> <p>National Protected Area Authority</p> <p>Sierra Leone Agricultural Research Institute (SLARI)</p> <p>National Water Resources Management Agency (NWRMA)</p> <p>Electricity and Water Regulatory Commission (EWRC)</p> <p>National Tourist Board (NTB)</p> <p>Ministry of Planning and Economic Development</p> <p>Sierra Leone Maritime Administration (SLMA)</p> <p>Sierra Leone Meteorological Agency (SLMet)</p> <p>Sierra Leone Roads Authority (SLRA)</p> <p>Sierra Leone Housing Corporation (SALHOC)</p> <p>Environment Protection Agency (EPA)</p> <p>Forestry Division</p> <p>Office of National Security (ONS)</p> <p>National Fire Force (NFF)</p>	<p>Overall coordination of NAP implementation</p> <p>Define policies and strategies</p> <p>Resource mobilisation</p> <p>Ensuring policy coherence</p> <p>Lead adaptation planning across sectors and levels</p> <p>Drive ownership of NAP process</p>

Group	Members	Roles and responsibilities
Scientific and Technical Advisory Taskforce (STAT)	Universities Sierra Leone Agricultural Research Institute (SLARI) Sierra Leone Meteorological Agency (SLMet) National Water Resources Management Agency (NWRMA) Environment Protection Agency (EPA) National Association of Environmental Professionals (NAEP) Sierra Leone Institution of Engineers (SLIE) Statistics Sierra Leone (SSL) Sierra Leone Institution of Geoscientists (SLIG)	Data gathering and analysis Advise the steering committee on relevant issues Review data gathered from different sources and advise on fit with broader NAP activities Advise sub-structures on data gathering and dissemination best practices Define/identify vulnerable groups (women, PWD, youth, elderly, etc.) Information sharing (institutionalise lesson learned) Coordinate bilateral and multilateral assistance and link with municipalities Define sectoral priorities for adaptation
Private Sector Consultative Group	Water packaging companies (e.g., Grafton, Luvian, etc) Fertilizer producers Sierra Leone Investment and Export Promotion Agency Sierra Leone Produce Marketing Board Chamber of commerce and industry Chamber of Agribusiness Sierra Leone Association of Insurance Companies Association of Commercial Banks Renewable Energy Association of Sierra Leone (REASL) Small Medium Enterprises Development Agency (SMEDA) Sierra Leone Water Company Guma Valley Water Company Addax Bioenergy Ltd (Sunbird) Miro Forestry Ltd Kingho Mining Chamber of Mines Leadway enterprises Hotel Association of Sierra Leone Telecom companies Sierra Leone Artisanal Fishermen Union Sierra Leone Timber Association SELI hydropower	Information dissemination Financial support/financing Knowledge transfer Supporting the integration of adaptive practices to increase the private sector resilience (climate proof investments, climate-related insurance, etc.) Advisory services

Group	Members	Roles and responsibilities
Local Councils, Communities and CSOs Consultative Group	Local Councils Coalition of CSOs Climate Change, Environment, and Forestry Consortium (CEFCON) Sierra Leone Alliance Against Hunger Campaign for Good Governance Marine Watch WONES Environmental Foundation for Africa (EFA) Sierra Leone Association of Journalists (SLAJ) Conservation Society of Sierra Leone (CSSL) Inter Religious Council of Sierra Leone (IRCSL) Sierra Leone Muslim Congress (SLMC) Sierra Leone Labor Congress (SLLC) WASH Network (WASHNet) Sierra Leone Union for Disability Issues (SLUDI) PACJA Green Scenery Sierra Leone Urban Research Centre (SLURC) Environmental Forum for Action (ECFORAC) 50-50 Group	Advocacy Awareness raising and outreach Resource mobilization Capacity building Research/M&E Networking
Development Partners Consultative Group	UN Development Programme (UNDP) US Agency for International Development (USAID) World Meteorological Organization (WMO) World Health Organization (WHO) German International Cooperation (GIZ) Irish Aid World Bank Group (WBG) African Development Bank (AfDB) European Union (EU) Food and Agriculture Organization (FAO) International Fund for Agricultural Development (IFAD) Department for International Development (DFID) Islamic Development Bank (IDB) UN Environment Programme (UNEP) United National Framework Convention on Climate Change (UNFCCC) Economic Community of West African States (ECOWAS) African Union (AU) UN Children's Fund (UNICEF) UN Industrial Development Organization (UNIDO) China Aid	Resource mobilisation Technical support including supporting GCF Readiness for adaptation and GCF direct access Knowledge transfer

6.7 Recommendations

There are several priorities with respect to improving the NAP process that should be addressed.

- Determine clear legal pathway to incorporate guidance and recommendations from the NAP into sector and local planning and budgeting processes, and to implement the priorities described in the NAP.
- Set legal guidance for clear mandate and roles for the various agencies working on climate change.
- Establish a data sharing agreement between all responsible agencies to enable information sharing and knowledge exchange in a transparent and participatory manner.
- Align NAP process with current and future development plans, to strengthen ownership and contribution from institutions responsible for national development planning and budgeting.
- Increase coordination roles of the Ministry of Environment in climate change adaptation. This includes convening government and non-government stakeholders, supporting capacity building and information exchange and building a shared understanding of policy, project and programme implementation goals.
- Establish the institutional system presented in this chapter.
- Appoint and provide capacity building support to sectoral focal points and sectoral adaptation teams, which will guide the process of mainstreaming climate change adaptation and implementation of the NAP within sectors.



Photo: Government of Sierra Leone



Photo: Sierra Leone, UNICEF

Next steps

7.1 Introduction

This chapter presents the next steps in the NAP process, including a roadmap with key activities and an implementation plan. The next steps will lead to subsequent versions of a NAP and its implementation.

7.2 NAP process roadmap

The NAP priorities have clear linkages to various clusters in Sierra Leone's Medium-Term National Development Plan (MTDP) (2019-2023) (Government of Sierra Leone 2019). While the country's vision for the environment and climate change adaptation is clearly stated in cluster 7 of Sierra Leone's Medium-term National Development Plan (2019–2023) (Government of Sierra Leone 2019), the NAP includes issues that cross sectors and therefore clusters. This provides an implicit mandate for addressing the priorities in the NAP. Additionally, since the MTDP is explicitly connected to the SDGs, this provides an alignment between the three policies. The linkages between the NAP and MTDP goals are provided in the table below.

2021

- Validation of initial NAP
- Submission of initial NAP to UNFCCC
- Validation of National Framework for Climate Services, informing NAP and NDC review
- Two NSC meetings to plan for the NAP process
- Formalized steering and interagency coordination groups
- Regional consultations on NAP and NDC review process
- Finalization of National Electrification Plan (to inform NAP and NDC review)
- Finalization of NDC review (NAP to inform review)
- Validation of revised NDC
- Review of National Climate Change Adaptation Plan
- Review of National Climate Change Adaptation Policy

- Conduct a gender analysis
- Hold consultations on GCF NAP Readiness Grant
- GCF NAP Readiness application submitted
- Work on integrating climate change into the education curriculum (2021-2022)

2022

- Receive GCF Readiness grant (Q2) (18-24 months implementation)
- Conduct vulnerability and risk assessments
- Produce institutional and human capacity needs assessment and strengthening plan
- Hold stakeholder consultations
- Identify adaptation options
- Apply stakeholder inclusive prioritization process to identify specific adaptation options
- Formulate concept notes, implementation arrangements, initial cost estimates and financing structures for prioritized adaptation options
- Formulate monitoring and evaluation framework for the NAP process

2023

- Develop Medium-term National Development Plan (2024-2029)
- Prepare full NAP
- Validate NAP

2024-2029

- Begin NAP priority programme Implementation
- Share 4th National Communications (NAP data to inform NC4)
- Begin PRSP5/Medium-term National Development Plan (2024-2029)
- Integrate adaptation into national, sector and local planning and budgeting (2025)

7.3 Implementation strategy: actions and needs

The actions identified in the NAP require substantial financial resources, investment, technology development and transfer, and capacity building. International cooperation is an important and prerequisite for leveraging of inputs for the implementation of the NAP.

Capacity development

Institutions and communities involved have skills that are essential for the NAP process. These capacities, which are found within specialized Ministries, Departments and Agencies (MDAs), state corporations, private sector, research and learning institutions will be utilized in the planning and implementation of the NAP.

There are, however, gaps in capacity development and a need for further learning and support, as detailed in the previous chapters. There is a need for support for cooperation across the government and internationally, including south-south cooperation, regional cooperation, bilateral and multilateral cooperation. Additional effort will be focused on implementation of a climate curriculum, technical training programmes and building south-south exchange and learning programmes.

Identification of specific adaptation options

This initial NAP has compiled priorities from strategies, policies and plans related to climate change adaptation, synthesizing Sierra Leone's key adaptation priorities. However, these priorities are currently high-level objectives and therefore, further refining will be necessary.

As part of the formulation of the full NAP, Sierra Leone will engage in a process whereby sectoral groups identify a range of possible actions for achieving each of the adaptation priorities listed in this Initial NAP. These options will be prioritized into specific actions that are appropriate for the Sierra Leone context and are aligned to resource availability.

Subsequently, these final priorities will be elaborated into concept notes that inform detailed project design processes, including basic climate rationale, theory of change, and draft implementation arrangements. Subsequent consultations and analysis will allow for these concepts to be matched to a range of diverse financing options. The development of initial concept notes will also help to inform the full NAP's monitoring and evaluation framework (see below).

Mobilization of finance

The priorities included in this document provide projects for public, private, international and national funding. While the costs for this plan cannot be calculated at this stage, there are a few documents that provide an estimate. For example, the NDC expenditure commitment estimates US\$ 900 million for most of the financing needed for adaptation.

There are also cost estimates outlined in the MTDP (2019-2023). The total costs for all the priorities that are linked between the NAP and MTDP is approximately \$3 billion for a five-year period. The section, 'Addressing vulnerabilities and building resilience' includes \$96.38 million in costs for five years. Further analysis will need to be conducted for a more accurate costing estimation.

It is planned for GCF to significantly finance the NAP's adaptation measures, given that Sierra Leone is a sub-Saharan African LDC, and a priority country for the GCF. To ensure that Sierra Leone is well placed to access GCF financing, the concept notes developed based on prioritized actions will be informed by GCF requirements.

Two financing goals have been set out for the NAP:

1. Establish a National Trust Fund for channeling adaptation support across sectors
2. Direct 40 percent of international development funding toward adaptation priorities across different sectors

Stakeholder Involvement

Subsequent planning and implementation of the NAP will continue to adopt a collaborative and adaptive learning approach by incorporating inputs from consultative groups. The NAP will ensure strong involvement of all stakeholders including government agencies, NGOs, private sector, universities, community-based organization, women's rights organizations and development partners.

Communication strategy

A climate change communications strategy under the NAP has been developed. This includes detailed information on targeted messages and is an essential for developing and implementing the NAP.

Monitoring and evaluation, learning and reporting

A framework for monitoring and evaluation (M&E) needs to be developed to support learning, accountability, transparency and reporting. This M&E framework is tentatively scheduled to be formulated in 2022, contingent on the availability of financial and technical support. The M&E framework will include concrete targets for tracking progress against the NAP's objectives described in Chapter 1. This system needs to be integrated between local and national governments. As the NAP is a working document, there needs to be a system in place to integrate lessons over time. Additionally, there also needs to be a platform created for knowledge sharing and information exchange. This will require the development of a data sharing policy, which will ensure data exchange between sectors, and between public and private institutions.



Photo: Government of Sierra Leone

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Annex 1: Stakeholder Consultation and Reviewer List

Bo District Council
Bombali District Council
Bonthe District Council
Christian Association for Sierra Leone
Climate Change, Environment and Forestry Consortium (CEFCON)
Coastal Resources Management Department
Conservation Society for Sierra Leone
Conservation Trust Fund
Disaster Management Department/Office of National Security
Environment Protection Agency
Freetown City Council
Inter Religious Council Sierra Leone (IRC)
Kambia District Council
Kenema District Council
Kingho Mining
Ministry of Agriculture
Ministry of Agriculture and Forestry
Ministry of Energy
Ministry of Environment
Ministry of Finance
Ministry of Fisheries and Marine Resources
Ministry of Foreign Affairs and International Cooperation
Ministry of Health and Sanitation
Ministry of Lands and Housing
Ministry of Local Government and Rural Development
Ministry of Mines and Mineral Resources
Ministry of Planning and Economic Development
Ministry of Tourism and Cultural Affairs
Ministry of Trades and Industries
Ministry of Works and Public Assets
Ministry of Youth Affairs
Moyamba District Council
National Commission on Social Action
National Protected Area Authority
National Tourist Board
National Water Resources Management Agency
Port Loko District Council
Pujehun District Council
Sierra Leone Agricultural Research Institute
Sierra Leone Meteorological Agency
Sierra Leone Muslim Congress
Sierra Leone Roads Authority
Sierra Leone Urban Research Centre
Statistics Sierra Leone
United Nations Development Programme, Sierra Leone
WeGo Logistics
Western Area District Council

International reviewer list

Least Developed Countries Expert Group
United Nations Framework Convention on Climate Change
NAP Global Network
National Adaptation Plan Global Support Programme
United Nations Development Programme
World Meteorological Agency



Photo: Sierra Leone, UNICEF

Annex 2: : Priority sector SWOT analysis

The following section analyzes the strengths, weaknesses, gaps and opportunities for each of the priority sectors. Gender Equality and Social Inclusion (GESI) information has been integrated into each sector.

Agriculture and food security	
Strengths	<ul style="list-style-type: none"> Existence of relevant policies, including National Agricultural Transformation Strategy, developed Availability of human resources Environmental NGOs implementing climate change adaptation process Ongoing agricultural investments by district councils Increased capacity building support for farmers and Farmer Based Organizations (FBOs) Increased access to finance for agribusiness Increasing access to finance due to the establishment of Agricultural Business Centers and Financial Service Associations Women benefiting from microcredit and cash for work projects
Weaknesses/gaps	<ul style="list-style-type: none"> Limited institutional capacity Inadequate capacity at farm level Need for stronger rural extensions services that can provide guidance on climate risks and adaptation options
Opportunities	<ul style="list-style-type: none"> Potential for accrediting Ministry of Finance as a Green Climate Fund National Designated Authority The availability of diverse funding sources Organizations and projects working on cross-sector priorities, including women in agriculture (GOSL), youth in agriculture (GOSL/Ministry of Youth Affairs) and promoting effective engagement in agribusiness for women's cooperatives in Sierra Leone (FAO project)
Threats	<ul style="list-style-type: none"> Conflicting mandates of government agencies responsible for forestry (e.g., among the Forestry Division, National Protected Area Authority, and NaRTGA for timber governance) Bureaucracy in accessing funds Emergence of new strains of pests & diseases
Water resources and energy	
Strengths	<ul style="list-style-type: none"> Climate change and adaptation is captured in NWRMA's 5 Year strategic development plan and includes a budget Adaptation elements are captured in annual work plans and NWRMA's 5-year strategic development plan Training in developing resilient water resources and energy structures Political incentives (tax reduction) for renewable energy investments Availability of hydrological monitoring equipment Key staff employed
Weaknesses/gaps	<ul style="list-style-type: none"> The Ministry of Water Resources does not capture climate change in its policy oversight functions Limited awareness of, and attitude concern towards, climate risks in the sector Fewer women in leadership roles in the sector Limited training opportunities for women and other marginalized groups
Opportunities	<ul style="list-style-type: none"> Strong political support for sustainable water resources management and renewable energy dissemination Increasing attention on water resources management and energy efficiency issues Donor commitment to support water resources management and new energy sector activities Development of multi-agency programmes and projects Sustained stakeholder and media engagement Summary and baseline reports on off-grid energy interventions Planning unit being set up at the Ministry of Energy by the Millennium Challenge Coordinating Unit

Water resources and energy (cont'd)	
Opportunities (cont'd)	<p>Existence of various working groups in the energy sector</p> <p>Increasing focus on GESI issues in off-grid solar energy strategy and monitoring mechanism developed by the Africa Clean Energy Technical Assistance Facility</p> <p>Gender mainstreaming supported by the Economic Community of West African States (ECOWAS)/ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) initiatives for regulatory support</p>
Threats	<p>Pressure for land leading to the destruction of critical watersheds and catchments</p> <p>Increasing pressure on water resources from the growing population</p> <p>Insufficient knowledge of water resources management among stakeholders</p> <p>Limited capacity for mainstreaming climate change into energy projects</p> <p>Limited financing for off-grid renewable energy interventions</p> <p>Non-compliance with the rules and regulations by some stakeholders</p> <p>Inadequate and untimely release of budgetary allocations to implement programmes</p>
Cross-cutting priority: Hard and soft infrastructure	
Strengths	<p>Policy foundation including five-year strategic plan (with adaptation features not expressly stated)</p> <p>Existence of various project proposals and plans (with adaptation components) on Water Sanitation and Hygiene Programme (WASH)</p> <p>Donor project appraisal documents with climate change considerations (such as the Project Appraisal Document for the transport project supported by the World Bank)</p> <p>Existence of environmental units for environmental safeguard compliance</p> <p>Mandatory safeguard compliance for donor support to infrastructure projects</p> <p>Draft building-code policy and guidelines for resettlement developed by the Sierra Leone Roads Authority</p> <p>Introduction of green building designs</p> <p>Increasing support to the Civil Aviation Authority to meet international (International Civil Aviation Organization (ICAO) and other) standards</p> <p>Strong support for WASH by the donor community</p> <p>Awareness-raising among practicing engineers</p> <p>Mandatory Environmental Impact Assessments including climate change components for all infrastructure projects</p> <p>WASH facilities are mostly disabled-friendly</p> <p>3-towns WASH project gave greater attention to marginalized groups and disadvantaged communities</p>
Weaknesses/gaps	<p>Annual work plans developed by SLRA (for road works), Ministry of Works and Public Assets, Road Maintenance Fund Administration, and Ministry of Transport and Aviation do not include resilience and adaptation components</p> <p>Limited capacity for mainstreaming climate change considerations into infrastructure projects</p> <p>Sierra Leone Housing Corporation near-defunct</p>

Cross-cutting priority: Hard and soft infrastructure (cont'd)	
Opportunities	<p>Implement plans and policies developed for WASH, waste management, and environmental health</p> <p>Non-state actors to provide budgetary support for resilient infrastructure projects (e.g., resilient housing in disaster prone informal settlements, etc.)</p> <p>Various consortia supporting WASH interventions at community level</p> <p>Ongoing trainings provided by the World Bank may increase knowledge for adaptation planning</p> <p>New projects with adaptation components (e.g., Resilient Urban Sierra Leone project funded by the World Bank) could build capacity for adaptation planning</p> <p>Development of a national resettlement policy</p> <p>Increasing risk awareness and support for resilient housing following the mudslide that occurred in 2017</p> <p>Compliance with International Civil Aviation Organisation standards may increase opportunities for funding</p> <p>Continued support for ecological sanitation by the GEF Small Grants Programme and Department for International Development</p> <p>Active labor unions can provide effective platforms for knowledge sharing</p> <p>Devolution of roads to municipal councils could increase commitment to adaptation planning</p> <p>High Civil Society Organisation (CSO) involvement in project design and delivery</p> <p>Child-centered climate change programming by various organizations</p> <p>Integrate climate change into Community-led Total Sanitation projects</p> <p>GESI mainstreaming receiving increasing focus by donors of infrastructure projects</p>
Threats	<p>Rapidly failing roads and buildings and risk of disasters is high</p> <p>Denial among technical staff of the impacts of climate change on infrastructure</p> <p>Limited capacity for adaptation planning and mainstreaming</p> <p>Unclear roles and responsibilities</p>
Coastal zone management	
Strengths	<p>Policy framework: Marine Resources Act, Draft Wetland Conservation Act</p> <p>New marine-protected areas to be designated</p> <p>Increasing support for ecotourism across coastal communities</p> <p>Increasing risk awareness</p> <p>Increasing mangrove restoration efforts</p> <p>Many trainings organized to strengthen the capabilities of councils, CSOs, and Community Based Organisations for effective coastal resources management</p> <p>Regular State of the Environment Report done by the Environment Protection Agency (EPA), providing a basis for planning and delivery</p> <p>Coastal resilience project supporting data collection on coastal communities and fisheries practices</p>
Weaknesses/gaps	<p>Limited capacity for research and project implementation at the National Protected Area Authority</p> <p>No clear plans and strategies proposed for coastal conservation by the National Protected Area Agency</p> <p>Fragmented decision-making by the Ministry of Fisheries, EPA, NPAA, and donor agencies</p> <p>The Wetlands Act is still a draft and not enforceable</p> <p>Co-management plans have been developed for few marine-protected areas</p> <p>Mangrove management planning needs further support in protecting MPAs</p> <p>Need to pass draft forestry, wildlife conservation and wetland conservation laws</p> <p>Limited financing for community-driven interventions</p>

Coastal zone management (cont'd)	
Opportunities	<ul style="list-style-type: none"> Delivery of the Coastal Climate Change Adaptation Plan Formation of the Coastal Chiefs Natural Resources Management Network Formation of a Co-Management Committee for implementing plans developed for the Sherbro River Estuary Participatory rural appraisal of coastal communities can inform future adaptation planning Ongoing planning for the Mangrove for Life project supported by the European Union and to be implemented by the International Union for Conservation of Nature and Wetlands International Africa Ongoing community embankment initiatives supported by USAID Resource mobilization plan developed for the Sherbro River Estuary Co-Management Committee by WA BiCC
Threats	<ul style="list-style-type: none"> Low compliance with national laws Acute rate of mangrove forest degradation Rising water level, sedimentation and flooding Ineffective coastal governance structures (in terms of behavior change, communications, monitoring, and resource mobilization) Coastline development proposed by the government could reverse conservation gains made over the years
Environment (including forestry, land, mineral resources and tourism)	
Strengths	<ul style="list-style-type: none"> Policy formulation and implementation including new policy for timber governance and reforestation Proposed structures for drought management, land reform, and land degradation neutrality High involvement of external stakeholders Community readiness to implement forest conservation measures Ongoing Sustainable Development Goal 15.3 assessments/reporting Environmental Impact Assessments (EIAs) 4 directorates established by the Ministry of the Environment (established by the presidency in 2019) Establishment of a Land Commission Devolution of land permits to municipality councils National Reforestation and Timber Governance Agency to be established Increasing support by donors and private sector institutions for tourism Development of a national strategy for tourism development
Weaknesses/gaps	<ul style="list-style-type: none"> For ministries, departments or agencies undertaking research, recommendations are not adequately implemented No resource mobilization strategy Agencies implementing initiatives belong to different ministries in different (non-environmental) sectors
Opportunities	<ul style="list-style-type: none"> International networking and coordination mechanisms Diverse funding sources Political support (new Ministry of the Environment established) Growing donor support Establishment of environmental court
Threats	<ul style="list-style-type: none"> Increasing demand for forest (wood and non-wood) products Increasing demand for forestland for agricultural purposes Rapid rural-urban migration Environmental degradation and climate change Non-compliance with Multilateral Environmental Agreements

Disaster Management	
Strengths	<p>Existence of disaster management institutions at national and subnational level</p> <p>Cross-level interaction for disaster management (between policy and local-level institutions such as municipal councils)</p> <p>National Disaster Management Agency established</p> <p>Emergency operations center to be established by the World Bank</p> <p>The Disaster Risk Management (DRM) Policy is being revised</p> <p>National emergency response plan is being developed</p> <p>Cross-institutional platforms being developed for data sharing</p> <p>Increasing donor support to disaster resilience projects</p> <p>Capacity needs-assessment of Disaster Management Department has been done to support ongoing investment planning process</p> <p>Regular stakeholder meetings and collaborative planning across municipal and national levels</p>
Weaknesses/gaps	<p>No resource mobilization plan</p> <p>Difficulty for community structures to access funding</p> <p>Poor coordination and networking</p> <p>Limited policy learning and evaluation</p> <p>Limited capacity for attributing activities to disaster management outcomes</p> <p>Limited capacity for policy development and resource mobilization</p> <p>Disaster management seasonal (only a priority when disaster events occur)</p> <p>Lack of harmonized DRM messaging to affected communities</p> <p>Limited visibility of adaptation projects</p> <p>High donor dependence</p>
Opportunities	<p>Ongoing improvements to early warning</p> <p>The World Bank is developing an investment plan for the sector</p> <p>Stand-alone disaster management agency to be established by the government</p> <p>Increased donor support for disaster resilience building and risk awareness raising</p>
Threats	<p>Outdated policy frameworks</p> <p>Limited government buy-in; disaster management is not a priority unless events occur</p> <p>Fragmented institutional approaches (competing interests)</p>



