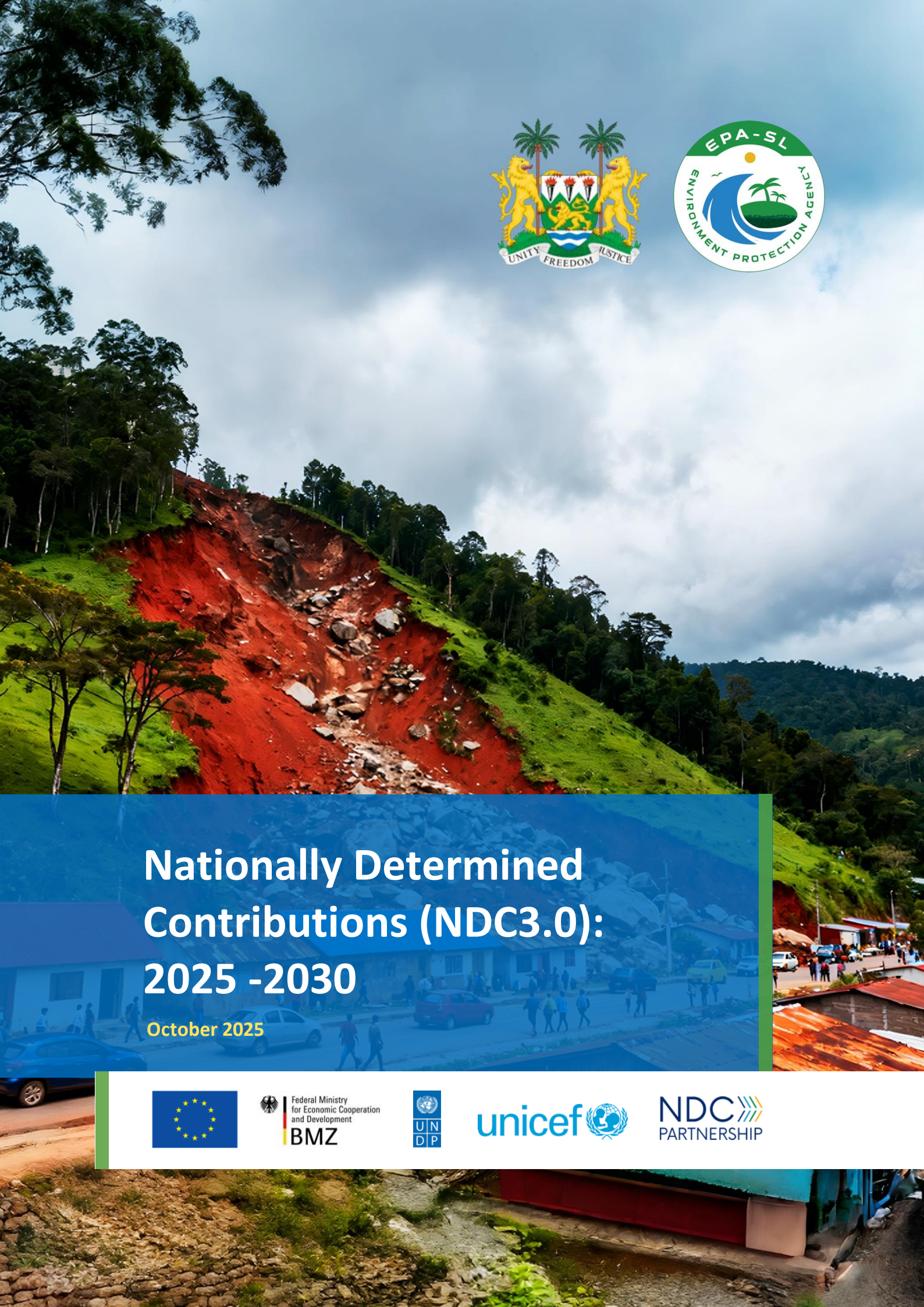

Nationally Determined Contributions (NDC3.0): 2025 -2030

October 2025

Federal Ministry for Economic Cooperation and Development
BMZ

unicef

NDC PARTNERSHIP

Contents

List of Abbreviations and Acronyms

A4P	**Agenda for Prosperity**
AFOLU	Agriculture, Forestry and Other Land Uses
Blended Finance	Grants + concessional loans + private capital to scale interventions
BUR	Biennial Update Report
CCP	Climate Change Project
CCS	Climate Change Secretariat
CCSAP	Climate Change Strategy and Action Plan
CO2	Carbon Dioxide
CEF	Carbon Emission Factors
CFC	Chloro Fluorocarbon
CH4	Methane
CMB	Coastal Management Board
CO	Carbon Monoxide
COP	Conference of Parties
Debt-for-Climate Swap	Debt service diverted to domestic climate investments
ECOWAS	Economic Community of West African States
EF	Emission Factor
EI	Energy Industries
EJ	Exajoule
EPA-SL	Environment Protection Agency – Sierra Leone
FAO	Food and Agricultural Organisation
FBC	Fourah Bay College
GDP	Gross Domestic Product
GEF	Global Environmental Facility
Gg	Gigagrams
GHG	Greenhouse Gas
Green / Blue Bonds	Raise capital from investors for climate infrastructure or water projects.
HCFC	Hydro-Chlorofluorocarbon
HFO	Heavy Energy Oil
IPCC	Intergovernmental Panel on Climate Change
ICZM	Integrated Coastal Zone Management
Gg	Gigagrams
GHG	Greenhouse Gas
HCFC	Hydro-Chlorofluorocarbon
HFO	Heavy Energy Oil
IPCC	Intergovernmental Panel on Climate Change
ICZM	Integrated Coastal Zone Management
IMBO	Institute of Marine Biology and Oceanography
INC	Initial National Communication
IPCC	Inter-governmental Panel on Climate Change
IPPU	Industrial Processes and Product Use
ISIC	International Standard Industrial Classification
MASSADA	MASSADA
MAFFS	MAFFS
MBSE	MBSE
MCI	Manufacturing and Construction Industries

MoEnv	Ministry of the Environment
MOE	Ministry of Energy
MRU	Mano River Union
MTA	Ministry of Transport and Aviation
MT	Million Tonnes
MTNDP	Medium-Term National Development Plan
MP	Metal Production
NOx	Nitrogen Oxide
N2O	Nitrous Oxide
NC	National Communication
ND	New Direction" (Sierra Leone National Development Plan 2019/24)
NDC	Nationally Determined Contribution
NGO	Non-Governmental Organization
NMVOC	Non-Methane Volatile Organic Compound
NCCS	National Climate Change Secretariat
NCSP	National Communications Support Programme
NPPA	National Protected Area Authority
PA	Paris Agreement
Parametric Insurance	Payouts triggered by climate indices (floods, droughts, storms)
PPP / Private Investment	Risk-sharing with private partners for large infrastructure projects
PRSP	Poverty Reduction Strategy Paper
SLS	Sierra Leone Statistics
RBF	Results-Based Finance, tied to verified outcomes.
REDD+/PES	Forest carbon and ecosystem services payments
SLSB	Sierra Leone Standard Bureau
SNC	Second National Communications
SSL	Statistics Sierra Leone
SO2	Sulphur Dioxide
SF6	Sulphur Hflexafloride
SWDS	Solid Wastes Disposal Sites
TNC	Third National Communications
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research
USL	University of Sierra Leone
VMT	Vehicle Miles Travelled
WONES	A Women's Empowerment Association

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EXECUTIVE SUMMARY

Sierra Leone's updated Nationally Determined Contribution (NDC 3.0) charts an ambitious course to achieve a climate-resilient, inclusive, and low-carbon future. Covering the period 2025–2035, it aligns with the Medium-Term National Development Plan (MTNDP 2024–2030), the Energy Transition and Green Growth Plan, and the Feed Salone Strategy, while remaining consistent with global frameworks such as the Paris Agreement, the Sustainable Development Goals, Agenda 2063 of the African Union, and the Sendai Framework for Disaster Risk Reduction.

The total cumulated needs for the NDC 3.0 over the period 2025-2035 are US$ 2,974 million (2.974 billion). The total Cost of Mitigation Measures is US$ **1,024 million (1.024 billion).** Adaptation Final aggregates (**2025-2035**) require US$ **1,950 million (1.95 billion)**. This effort will provide a 19,987 Gg CO2e reduction by 2035, which will represent 36.2% of the BAU economy-wide emissions.

Mitigation is central to Sierra Leone's vision of a low-carbon economy. The planned energy transition reduces dependency on costly imported fossil fuels, strengthens energy security, and creates opportunities for domestic value chains in solar, hydro, and clean cooking technologies. It will also position Sierra Leone as an emerging regional clean energy hub within the West Africa Power Pool. Importantly, mitigation commitments are designed to mobilise private capital, de-risk investments, and expand green jobs. By linking mitigation to industrialisation and job creation, Sierra Leone ensures that climate ambition also delivers socio-economic transformation.

Sector	High-level Mitigation Targets
Waste	**Reduce GHG emissions from the waste sector by 52.5% below BAU levels by 2035**[1] ▪ Reduce emissions by 135 Gg CO2e per year by supporting the implementation of a landfill gas recovery system by 2035 ▪ Reduce emissions by 300 Gg CO2e per year by supporting Waste Organic Diversion; by 2035.
Transport	**Reduce GHG emissions from the transport sector by 16.2% below BAU levels by 2035** [2] ▪ Reduction of 141.5 $GgCO_2$ per year by the introduction of 10,000 electric kekehs; by 2035 ▪ Reduction of 214 $GgCO_2$ per year by the introduction of 100 electric buses; by 2035 ▪ Reduction of 179 $GgCO_2$ per year by improving the efficiency of the vehicle fleet; by 2035

[1] BAU emissions from waste sector in 2035 are estimated at 837.36 Gg CO2e
[2] BAU emissions from transport sector in 2035 are estimated at 3288.68 Gg CO2e

Energy	**Reduce GHG emissions from the energy sector by 41.6% below BAU levels by 2035[3]** ○ Reduce emissions by 41.62 $GgCO_2e$ avoided per year by the installation of 50 MW in mini grids in rural areas. ○ Reduce emissions by 15 $GgCO_2e$ avoided per year by the installation of 50 MW in schools, hospitals and manufacturing units. ○ Reduce emissions by 0.63 $GgCO_2e$ avoided per year by installing SHS in 5000 HHs in rural areas by 2035. It includes rural micro-enterprises. ○ Reduce emissions by 488.6 $GgCO_2$ avoided per year by supplying improved cookstoves to 90% of HHs (900,000 HHs) and 12,000 institutional stoves by 2035. ○ Reduce emissions by 50.8 $GgCO_2$ avoided per year by supplying LPG cookstoves to 60,000 HHs; by 2035 ○ Reduce emissions by 1750 $GgCO_2e$ avoided per year by supplying biogas cookstoves to 90,000 HHs; by 2035
AFOLU	**Reduce GHG emissions from the AFOLU sector by 33.6% below BAU levels by 2035[4]** • Reduce emissions by 18204 $GgCO_2e$ avoided per year by improving management of 200,000 ha forests; 100,000 ha mangroves, and 200,000 restored forests; by 2035 • Reduce emissions by 910 $GgCO_2e$ avoided per year by 60,000 ha not burnt during farming; 90,000 ha additional area accumulated from sedentary farming, and 60,000 HHs benefited from increased livelihoods & co-benefits

Adaptation is the safeguard of Sierra Leone's development. By prioritising agriculture, water, health, education, child protection (including gender, social protection and social welfare) and coastal resilience, the NDC strengthens the systems on which livelihoods depend. Adaptation interventions will secure food production, reduce climate-induced migration, protect biodiversity, safeguard critical infrastructure and improve child protection outcomes. The emphasis on solar-powered irrigation, resilient seed systems, and post-harvest storage directly supports the Feed Salone strategy and rural poverty reduction. Equally, investments in health, education, child protection and urban resilience ensure that communities are better equipped to cope with climate shocks. Adaptation measures thus act as a shield against climate risks while generating co-benefits for growth and social stability.

[3] BAU emissions from energy sector, excluding transport, in 2035 are estimated at 1415.92 Gg CO2e

[4] BAU emissions from ALOFU sector, as woodland degradation and charcoal cycles outweigh any incidental regrowth, is 56864 Gg CO2e

Sector	High-level Adaptation Targets
Waste	**Establishment of new landfill facilities** ○ Landfill leachate collection system planned with enough capacity for heavy rainfall events. ○ Diverting organic waste from landfill through segregated organics collection contributes to preventing landfill fire outbursts. ○ Provide fire-safety structures for landfills, including periodical cover with dry material. ○ Disposal sites must be compacted each day to force waste disposed of to settle, preventing deadly landfill slides (most dangerous for communities living off waste salvaged in or around dump sites). ○ Ensure landfills have more than one access route and effective drainage systems. **Development of small-scale composting of market waste** ○ Implement frequent organic waste segregation collection, distributing food waste caddies (reduces odours, pests and insects from rapidly degrading material).
Transport	**Support the implementation of infrastructure that fosters the development of electric buses and electric Kekehs** ○ Ensure the low-income population reaches jobs, education and healthcare services, improving their access to economic and social opportunities. ○ Ensure climate-resilient transport systems, improving safe and equitable access to schools, health, and protection services.
Energy	**Create an FDI private investment enabling environment focusing on PPA in renewables;** ○ Diversify the energy matrix to provide a more resilient system under climate variability **Minigrids in Rural Areas** ○ Local economic development: new MSMEs (milling, cold rooms, welding, ICT), longer trading hours. ○ Public services: reliable power for schools/health posts (lighting, vaccine cold chain, labs). ○ Household welfare: safer lighting (kerosene substitution), study time for students, phone/IT connectivity. ○ Gender: time savings, women-led last-mile businesses, safer evening mobility. ○ Environment/air quality: diesel genset displacement (noise, NOx/PM), reduced kerosene use. ○ Resilience: backup supply for clinics/EM services; mobile money/communications during outages. **Commercial/Industrial PV** ○ Competitiveness: reduced LCOE and OPEX; lower outage losses (spoilage, downtime).

	○ Jobs & skills: electricians, EPC crews, O&M technicians; HSE practice diffusion. ○ Grid support: peak-shaving, potential ancillary services with storage. ○ Environment: diesel displacement, quieter operations. **SHS in rural areas** ○ Energy access leap: Tier-1/2 electricity; phone charging and radio/TV. ○ Education & security: evening study hours; reduced fire risk vs candles/kerosene. ○ Micro-enterprise: pay-per-charge services, small retail refrigeration (higher-capacity SHS). **Produce and distribute improve cookstoves. LPG cookstove or biogas cookstoves that use fuel wood and charcoal.** ○ Reduce health problems when breathing in smoke from cooking fires by using improved fuel-efficient stoves that reduce the production of smoke and harmful gases within households
Forestry and Land Use	• Improved management of forest and mangroves • Community Forestry and Co-Managed Protected Areas • Agroforestry and Climate-Smart Tree Crop Intensification • Wetland and Mangrove Restoration
Policy Measures	**Agriculture and Food Security** ○ Climate Smart Nutrition Sensitive Agriculture (CSA) and Extension Scale-up ○ Irrigation and Water Harvesting ○ Seed Transformation Systems, Post-Harvest and Storage ○ Climate Resilient Water Supply and Sanitation **Water Resources and Coastal Management** ○ Integrated Watershed Management for Rokel, Sewa, and Moa Basins ○ Coastal Resilience: Mangrove Restoration and Urban Flood Protection **Disaster Risk Reduction and Early Warning** ○ National Multi-Hazard Early Warning System with Last-Mile Delivery ○ NDMA Capacity, Equipment, and Emergency Logistics ○ Community-Based Disaster Risk Management (CBDRM) and Safe Infrastructure ○ Strengthening Climate Observation and Early Warning Systems for Sierra Leone ○ AI-Based Climate and Weather Forecasting System for Resilient Development in Sierra Leone **Health**

	○ Climate-Resilient Health Facilities (Power, Water, and Safe Siting) and health systems strengthening ○ Climate-Informed Disease Surveillance and Early Action ○ Integrated Vector Management and Heat-Health Action Plans ○ Environmental Health Management Action Plan **Education** ○ Disaster and Climate Risk Management in Schools ○ Climate-Resilient Infrastructure and Safe Access ○ Climate and Environmental Education in Curricula and Teacher Training ○ Greening School Communities and Operations

Cross-cutting priorities are the glue that binds mitigation and adaptation into a socially just transition. By embedding local content requirements, Sierra Leone ensures domestic ownership of climate investments. Gender and youth mainstreaming guarantee that climate action expands opportunities for those historically marginalised. Technology transfer and South-South cooperation expand Sierra Leone's access to innovations while enabling knowledge-sharing with peer nations. The focus on a just transition ensures that communities dependent on carbon-intensive sectors are not left behind but are integrated into emerging green industries. Together, these measures safeguard the inclusivity and sustainability of the NDC.

The Finance Roadmap is designed to drive a sustainable and effective climate response through a set of complementary actions:

- **Mobilising private and international finance** to reduce reliance on limited domestic budget resources, while unlocking capital at scale.
- **Deploying de-risking instruments**—including guarantees, concessional loans, and results-based financing—focused particularly on early-stage investments in the energy and clean cooking transitions, where perceived risks remain highest.
- **Broadening the funding base** by tapping into carbon markets and issuing green and blue bonds, both to supplement revenues and to attract long-term impact investors.
- **Phasing interventions strategically**—starting with pilots, followed by Wave 1 rollouts, and ultimately full-scale implementation—so that systems are tested, investor confidence is built, and national capacity develops in step with financial commitments.
- **Strengthening Environmental Tracking Frameworks (ETF) and Monitoring, Reporting and Verification (MRV) systems** to ensure transparency of finance flows, measurable outcomes, and access to results-based climate finance.

Building on these foundations, the strategy will mobilise a combination of financial instruments and defined amounts dedicated to both mitigation and adaptation. The NDC 3.0 is characterised by three financial points: it is fair and ambitious, with a clear and credible national ownership and a sustainable public finance path.

A Fair and Ambitious Mitigation–Adaptation Balance for a Developing Economy

The Government reaffirms its commitment to a balanced and just climate response by adopting a fair 1:2 financing ratio between mitigation and adaptation actions in the 2025–2035 NDC 3.0 financial roadmap. With a total of USD 2.974 billion mobilised over ten years, USD 1.024 billion is allocated to mitigation and USD 1.950 billion to adaptation. This strategic prioritisation reflects the country's developmental status and high vulnerability to climate impacts, while maintaining responsibility in reducing emissions. The financing structure ensures mitigation actions remain adequately resourced to contribute to global emission reduction efforts, while acknowledging the urgent need for investments in resilience and climate-proof development to protect populations, infrastructure and ecosystems.

A Clear and Credible National Ownership

The NDC 3.0 financial roadmap targets strong domestic mobilisation. For mitigation, the national budget plus private, will cover 20 percent of total mitigation needs—equivalent to USD 205 million. For adaptation, the Government commits USD 400 million, representing 20.5 percent of total adaptation financing needs. These reflect a credible, fair and responsible contribution from a developing country with limited fiscal space. They signal the country's serious engagement in climate action while transparently highlighting the financing gap that must be addressed through international climate finance, concessional instruments and technology transfer in line with the principles of equity and common but differentiated responsibilities.

A Sustainable Public Financing Pathway and Innovative Domestic Resource Mobilisation

The Government has established a sustainable and realistic financing pathway that secures USD 605 million in national contribution over the decade—USD 400 million for adaptation and USD 205 million for mitigation. Of this amount, USD 304 million will be mobilised directly by the Government (USD 225 million for adaptation and USD 79 million for mitigation), while the remaining USD 301 million will be generated through private sector participation and community-based mechanisms. Importantly, as NDC3.0 measures will unfold, they will give rise to revenue such as infrastructure resilience levy, early warning service fees, landfill taxation and public–private partnership models. This approach safeguards fiscal sustainability while integrating climate finance into national systems through climate budget tagging and strategic public investment planning.

The mitigation finance structure under NDC 3.0 demonstrates a balanced and sustainable blend of domestic commitment and international partnership, anchored in strong private-sector engagement. Out of a total of USD 1.024 billion, 20 percent (USD 205 million) represents unconditional domestic effort—comprising USD 79 million in public expenditure and USD 126 million from private investment—reflecting firm national ownership and a credible domestic contribution.

The remaining 80 percent (USD 819 million) is conditional on international support, structured to maximise leveraging and de-risking effects. Within this, USD 126 million is expected from public derisking instruments such as guarantees and concessional finance, designed to crowd in USD 693 million of international finance investment for low-carbon infrastructure, clean energy, and sustainable transport. This public–private and national–international architecture ensures long-term financial sustainability by coupling domestic accountability with global solidarity, reducing dependence on grants while fostering transformative private capital flows into mitigation.

Table 1: Mitigation Portfolio funding

Category	Amount (M USD)	% of Total Mitigation
DOMESTIC	**205**	**20.0%**
Public	79	7.7%
Private	126	12.3%
INTERNATIONAL (conditional)	**819**	**80.0%**
Public	126	12.3%
Private & Market	693	67.7%
TOTAL	**1,024**	**100%**

The adaptation finance portfolio totals **USD 1,950 million**, structured to reflect the distinct logic of adaptation action—where the emphasis lies in building resilience and managing climate risk across systems, rather than delivering direct emission reductions.

- **Unconditional resources** amount to **USD 400 million (20.5%)**, reflecting actions that can be undertaken with domestic or already-secured financing. Within this, **public finance (USD 225 million, 11.5%)** will support baseline resilience measures, institutional capacity, and public goods such as climate information systems. The **private component (USD 175 million, 9.0%)** represents market-driven adaptation investments, particularly in agriculture, infrastructure, and insurance—areas where resilience and profitability can align without concessional support.
- **Conditional finance**, totalling **USD 1,550 million (79.5%)**, demonstrates the scale of ambition contingent upon enhanced international support and risk-sharing mechanisms. Within this structure, **public conditional finance (USD 349 million, 17.9%)** is dedicated to **de-risking instruments**, such as guarantees, concessional loans, and blended funds that lower the cost of capital and attract private participation. Meanwhile, **conditional private finance (USD 1,201 million, 61.6%)** represents the **leveraged investment potential**—mobilised once enabling conditions and risk mitigation frameworks are in place.

This balance of **public de-risking and private leveraging** provides a **credible and structured pathway** for scaling adaptation action. It recognises that adaptation investments often yield diffuse or long-term benefits, requiring strong public frameworks to crowd in private actors. The portfolio's design thus reflects both fiscal realism and strategic ambition—anchored in a partnership model where public support unlocks private resilience finance at scale.

Table 2: Adaptation Portfolio funding

Category	Amount (M USD)	% of Total Adaptation
DOMESTIC	**400**	**20.5 %**
Public budget	225	11.5%
Private	175	9.0%
INTERNATIONAL (conditional)	**1550**	**79.5 %**
Public	349	17.9%
Private & Market	1,201	61.6%
TOTAL	**1,950**	**100%**

Importantly, types of financial instruments and sources of finance are strategically targeted so as to reach a sound blended finance model around a derisking/leveraging / innovative finance progress, as the tables below show.

Table 3: Breakup for mitigation finance by financial function (derisking, leveraging, innovative)

Category / Subcategory	Amount (M USD)	% of Total Mitigation (1,024 M USD)
DOMESTIC– TOTAL	**205**	**20.0%**
Public Budget	**79**	**7.7%**
Domestic Private	**126**	**12.3%**
INTERNATIONAL– TOTAL (conditional)	**819**	**80.0%**
Public Derisking	**99**	**9.7%**
Private Sector Derisking	**116**	**11.3%**
MDB Scaling Up	**167**	**16.3%**
Philanthropy & Bonds Market Scaling Up	**220**	**21.5%**
Incentives & Innovative Finance	**217**	**21.2%**
GRAND TOTAL	**1,024**	**100%**

Table 4: Breakup for adaptation by financial function (derisking, leveraging, innovative)

Category / Subcategory	Amount (M USD)	% of Total
DOMESTIC– TOTAL	**400**	**20.5%**
Public Finance	225	11.5%
Private Domestic	175	9.0%
INTERNATIONAL– TOTAL (conditional)	**1,550**	**79.5%**
Public good Derisking	337	17.3%
Public Scaling-up	456	23.4%
Private Blending	224	11.5%
Sub-total Bonds – Scaling up	430	22.0%
Results-based (Innovative) Finance	103	5.3%
GRAND TOTAL	**1,950**	**100%**

The strength of Sierra Leone's NDC lies in its governance. The implementation framework ensures clarity of roles, reduces institutional overlaps, and strengthens accountability. By empowering the Ministry of Environment and Climate Change, the Environment Protection Agency, and the Ministry of Energy as lead institutions, the framework provides both political authority and technical capacity to drive delivery. Furthermore, the inclusion of civil society, local authorities, and the private sector establishes the foundation for participatory and transparent governance. Effective coordination mechanisms will accelerate policy coherence, reduce duplication of resources, and ensure alignment with donor programs. Implementation readiness is thus a key marker of Sierra Leone's credibility under the Paris Agreement.

MRV is the backbone of NDC 3.0. A robust, transparent system ensures that progress is measurable, verifiable, and credible both nationally and internationally. This transparency will attract investor and donor confidence, enabling Sierra Leone to access climate finance and carbon markets under Article 6. The MRV framework also creates a domestic evidence base, allowing policymakers to adapt strategies in real time. By strengthening institutional capacity for data collection and reporting, Sierra Leone ensures that climate actions are not aspirational but demonstrably implemented and evaluated against clear targets.

In this sense, Sierra Leone has moved beyond NDC 2.0 and has successfully delivered its first BUR1 in 2024. To support the transition to the Enhanced Transparency Framework, the government is actively developing a roadmap for its first BTR, with technical support under CBIT. Institutionally, Sierra Leone has anchored climate and transparency efforts within both the environmental sector (via EPA and the Meteorological Agency) and, crucially, within the Ministry of Finance by establishing a **Climate Finance Unit** and CEDA (**Centre for Environmental Data and Statistics**).

Sierra Leone's NDC 3.0 is both a climate action plan and a **development document**. It provides a roadmap for reducing emissions, building resilience, and ensuring inclusivity while linking directly to food security, energy access, and economic transformation. By mobilising an estimated **US$ 1,950 million over the period 2025-2035** and leveraging strong partnerships, Sierra Leone can transition from vulnerability to leadership in climate-smart growth. NDC 3.0 is therefore not just about compliance with the Paris Agreement, but about creating a resilient, equitable, and prosperous future for all Sierra Leoneans.

1 Introduction

The Republic of Sierra Leone faces the urgent and complex challenge of addressing climate change while advancing national development priorities and safeguarding the well-being of its people. Building on the country's long-standing engagement with the United Nations Framework Convention on Climate Change (UNFCCC) and guided by the Medium-Term National Development Plan (MTNDP 2024–2030), the Nationally Determined Contribution (NDC) 3.0 sets out an ambitious and forward-looking framework to drive climate action between 2025 and 2035.

Sierra Leone's NDC 2.0 marked a significant step toward integrating climate action into national planning, with measurable progress in stakeholder engagement, sectoral inclusion, and international alignment. The process successfully enhanced institutional coordination through the Environmental Protection Agency (EPA-SL) and strengthened data availability in priority sectors such as energy, agriculture, and forestry. However, implementation faced challenges due to limited financing, weak monitoring and reporting systems, and insufficient technical capacity across ministries, which hindered full operationalisation of targets. Additionally, the absence of a dedicated MRV framework and sustainable financing mechanisms constrained transparency and long-term impact. Building on these lessons, this NDC 3.0 adopts a more robust, evidence-based and finance-ready approach—anchored in an operational MRV system, stronger institutional mandates, climate budget integration through the Ministry of Finance, and a clearer linkage between mitigation, adaptation, and investment pipelines—making it more actionable, credible, and aligned with the Enhanced Transparency Framework of the Paris Agreement.

It integrates mitigation and adaptation priorities across all sectors of the economy, including energy, agriculture, forestry, coastal and urban systems, transport, waste management, health, education and industry. It also incorporates cross-cutting themes such as gender equality, child protection, youth empowerment, technology transfer, South-South cooperation, and climate finance.

This NDC 3.0 aligns with the ongoing institutional reforms of the Environmental Protection Agency (EPA-SL) under the Environmental Protection and Climate Strategy (EPATS) and the Climate Change Secretariat (CCS) framework. These reforms are redefining EPA-SL's mandate from a primarily regulatory authority to a national climate coordination and delivery institution with strengthened technical, analytical, and reporting capacities. Through EPATS/CCS, the EPA is institutionalising the national MRV system and will lead the implementation of the MRV system, mainstreaming climate actions across ministries, departments, and agencies (MDAs), and ensuring that transparency, data governance, and results-based management are embedded in national planning. This alignment reinforces ownership of the NDC process, ensuring that climate commitments are not externally driven but rooted in domestic institutional capability, legal authority, and policy coherence. By linking the NDC's implementation to these structural reforms, Sierra Leone demonstrates that its climate ambition is underpinned by a credible institutional architecture capable of sustaining long-term transformation.

The document consolidates lessons from previous climate strategies and reports—including the Initial and Second National Communications, the Biennial Update Report (BUR), and the iNAP—while aligning with emerging national strategies such as the Energy Transition and Green Growth Plan and the Feed Salone Strategy. It also responds to international commitments under the Sustainable Development Goals (SDGs), Agenda 2063 of the African Union, and the Sendai Framework for Disaster Risk Reduction.

To guide readers, the document is organised into the following sections:

a) **Section 1 – National Context:** Presents Sierra Leone's socio-economic and environmental profile, key vulnerabilities to climate change, and alignment with national development priorities.
b) **Section 2 – Mitigation Measures:** Outlines sectoral strategies for reducing greenhouse gas emissions, including energy transition, low-carbon transport, forestry, agriculture, industry, and waste management.
c) **Section 3 – Adaptation Measures:** Details actions to strengthen resilience in climate-sensitive sectors, focusing on agriculture, water, health, coastal and urban systems, and disaster risk reduction.
d) **Section 4 – Cross-Cutting Priorities:** Highlights measures for technology transfer, capacity building, gender and youth empowerment, just transition, and South-South and triangular cooperation.
e) **Section 5 – Implementation Framework:** Sets out the institutional arrangements, roles of ministries and agencies, stakeholder engagement, and financing strategies needed to operationalise the NDC.
f) **Section 6 – Monitoring, Reporting and Verification (MRV):** Provides the framework for measuring progress, ensuring transparency, and aligning national MRV systems with the Enhanced Transparency Framework under the Paris Agreement.
g) **Annexes:** Contain detailed technical information, sectoral data, financial needs assessments, and alignment matrices with other national and international strategies.

The NDC 3.0 is accompanied by a set of documents that provide technical support for the measures, proposals, and diagnoses specified herein. These documents are:

1. GHG Inventory and emissions baseline report
2. Infrastructure vulnerability and adaptation assessment
3. Mitigation outcomes assessment report
4. Report on technological requirements.
5. Climate finance and investment roadmap.
6. MRV framework
7. Stakeholder consultation and validation: Summary report

Through NDC 3.0, Sierra Leone articulates clear sectoral targets, financial needs, implementation arrangements, and monitoring systems. It emphasises a whole-of-society approach that brings together government institutions, the private sector, civil society, development partners, and communities to deliver climate solutions that also drive economic transformation and poverty reduction.

In doing so, the NDC 3.0 serves not only as a climate action plan but also as a roadmap for sustainable development, resilience building, and just transition in Sierra Leone. It is a call to collective action and partnership, ensuring that the country's climate ambition translates into tangible benefits for present and future generations.

2 Process & Stakeholder Engagement

2.1 Gap Analysis

As mandated by the Paris Agreement, the core principle for revising Nationally Determined Contributions (NDCs) is to deepen commitment, ambition and progression.

As NDC 3.0 builds upon Sierra Leone's Updated NDC (2021), this section critically assesses the latter, highlighting its well-defined commitments and scope for further details, quantification, or institutional strengthening in NDC 3.0.

This serves as a base toward Sierra Leone's strengthened ability to fulfil its international obligations under the Paris Agreement, while supporting national development and resilience.

It is worth noting at this point that a detailed analysis of the Gap Analysis can be found in Annex A.

2.1.1 Mitigation Sectoral Analysis

Energy

The energy sector remains dominated by biomass and fossil fuels, despite clear ambitions to expand renewable energy and clean cooking access. The Updated NDC established important targets but lacked measurable indicators and financing mechanisms. NDC 3.0 responds by translating these goals into a renewable energy project pipeline with quantified key performance indicators (e.g., installed capacity, grid loss reduction, household clean cooking access). It also introduces energy storage, forecasting, and grid code upgrades, supported by a National Energy MRV Protocol to ensure accurate tracking of sectoral progress. Financing will be enhanced through the operationalisation of the National Climate Finance Facility and blended finance instruments.

Transport

The transport sector contributes significantly to national emissions, largely due to an ageing fleet, poor fuel efficiency, and the absence of emission standards. While pilot initiatives such as the EPA-led e-mobility project have shown progress, systemic change requires phased enforcement of fuel efficiency and import-age standards, and the establishment of vehicle inspection and maintenance systems. NDC 3.0 introduces a Transport MRV module within the BUR framework and sets the stage for a comprehensive Urban Mobility Plan anchored in public transport, electric mobility, and accessibility to education and health services.

Waste

Waste management remains a critical gap, constrained by infrastructure, financing, and methane control. The NDC 3.0 integrates lessons from the Integrated National Waste Management Strategy (2012–2016) and aligns with the Basel, Stockholm, Rotterdam, and Minamata Conventions. It introduces national waste performance standards, methane MRV systems, and public–private partnerships to improve collection, recycling, and energy recovery. The objective is to transform waste management into a climate mitigation and circular economy pillar, with explicit linkage to emission reduction targets.

Industrial Processes and Product Use (IPPU)

Emissions from hydrofluorocarbons are increasing due to growing cooling demand. The absence of a refrigerant registry and licensing system undermines compliance with the Kigali Amendment. NDC 3.0 calls for the establishment of a National Refrigerant Registry, Minimum Energy Performance Standards (MEPS), and energy labelling systems. These measures will be integrated into the MRV framework and supported by industrial standards for low-carbon manufacturing and enforcement.

Agriculture, Forestry, and Other Land Use (AFOLU)

AFOLU is both a key emission source and a major mitigation opportunity. Current limitations include incomplete forest reference levels, weak carbon-rights legislation, and insufficient data on agricultural emissions. NDC 3.0 strengthens forest governance through REDD+ scaling, mangrove restoration, and community forestry agreements. It introduces carbon-rights and benefit-sharing legislation, fire management, and climate-smart agriculture to ensure food security and sustainable livelihoods. Improved MRV and tenure systems will underpin transparent carbon accounting and community benefit-sharing.

2.1.2 Adaptation and Resilience Gaps

Adaptation remains central to Sierra Leone's national resilience agenda but lacks measurable progress indicators. The Updated NDC envisioned a 50% reduction in vulnerability by 2030; however, no quantifiable metrics were defined. NDC 3.0 seeks to institutionalise climate budget tagging, expand hydrometeorological and early-warning systems, and introduce resilience standards for health facilities, including heat alerts, solar cold chains, and water and sanitation compliance.

Coastal zones are identified as a key vulnerability area. NDC 3.0 operationalises blue carbon MRV systems, shoreline management plans, and carbon-credit-ready estuary projects in mangrove and delta ecosystems. These measures aim to reduce coastal erosion and flooding risks while unlocking new opportunities in climate finance and carbon markets.

Importantly, NDC 3.0 integrates child protection and gender equality into adaptation planning, ensuring that measures address the specific vulnerabilities of children, women, and marginalised groups. This is consistent with the Global Goal on Adaptation under the Paris Agreement, which calls for inclusive and equitable resilience outcomes.

2.1.3 Governance, MRV, and Financing Frameworks

Weak coordination and limited financing have hindered the full implementation of the Updated NDC. The Environmental Protection Agency (EPA-SL) remains the lead institution, but clear mandates, coordination mechanisms, and budgetary authority must be reinforced across line ministries. NDC 3.0 proposes a single national MRV guideline harmonising sectoral methods, templates, and quality assurance procedures. Mandatory data reporting by utilities, transport fleets, and municipalities will enhance transparency and compliance.

The financing architecture will be strengthened through the Climate Finance Unit and National Climate Financing Facility, which will mobilise resources from domestic budgets, multilateral

funds, and private-sector investment. An NDC Investment Plan will guide project preparation and link conditional commitments to bankable outcomes. The goal is to increase the share of private-sector participation beyond the current 12% through targeted incentives and blended financing instruments.

2.1.4 Implementation Pathway for NDC 3.0

NDC 3.0 envisions a phased implementation strategy:

- Phase I (2025–2027): Establish sectoral targets, operationalise MRV protocols, finalise shoreline and REDD+ frameworks, and mainstream climate budget tagging.
- Phase II (2028–2032): Scale up renewable energy to 150 MW, deploy one million clean cooking devices, expand waste-to-energy partnerships, and implement mass transit systems.
- Phase III (2033–2035): Consolidate progress through robust operation and maintenance systems, enable Article 6 carbon market participation, and conduct comprehensive sectoral reviews to inform future NDC cycles.

This phased approach ensures that Sierra Leone moves from planning to measurable implementation, strengthening its credibility under the Paris Agreement while aligning with national development priorities.

2.1.5 Strategic Priorities

To deepen ambition and ensure full alignment with international standards, NDC 3.0 will:

- Define transparent baselines and sectoral emission pathways.
- Link conditional mitigation measures to quantified finance and outcomes.
- Create measurable adaptation indicators and costed sectoral plans.
- Map climate actions to financing sources and establish a technology transfer roadmap.
- Institutionalise MRV frameworks with clear roles and reporting timelines.
- Strengthen inter-ministerial coordination and multi-stakeholder engagement.
- Integrate child protection and social safeguards into climate policies.

These strategic directions will enhance transparency, attract greater climate finance, and demonstrate Sierra Leone's continued leadership and commitment to achieving a resilient, low-emission, and inclusive economy by 2035.

2.2 Consultations

The development of Sierra Leone's NDC 3.0 has been guided by an inclusive and iterative consultation process designed to ensure both technical rigour and broad national ownership. Building on the gap analysis and sectoral reviews presented earlier, this section documents the timeline of activities and the series of stakeholder consultations conducted across key regions and sectors.

Between June and October 2025, Sierra Leone's Environment Protection Agency (EPA-SL) led an extensive series of consultations and workshops nationwide to finalise the country's Nationally Determined Contribution (NDC) 3.0. District-level consultations were conducted across all 12 districts—bringing together Paramount Chiefs, local councils, ministries, civil society, youth, women,

and persons with disabilities—to ensure inclusivity and ownership of the process. These sessions identified local vulnerabilities, adaptation priorities, and mitigation opportunities in key sectors such as waste, energy, and transport. Participants emphasised challenges like inadequate infrastructure, urban waste management gaps, outdated substations, and the need for renewable energy expansion. The consultations also generated recommendations for enhancing resilience through early-warning systems, clean energy, biogas, composting, and climate-smart agriculture, while promoting gender balance, accessibility, and the integration of local knowledge into national planning.

At the national level, EPA-SL hosted a series of validation and technical workshops in Freetown, including sessions on data processing, mitigation, adaptation, and financial planning. The LEAP 3.0 data validation workshop strengthened national capacity for transparent data management and MRV systems, leading to the creation of a centralised data hub and sectoral focal points. The mitigation and adaptation validation meetings refined sectoral measures, ensuring alignment with Sierra Leone's Medium-Term National Development Plan and Paris Agreement goals. Finally, the Financial Roadmap discussions engaged the Ministry of Finance in determining sectoral funding commitments—solidifying the link between policy ambition, data credibility, and sustainable financing for climate resilience.
For a detailed description of these events, see Annex B and the document "***Stakeholder consultation and validation Summary report***".

2.3 Alignment with National Policies

Sierra Leone's NDC 3.0 serves as the operational blueprint for translating the country's climate ambition into tangible investments that advance both mitigation and adaptation priorities, firmly anchored in the national policies. The MTNDP identifies climate resilience and environmental action as a key enabling pillar alongside the "Big Five Game Changers": Feed Salone, human capital development, youth employment, digitalisation, and improved service delivery. In this framework, NDC 3.0 functions as the vehicle that integrates climate action into the national planning and budgeting process—linking renewable energy, sustainable agriculture, and ecosystem management to national growth objectives. By doing so, it ensures coherence between development and environmental policies, aligning with Sierra Leone's Climate Change Policy (2021), National Biodiversity Strategy and Action Plan, and Long-Term Climate Vision (2021–2050).

The Feed Salone Strategy (2023) and Energy Transition & Green Growth Plan are pivotal to NDC 3.0's design, bridging food security, energy access, and climate resilience. Under Feed Salone, the NDC promotes climate-smart, nutrition-sensitive agriculture through sustainable livestock management, agroforestry, soil carbon restoration, and mangrove protection—directly linking agricultural productivity with adaptation and emission reduction. Similarly, the Energy Transition Plan's target of universal access and full electrification by 2040 is operationalised through NDC 3.0 investments in renewable energy, mini-grids, clean cooking, and e-mobility pilots. The National Energy Compact ("Mission 300") further reinforces this ambition by prioritising energy equity and inclusion—raising electricity access while promoting decentralisation and gender-responsive approaches. Together, these frameworks embody Sierra Leone's shift toward a just, low-carbon economy guided by national and regional policies.

At the global level, NDC 3.0 aligns Sierra Leone's national priorities with Agenda 2063, the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction, and principles of the SAMOA Pathway. It positions climate action as a cross-sectoral driver of sustainable development—supporting SDG 7 (energy), SDG 13 (climate action), SDG 2 (food security), SDG 8 (decent work), SDG 9 (innovation), and SDG 5 (gender equality). Through clear indicators—such as emissions avoided, hectares restored, and households with modern energy access—NDC 3.0 functions as Sierra Leone's "delivery engine" for the SDGs within the MTNDP. Its alignment with Sendai's priorities on risk

governance and resilience ensures the integration of early warning systems, ecosystem-based adaptation, and resilient infrastructure, while its coastal and blue-economy components mirror the SAMOA Pathway's focus on sustainable fisheries and coastal livelihoods. Collectively, NDC 3.0 consolidates Sierra Leone's national frameworks into a unified, government-owned roadmap for 2025–2030—anchoring climate action at the core of sustainable development.

3 Updated National Circumstances & Risk Assessment[5]

3.1 Sectoral vulnerability[6]

The identification of sectoral vulnerability is a critical step in understanding Sierra Leone's exposure to climate risks and in designing targeted responses under NDC 3.0. Vulnerabilities represent geographic areas, systems, or sectors where climate change impacts intersect with socio-economic vulnerabilities, creating heightened risks for livelihoods, infrastructure, ecosystems, and national development.

Vulnerabilities across **energy, transport, waste and IPPU** were systematically assessed in terms of the underlying risks they face—such as flooding, erosion, deforestation, biodiversity loss, urban congestion, or methane emissions—and the implications these risks hold for achieving Sierra Leone's climate commitments.

By explicitly linking risks to NDC 3.0 mitigation and adaptation objectives, the vulnerability analysis ensures that investments are prioritised where they will deliver the greatest impact. For example, energy vulnerabilities underscore the urgency of diversifying supply and expanding clean cooking solutions, while forestry and land use vulnerabilities emphasise reforestation, mangrove restoration, and sustainable land management. Likewise, urban waste vulnerabilities highlight the dual challenge of methane emissions and flood vulnerability, pointing toward integrated waste-to-energy and resilience solutions.

Ultimately, vulnerability analysis shows that there is a vital opportunity to move beyond portraying Sierra Leone merely as a climate-vulnerable nation and instead to highlight its growing leadership, progress, and ambition in driving climate-resilient development. While past assessments have emphasized exposure to climate risks such as flooding, coastal erosion, and agricultural stress, Sierra Leone in 2025 is actively responding with vision and momentum, by strengthening institutional coordination through the Environmental Protection Agency (EPA-SL) and the Climate Change Secretariat (CCS), advancing renewable energy and sustainable agriculture under the Medium-Term National Development Plan (2024–2030), and expanding data systems to underpin transparent, evidence-based policy.

These advances reflect national ownership and a clear policy direction, demonstrating that we want not just to adapt to climate change but to position ourselves as proactive leaders in low-carbon, climate-smart growth.

The present NDC 3.0, beyond vulnerability, addresses opportunity, as national reforms, innovation, and partnerships are shaping a resilient and sustainable future.

[5] In Annex C, a more detailed description of the National Circumstances can be found

[6] It is worth noting at this point that what follows in a summary of a detailed analysis that can be found in the document "***Infrastructure vulnerability and adaptation assessment***" associated to the NDC, as described in Section 1.

3.1.1 Energy Sector

Over the last decade, Sierra Leone has expanded rural electrification, diversified its energy mix through solar mini-grids and small hydropower, and reinforced policy coherence under the National Energy Policy and the Energy Transition and Green Growth Plan (ETGGP). Despite this progress, heavy dependence on hydropower and limited rural access leave the sector highly sensitive to droughts and storms.

Key vulnerabilities include:

- Hydropower reliance and rainfall variability, causing output fluctuations and costly thermal backup;
- Transmission fragility from storm damage and lack of smart-grid technology; and
- Urban–rural access inequality, perpetuating biomass dependence.

The NDC 3.0 calls for energy diversification, climate-resilient infrastructure, and accelerated off-grid renewables, supported by international finance and private-sector participation.

3.1.2 Transport Sector

Sierra Leone's transport sector is modernising through road corridor rehabilitation, urban mobility improvements, and policy frameworks for e-mobility and fuel efficiency. Persistent vulnerabilities include:

- Flood- and erosion-prone corridors, where extreme rainfall disrupts supply chains;
- Urban congestion, particularly in Greater Freetown, is increasing emissions and health risks.

NDC 3.0 integrates climate-proofing of roads and bridges, urban drainage upgrades, and promotion of low-carbon public transport such as electric buses and three-wheelers. It further supports integrated land-use and transport planning to reduce congestion and enhance connectivity.

3.1.3 Waste Sector

The waste sector is transitioning from unmanaged disposal toward a circular-economy approach that links waste management to energy recovery and job creation. Under EPA-SL leadership, initiatives such as waste-to-energy pilots, biogas digesters, and hazardous-waste regulation are underway.

Vulnerabilities remain acute in:

- Uncontrolled dumpsites (Kissy, Kingtom, Bo, Kenema, Makeni, Kono) that worsen flooding and disease outbreaks;
- Methane emissions from decomposing organic waste; and
- Open burning of medical waste, which contributes to GHGs and air pollution.

NDC 3.0 calls for engineered landfills, composting and recycling, methane capture, and a national medical-waste management investment plan. These measures combine climate mitigation with public-health protection.

3.1.4 Industrial Processes and Product Use (IPPU)

Industrial emissions, though historically low, are increasing due to modernisation in cement and beverage production. Major risks include CO_2 process emissions, power unreliability, and exposure to heat stress.

The policy response emphasises:

- Energy-efficient and low-carbon technologies;
- Cleaner production standards; and
- Formalisation of small-scale industries through capacity-building and access to green finance.

These interventions will reduce emissions while promoting inclusive industrial growth aligned with the national green-industrial strategy

3.2 Gender Equality, Social Inclusion, and Conflict Sensitivity

3.2.1 Gender and Social Inclusion

Sierra Leone has demonstrated a growing commitment to gender equality through the National Gender Policy (2020), the Gender Equality and Women's Empowerment (GEWE) Act (2022), and the National Climate Change Policy.

Progress achieved:

- Integration of gender into sectoral climate strategies;
- Collection of sex-disaggregated data;
- Increased women's leadership in renewable energy and agriculture projects; and
- Expansion of gender-responsive budgeting in climate finance.

Remaining gaps include limited attention to transformative change, intersectionality, and gender-based violence prevention.

NDC 3.0 mandates 30 percent female participation in leadership and decision-making, dedicated funding for women and youth initiatives, and systematic collection of sex-, age-, and disability-disaggregated data to guide equitable implementation.

3.2.2 Conflict-Sensitive Climate Risks

Given Sierra Leone's post-conflict context, the NDC 3.0 embeds conflict-sensitivity to prevent climate shocks from exacerbating tensions. Risks include:

- Resource competition (farmer–herder and water disputes);
- Environmental crime (illegal logging, mining, and fishing);
- Youth marginalisation and urban unemployment; and
- Displacement from floods or coastal erosion.

Mitigation priorities include integrated land-use planning, shared water infrastructure, community-based monitoring, and green-jobs programs for youth. Conflict-sensitive MRV systems will track equitable benefit-sharing and strengthen social cohesion

3.2.3 Link to Long-Term Low-Emission Development Strategy (LT-LEDS)

The forthcoming LT-LEDS (2050) will operationalise Sierra Leone's net-zero vision, providing decarbonization pathways across energy, land use, waste, transport, and industry. NDC 3.0 (2025–2035) functions as its medium-term implementation instrument, translating long-term ambition into actionable, costed investments.

Together, the Climate Vision (2021–2050), NDC 3.0, and LT-LEDS create a coherent, tiered framework that links short-term delivery, medium-term scaling, and long-term transformation. This alignment enhances Sierra Leone's credibility, readiness, and attractiveness to climate finance and partnerships.

3.2.4 Just-Transition and Local-Content Priorities

Sierra Leone's low-carbon transition will be people-centred, grounded in equity, inclusion, and decent work. The Government will safeguard communities dependent on carbon-intensive livelihoods through social protection, alternative-livelihood support, and skills retraining.

The Energy Transition and Green Growth Plan (ETGGP) and Feed Salone Strategy serve as dual pillars for building domestic expertise and ensuring local ownership. Key principles include:

- Domestic workforce development in renewable energy, e-mobility, and MRV;
- Technology transfer and local innovation for solar, clean cooking, and agro-processing systems;
- Promotion of MSMEs in green value chains;
- Local-content procurement rules for climate projects; and
- Community benefit-sharing in forestry, mangrove, and carbon-market initiatives.

These principles guarantee that the climate transition creates inclusive jobs, strengthens local enterprises, and channels carbon revenues to communities, ensuring that Sierra Leoneans are the principal beneficiaries of the green economy.

On the other side, Sierra Leone's NDC 3.0 identifies a portfolio of measures that address both climate mitigation and adaptation, ensuring that climate action simultaneously reduces greenhouse gas (GHG) emissions while strengthening resilience to climate shocks. The cross-cutting nature of these measures delivers synergies that support sustainable development, agri-food systems for improved food and nutrition security, energy access, child protection, education and public health.

In Annex D, a detailed description of the co-benefits of the different measures proposed is provided and analysed.

3.3 Policy Coherence with the National Adaptation Plan and Other Frameworks

NDC 3.0 fully aligns with Sierra Leone's environmental and climate policy architecture:

- The National Adaptation Plan (2023) — advancing resilience through early-warning systems, climate-proofed infrastructure, and NDMA capacity-building;
- The National Biodiversity Strategy and Action Plan (2017) — guiding reforestation, mangrove restoration, and biodiversity conservation;
- The REDD+ Strategy (2019) — supporting avoided deforestation, carbon-stock enhancement, and transparent benefit-sharing; and
- The Blue Economy Policy (2021) — promoting coastal protection, sustainable fisheries, and "blue-carbon" restoration.

This alignment ensures coherence across government, strengthens institutional ownership, and facilitates access to international climate finance, while upholding reporting commitments under both the UNFCCC and the Convention on Biological Diversity.

4 Mitigation Contribution

4.1 Description of modelling tools

The preparation of Sierra Leone's NDC 3.0 was anchored on two mutually-reinforcing modelling platforms. First, the 2006-IPCC-compliant **Inventory Software** was populated with every published energy balance, agriculture survey, waste audit and forest inventory that the Environmental Protection Agency (EPA-SL) had collected for the years 2015-2024. The compilation team applied Tier 1 defaults for most categories and tier 2 in FOLU categories by combining soil and land cover change analysis. The software was used to produce a complete time-series in the UNFCCC CRT format and a database 2015-2024 historical reference from which the 2035 BAU trajectory was projected for the Waste, IPPU, Energy and the AFOLU sectors.

Once the historical matrix was closed, the same CRT dataset was imported without modification into LEAP 2023. And applied in defining three LEAP scenarios:

- BAU, which simply froze existing policies and extrapolated the IPCC inventory trend-lines to 2035;
- WEM (With Existing Measures), which added already-funded projects.
- WAM (With Additional Measures), which layered the aspirational interventions listed in the draft NDC 3.0.

LEAP's end-use structure was disaggregated into energy demand and supply branches to record the penetration rate of each technology by energy use; and easy of applying emission factors and coefficients aligned with the IPCC Inventory guidelines to guarantee perfect numerical consistency into the future. After calibration, LEAP was used to project the GHG emissions 2035 under BAU, WEM and under WAM, figures that were copied verbatim into the mitigation chapter of the NDC 3.0. Parallel runs were executed for local air pollutants ($PM_{2.5}$, SO_2, NO_x) reduction estimation of the proposed mitigation measures using LEAP. Finally, the IPCC Inventory Software was used to generate the indirect CO_2 from urban waste incineration.

It has to be mentioned here that all the GHG science and calculations regarding BAU trajectories and CO_2e abatements can be found in the supporting document "***GHG Inventory and emissions baseline report***" associated with the NDC 3.0, as described in Section 1.

4.2 Emission BAU Trajectories

4.2.1 Methodological Approach – Sierra Leone

Sierra Leone's updated Nationally Determined Contribution (NDC) mitigation targets have been developed through a rigorous, government-led assessment of the country's greenhouse-gas (GHG) abatement potential to 2035. The methodology updates the 2020 NDC baseline, aligns with the 2022 National GHG Inventory, and is consistent with the Medium-Term National Development Plan 2024–2030 and the Electricity Master Plan 2022. The exercise was executed in three sequential stages under the oversight of the Environmental Protection Agency of Sierra Leone (EPA-SL) in coordination with the Ministries of Energy, Transport, Agriculture, Lands & Environment, and Finance.

Business-as-Usual (BAU) Emission Projection

The base year of 2015 was used in line with the national GHG inventory submitted to the UNFCCC. Key drivers are the macro-economic indicators approved by Statistics Sierra Leone (population growth 3.0

% yr-1; GDP growth 5.0 % yr-1 2024–2030); and the power-sector expansion programme (additional 150 MW solar-hydro by 2030). The Long-range Energy Alternatives Planning (LEAP) system, calibrated to Sierra Leone datasets, was used to produce an updated BAU scenario projecting economy-wide GHG emissions to 2035.

Identification, Quantification and Prioritisation of Mitigation Measures

Measures were identified through inter-ministerial technical working groups and stakeholder consultations held in all four administrative regions between March and May 2023. Each measure was modelled in LEAP to estimate GHG abatement potential relative to the updated BAU. Unit abatement cost and investment requirements were calculated using EPA-SL cost databases, ECOWAS ECREEE benchmarks and World Bank SAP values. Prioritisation applied three criteria: consistency with national development plans; technical readiness for implementation within three years; and domestic co-benefits (employment, gender, poverty reduction). Measures satisfying domestic financing capacity were designated "unconditional"; those requiring international support were designated "conditional".

BAU emissions projections

Sierra Leone's updated mitigation contribution is expressed as a percentage reduction below a Business-as-Usual (BAU) trajectory that runs from 2015 to 2035. The BAU scenario depicts future greenhouse-gas (GHG) emissions on the assumption that no additional mitigation policies and measures (PaMs) beyond those already operational by 31 December 2024 are implemented. It therefore serves as the reference against which the emission-reduction impact of all new or enhanced PaMs included in this NDC update is measured.

Consistent with the Enhanced Transparency Framework and best-practice guidance from the UNFCCC, Sierra Leone has adopted a dynamic baseline. The EPA-SL, in consultation with Statistics Sierra Leone and the National Commission for Development Planning, will formally revise the BAU every two years to incorporate updated activity data, macro-economic forecasts and methodological improvements reflected in the national GHG inventory. This approach avoids the systematic over- or under-estimation of baseline emissions that can arise from a static baseline once new data become available.

The 2025 BAU projection was built through bottom-up, sector-specific modelling of activity drivers and emission factors to 2035. Activity forecasts were reconciled with official Government of Sierra Leone (GoSL) plans and statistics, including the Medium-Term National Development Plan 2024–2030, the Electricity Master Plan 2022, the 2023 Population and Housing Census preliminary results, and the 2022 National Forest Inventory. Cross-departmental validation workshops were held with the Ministries of Energy, Transport, Agriculture, Lands & Environment, and Finance to ensure consistency across sectors. Two macro-economic drivers dominate the BAU trajectory to 2035, which include:

1. Economic growth: Real GDP growth is projected to average 5.0 % yr-1 over 2024–2030, moderating to 4.5 % yr-1 thereafter, in line with the latest IMF Article IV and Ministry of Finance macro-fiscal framework. Higher value-added activity in agriculture, mining, construction and services increases demand for electricity, freight transport, cement and land, thereby pushing up CO_2 and non-CO_2 emissions.

2. Population growth: The population growth derived medium scenario shows the national population rising from 7.8 million in 2022 to 11.2 million in 2035, an average annual growth of 2.8 %. Urban growth (4.2 % yr-1) exceeds rural growth (1.9 % yr-1), driving higher energy use for housing, transport, water and waste management.

3. In the document ***D9 Climate finance and investment roadmap,*** a detailed financial calculation was done allocating unconditional financial contributions to Sierra Leone mitigation measures. These figures will shape the different mitigation scenarios, as we will see in a later section.

4.2.2 Economy Wide GHG Emissions

Sierra Leone's economy-wide greenhouse-gas inventory more than doubled between 2016 and 2024, rising from 14.9 Mt CO_2e to 25.2 Mt CO_2e as every sector except waste accelerated in tandem with a recovering economy and rapid urbanisation. AFOLU remained the dominant contributor throughout the period, growing at roughly 5 % yr^{-1} and accounting for more than 80 % of the national total in every recorded year. Energy-related emissions leapt from 1.0 Mt to 1.8 Mt—a 75 % increase—driven by expanded grid generation, increased diesel trucking and the re-start of industrial-scale mining.

Looking forward, it is projected that an almost three-fold surge, pushing total national emissions to 46 Mt CO_2e in 2030 and 72 Mt CO_2e in 2035, equivalent to an average annual growth rate of 8 %. AFOLU continues to dominate the inventory, supplying 31.9 Mt (69 %) in 2030 and 56.9 Mt (79 %) in 2035 as biomass burning, land use changes, especially conversion to grasslands, and rice methane scale with population and paddy area. Energy is the second-fastest escalator, reaching 3.1 Mt in 2030 and 4.7 Mt in 2035—an effective doubling every seven years—as grid capacity doubles and off-road transport expands.

Industrial processes and product use, still a minor contributor today, exhibit the steepest trajectory of any sector, rising 14 % yr^{-1} to hit 2.5 Mt in 2030 and 4.4 Mt in 2035 on the back of new cement, steel and beverage plants foreseen in the national industrial master-plan. Even the comparatively modest waste sector grows 3 % yr^{-1}, reaching 0.7 Mt in 2035 as urban centres generate more solid waste and wastewater. Taken together, these trends portray an economy where non-AFOLU sources collectively add 13 Mt of new emissions between now and 2035—an amount larger than the entire national inventory in 2016.

Overall, the scenario portrays an economy where two-thirds of the 2035 inventory originates from just two AFOLU line items—biomass burning and rice methane—while the remainder is driven by energy, industry and waste expansion linked to population growth, urbanisation and planned large-scale infrastructure. The trajectory underscores that any future climate commitment must confront these rapidly rising baselines if Sierra Leone is to keep its long-term temperature commitments within reach.

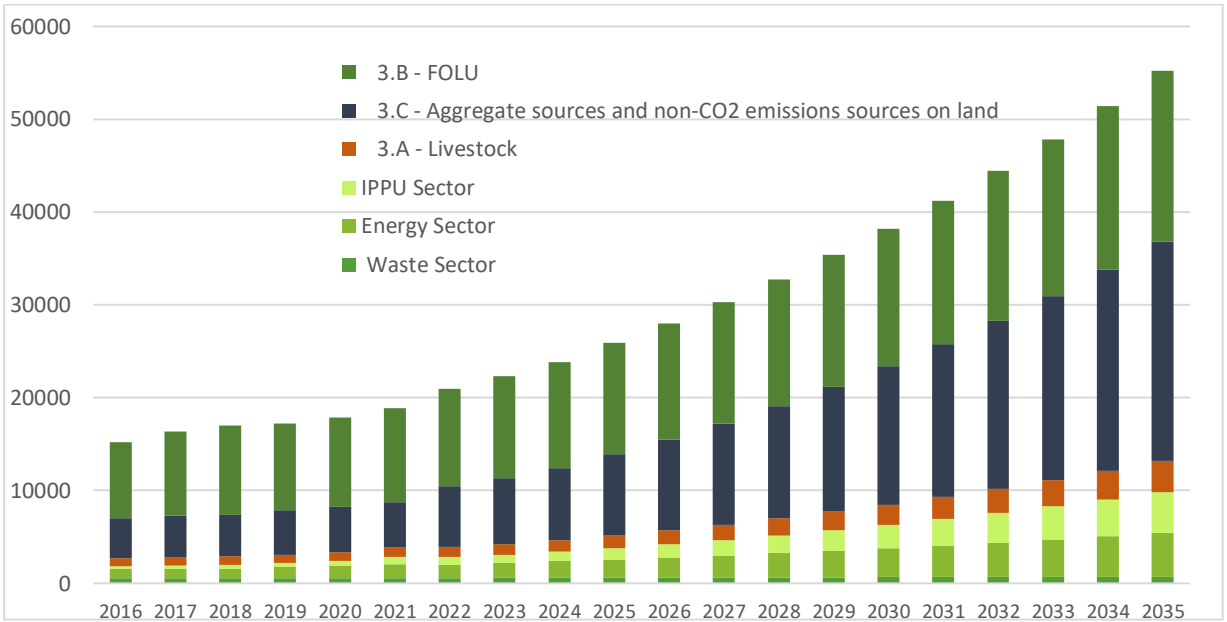

FIGURE 1 ECONOMY-WIDE GHG EMISSIONS

4.2.3 Sectoral historical and future emissions [7]

The table below shows a summary of the historical sectoral emissions from 2015 to 225 (showing the 2024 value), and the BAU trajectories. It also includes historical energy-wide emissions and the BAU trajectory.

	AFOLU	Energy	Waste	IPPU	Total Emission-Gg
Baseline 2024	20431.3	1803.46	597.46	1011.22	23843.44
Total Emissions 2030	31902.42	3121.66	663.47	2507.19	38194.74
Total Emissions 2035	45362.57	4724.66	725.06	4376.956	55189.24

4.3 Energy Sector Mitigation[8]

4.3.1 Mini-grids in Rural Areas

Detailed Description

The mini-grid program targets rural and peri-urban communities currently relying on diesel generators and traditional fuels for lighting and productive uses. Systems are typically solar PV + battery ('PV-BESS') hybrids with limited diesel back-up for resilience, sized between ~50 kW and 100 kW depending on demand clusters (households, clinics, schools, agro-processing, markets). Designs include smart metering and load management, anchor-business connections (e.g., milling, cold-chain, irrigation), and standardised O&M contracts to ensure high uptime. Tariffs should follow transparent, cost-reflective principles complemented by results-based financing (RBF)/capital grants to keep household tariffs affordable. Where appropriate, interconnection-ready designs and net-billing arrangements allow integration with the national grid or utility feeders when they arrive.

It is planned to implement minigrids powered by solar energy as well.

A national site pipeline should be prioritised using clear criteria: social infrastructure density (health posts and schools), productive-use potential (agro-processing, fisheries/cold-chain), current reliance on diesel/kerosene, and ability to establish community energy committees. The program should adopt standard technical specifications, safety and environmental management procedures, and gender-inclusive customer engagement (onboarding, payment options, and productive-use grants This measure builds on and scales up the existing EU/UNOPS risk-based model that focuses on mini-grids. This mini-grid measure targets rural and peri-urban communities currently relying on diesel generators and traditional fuels for lighting and productive uses. Systems are typically solar PV + battery ('PV-BESS') hybrids with limited diesel back-up for resilience. Sizing is between 1-100 KW as basic mini grid and above 100KW to 20 MW classed as full mini grid, depending on demand clusters (households, clinics, schools, agro-processing, markets). Designs include smart metering and load management, anchor-business connections (e.g., milling, cold-chain, irrigation), and standardised O&M contracts to ensure high uptime. Tariffs should follow transparent, cost-reflective principles complemented by results-based financing (RBF)/capital grants to keep household tariffs affordable. Where appropriate,

[7] For a detailed explanation and data calculation please see the supporting document called: ***GHG Inventory and emissions baseline report***

[8] All mitigation measures are described in a greater detail in the supporting document called: ***GHG Inventory and emissions baseline report***

interconnection-ready designs and net-billing arrangements allow integration with the national grid or utility feeders when they arrive.

It is planned to implement minigrids powered by minihydro as well.

A national site pipeline should be prioritised using clear criteria: social infrastructure density (health posts and schools), productive-use potential (agro-processing, fisheries/cold-chain), current reliance on diesel/kerosene, and ability to establish community energy committees. The program should adopt standard technical specifications, safety and environmental management procedures, and gender-inclusive customer engagement (onboarding, payment options, and productive-use grants).

Table 5: Outcomes & Indicators (2030 and 2035) – Mini grids

Item	2030 Target (Indicators)	2035 Target (Indicators)
Installed capacity & sites	25 MW in installed capacity. 80% solar and 25 % hydro. (Indicator: MW installed; number of commissioned sites)	50 MW in installed capacity. 80% solar and 25 % hydro. (Indicator: MW installed; cumulative sites)
Service & reliability	≥95% annual technical availability; (Indicator: uptime %, SAIDI/SAIFI proxies)	≥97% annual availability; (Indicator: uptime %, customer hours served)
Energy delivered	93.75 GWh/yr delivered; (Indicator: annual MWh metered)	187.5 GWh/yr delivered; (Indicator: annual MWh metered)
Customers & PUE	20,000 household connections; ≥1,500 productive-use connections; (Indicator: active meters by class)	50,000 household connections; ≥4,000 productive-use connections; (Indicator: active meters by class)
GHG reductions	20.84 $ktCO_2e$/yr avoided (diesel/kerosene displacement); (Indicator: tCO_2e/yr)	41.62 $ktCO_2e$/yr avoided; (Indicator: tCO_2e/yr)

4.3.2 Commercial/Industrial PV

Detailed Description

This measure builds on the measures already outlined in the Renewable Energy Policy (2016) and the National Renewable Energy Action Plan, which already sets clear targets up to 2030.

The Commercial/Industrial (C&I) PV measure supports rooftop and ground-mounted solar at factories, agro-processors, cold-chain facilities, mines, hotels, commercial buildings, universities, and health complexes. Systems are primarily behind-the-meter for self-consumption, optionally with battery storage to reduce peak demand and provide backup. Where policy allows, surplus generation is exported under net-billing/bi-directional metering. Designs include anti-islanding protection, UL/IEC-compliant inverters, single-line diagrams, and standardised O&M with remote monitoring. Procurement will leverage framework tenders and model PPAs/lease contracts to accelerate deployment, while ensuring electrical safety (lock-out/tag-out, harness protocols), roof structural checks, and worker training.

Candidate sites are prioritised based on daytime load profiles, high diesel/self-generation costs, roof/land suitability, and potential for productive-use synergies (cold storage, milling, water pumping). The program should integrate with EDSA and EGTC interconnection rules and metering procedures, and adopt a commissioning checklist (as-built drawings, performance testing, O&M manuals, and warranty records).

Targets for 2030 and 2035 and the associated monitoring indicators are summarised below.

Table 6: Outcomes & Indicators (2030 and 2035) - Commercial/Industrial PV

Item	2030 Target (Indicators)	2035 Target (Indicators)
Installed capacity & sites	20 MW across 10 C&I sites; (Indicators: MW installed; # sites)	35 MW across 20 sites; (Indicators: MW installed; cumulative sites)
Energy delivered	75 GWh/yr self-consumed/exported; (Indicator: annual MWh metered)	131.5 GWh/yr; (Indicator: annual MWh metered)
Reliability & performance	≥98% inverter availability; PR ≥ 75%; (Indicators: monitoring logs, PR)	≥98% availability; PR ≥ 78%; (Indicators: monitoring logs, PR)
Demand-side benefits	Peak demand reduced by≥15% at participating facilities; (Indicator: kW peak vs baseline)	Peak demand reduced by≥20%; (Indicator: kW peak vs baseline)
GHG reductions	13.65 $ktCO_2e$/yr avoided; (Indicator: tCO_2e/yr)	23.87 $ktCO_2e$/yr avoided; (Indicator: tCO_2e/yr)

4.3.3 Solar Home Systems (SHS)

Detailed Description

The EU-funded SOGREA project and World Bank–supported RESPITE programme have played a pivotal role in expanding off-grid and mini-grid systems in Sierra Leone, complementing the government's efforts under the Renewable Energy Policy (2016) and National Renewable Energy Action Plan (NREAP), which target universal and sustainable energy access by 2030. Building on these initiatives, the Solar Home Systems (SHS) program seeks to accelerate access to reliable electricity for rural and peri-urban households and micro-enterprises through quality-verified, small-scale photovoltaic systems ranging from 20–200 Wp, equipped with lithium-ion batteries and efficient DC appliances. The model emphasises affordability and scalability using PAYGo or lease-to-own approaches, supported by agent networks, telemetry-enabled performance monitoring, and standardised after-sales service. By focusing on dispersed settlements where grid expansion is economically unfeasible, the SHS program complements ongoing mini-grid and renewable generation investments, forming an essential part of Sierra Leone's decentralised energy strategy.

Key design features of the program include pre-installation assessments, user training, warranty compliance, and spare-parts logistics, ensuring system reliability and long-term performance. Financial inclusion is promoted through microfinance institutions and mobile-money payment systems, while gender-responsive measures prioritise women-led businesses and female-headed households in financing and awareness campaigns. Environmental safeguards are embedded through EPA-SL-aligned

e-waste and battery take-back schemes, ensuring sustainable disposal and recycling practices. Supporting actions—such as results-based financing, quality assurance, and promotion of local assembly and maintenance—strengthen private-sector delivery and job creation. Collectively, these interventions integrate the SHS program into the national electrification framework, aligning off-grid systems with grid and mini-grid roll-outs to ensure complementarity, inclusivity, and long-term sustainability.

Targets for 2030 and 2035 and the associated monitoring indicators are summarised below.

Table 7: Outcomes & Indicators (2030 and 2035) - SHS

Item	2030 Target (Indicators)	2035 Target (Indicators)
Households	4,000 households; (Indicators: # active SHS; PAYGo accounts)	5,000 households (Indicators: # active SHS; PAYGo accounts)
Access tier	≥70% of new SHS at Tier ≥2; (Indicator: MTF survey tier)	≥80% at Tier ≥2; ≥30% at Tier ≥3; (Indicator: MTF survey tier)
Energy delivered	2.25 GWh-DC/yr estimated; (Indicator: device telemetry kWh, modelled by Wp × PR)	2.81 GWh-DC/yr; (Indicator: device telemetry kWh)
Reliability & service	≥95% systems functional at 12-month check; (Ind.: service logs, warranty returns)	≥96% systems functional; (Ind.: service logs)
GHG reductions	0.51 $ktCO_2e$/yr avoided via kerosene/genset displacement; (Indicator: tCO_2e/yr)	0.63 $ktCO_2e$/yr avoided; (Indicator: tCO_2e/yr)

4.3.4 Cooking Transition – Improved Cookstoves (ICS)

Detailed Description

- This measure builds on the significant progress already being made in the clean cooking sector, rather than proposing entirely new or isolated initiatives. Over the past few years, Sierra Leone has taken practical steps to expand access to clean and efficient cooking solutions, with strong engagement from both government and partners.
- This program accelerates the uptake of Tier-2 and above efficient biomass stoves for households, institutions (schools, clinics, barracks), and micro-enterprises (street food vendors, fish smoking). Eligible technologies include high-efficiency wood rocket stoves, improved charcoal stoves, insulated institutional batch stoves, and (where viable) gasifier stoves with verified performance and durability. The package combines:
- Standards & certification (adoption of performance/safety specs; periodic re-testing).
- Quality-assured supply chains (pre-qualified local manufacturers/importers; warranties; spare parts).
- Affordability instruments (results-based grants per verified stove-in-use, targeted vouchers for poor/ vulnerable HHs, micro-leasing for vendors/institutions).
- Behaviour change & user training (safe use, nutrient retention, balanced diet, correct fuel prep/drying, maintenance); promote energy saving and healthy food preparation and cooking approaches that ensure retention of nutrients.
- Supporting local manufacturing, maintenance, and distribution networks to expand access in rural and peri-urban areas.

- Health & gender co-benefits (reduced exposure to household air pollution; time savings for fuel collection/cooking; women-led and disability inclusive distribution networks).
- The ICS program complements LPG/biogas pathways by reducing biomass demand immediately, mitigating fuel stacking while modern-fuel access scales.

Table 8: Outcomes & Indicators (2030 and 2035) - ICS

Item	2030 Target (Indicators)	2035 Target (Indicators)
Household ICS	25% of HHs (315,000 HHs using certified ICS Tier-2) (Ind.: active, verified units; survey usage rates)	50% of HHs (730,000 HHs, Ind.: verified units; longitudinal usage)
Institutional/enterprise ICS	6,000 institutional stoves; 600 MSME/vendor stoves (Ind.: commissioning records)	9,000 institutional; 1,500 MSME stoves
Fuel savings	40 % wood/charcoal reduction vs baseline (Ind.: KPTs, fuel-weighing)	50% reduction sustained (Ind.: repeat KPTs)
GHG reductions	212.4 $ktCO_2e$/yr avoided (stacking-adjusted)	488.6 $ktCO_2e$/yr avoided

Notes: Ranges depend on technology mix, sustained usage, and national fNRB/EF values.

4.3.5 Cooking Transition – LPG

Detailed Description

The country has made some important strides through ongoing policies, pilots, and private sector engagement. For example, the SDG7 Energy Compact and the Energy Transition and Green Growth Plan both identify LPG as a key pathway for achieving universal access to clean cooking. The National Petroleum Regulatory Agency (NPRA) has also strengthened oversight of LPG importation, storage, and distribution, while private operators like Afrigas are piloting flexible household LPG models in Freetown's informal settlements under the ENACT programme.

There are also signs of growing institutional capacity and infrastructure readiness, with LPG storage facilities being monitored by NPRA and new initiatives supporting safety standards and supply consistency. However, uptake remains low due to affordability challenges, limited distribution outside major towns, and weak demand-side awareness.

This measure will

- Focus on scaling existing LPG pilots and regulatory efforts to the national level rather than introducing parallel initiatives.
- Support market development and affordability, including pay-as-you-cook and cylinder exchange models pioneered by Afrigas and others.
- Promote public-private partnerships to expand LPG distribution infrastructure beyond Freetown and regional capitals.
- Strengthen data, monitoring, and safety systems through NPRA to ensure consumer confidence and sustainable growth.
- Link LPG deployment explicitly to gender, health, and climate co-benefits, highlighting reduced deforestation and emissions alongside health improvements.
- Introduce a data system should tracks cylinder movements, refill volumes, and incident reports for continuous safety improvement.

Targets for 2030 and 2035 and the associated monitoring indicators are summarised below.

Table 9: Outcomes & Indicators (2030 and 2035) - LPG

Item	2030 Target (Indicators)	2035 Target (Indicators)
People regularly cook with LPG	125,000 HHS or around 10% of HHs (Indicators: household surveys; active cylinder accounts; annual LPG tonnes)	250,000 HHs or 20% HHs (Indicators: surveys; LPG sales; active accounts)
Access & affordability	30,000 new connections with starter kits; (Ind.: # kits delivered; MFIs loans disbursed)	60,000 cumulative new connections; (Ind.: # kits; repayment performance)
Safety & quality	National installer training program; incident rate < 2 per 10,000 connections; (Ind.: training records; incident log)	Incident rate < 1 per 10,000; periodic cylinder re-qualification ≥ 95%; (Ind.: inspection logs)
GHG reductions	67.5 $ktCO_2e$/yr avoided (net of LPG emissions; stacking-adjusted); (Ind.: tCO_2e/yr)	141.5 $ktCO_2e$/yr avoided; (Ind.: tCO_2e/yr)

4.3.6 Cooking Transition – Biogas

Detailed Description

Sierra Leone's emerging biogas program builds on a decade of progress through national strategies and pilot projects that connect clean energy, waste management, and agriculture. The National Bioenergy Action Plan and Renewable Energy Policy (2016) identify biogas as a key opportunity to convert agricultural and municipal waste into energy while reducing dependence on fossil fuels. Demonstration initiatives like the ENERGICA program in Waterloo and the Waste Transformer pilot in Freetown have proven the feasibility of transforming organic waste into usable biogas for cooking, heating, and productive uses in schools, clinics, markets, and agro-processing centres. These pilots form the basis for scaling institutional, community, and household biodigesters that produce both clean fuel and organic fertiliser, supporting the country's goals of energy diversification, waste reduction, and circular-economy growth.

The national biogas program promotes a mix of institutional-scale plants (20–100 m^3/day) and household systems (6–12 m^3) using fixed-dome or prefabricated digesters with basic scrubbing, storage, and piping systems. Its design emphasises safety, continuous operation, and productive reuse of slurry as fertiliser, supported by manuals, operator training, and maintenance contracts. Enabling actions focus on scaling successful pilots, strengthening technical capacity, and developing regulatory and certification frameworks for quality control and safe operation. The program also fosters public–private partnerships to mobilise investment, integrates biogas with waste and agricultural value chains to ensure feedstock supply, and introduces performance-based payment systems to reward verified gas production. Together, these interventions aim to institutionalise biogas as a sustainable pillar of Sierra Leone's clean energy transition, creating economic, environmental, and social co-benefits.

Targets for 2030 and 2035 and the associated monitoring indicators are summarised below.

Table 10: Outcomes & Indicators (2030 and 2035) - Biogas

Item	2030 Target (Indicators)	2035 Target (Indicators)
Digesters operating	25,000 household units, 2% of HHs (Indicators: commissioning records; operational logs)	50,000 household units (Indicators: operational logs)
Biogas production	70 million Nm^3/yr (Ind.: gas meters; runtime logs)	14.0 million Nm^3/yr (Ind.: gas meters; runtime logs)
Organic waste diverted	140,000 t/yr from markets/livestock (Ind.: weighbridge/sampling)	350,000 t/yr (Ind.: waste audits)
GHG reductions	700 $ktCO_2e$/yr avoided (methane + fuel switch) (Ind.: tCO_2e/yr)	1750 $ktCO_2e$/yr avoided (Ind.: tCO_2e/yr)

4.4 Transport Sector

4.4.1 E-buses for Public Transport

Detailed Description

Sierra Leone's clean transport transition is gaining momentum through several complementary initiatives that together form a strong foundation for e-mobility and low-emission transport. The National e-Mobility Strategy and Implementation Plan, the GEF/UNEP-supported "Supporting Sierra Leone with the Shift to Electric Mobility" project, and pilot efforts such as the EPA-led e-kekeh demonstration, the NEEV Salone e-vehicle assembly, and UNDP-backed commercial EV feasibility studies have collectively established the institutional, technical, and policy groundwork for electric transport. These initiatives—driven by the EPA, Ministry of Transport, and key development partners—seek to reduce fossil-fuel dependence, promote renewable-based charging infrastructure, and build local manufacturing and service capacity for electric vehicles, particularly e-bikes, e-kekes, and e-buses.

The e-bus program extends this transition by introducing battery-electric buses on high-demand urban routes in Freetown and regional hubs. The first phase prioritises depot-based overnight charging and opportunity charging at terminals, using 9–12 m buses for trunk routes and 6–8 m models for feeders, all equipped with regenerative braking, telematics, and CCS2 chargers. Complementary investments include route redesign, depot electrification (transformers and 60–180 kW chargers), driver and mechanic training, and private-operator service contracts. Integration with renewable PPAs and time-of-use tariffs ensures a low-carbon power supply and reduced operating costs, directly linking the transport and energy sectors through findings from the RE-Based EV Charging report. Fleet management will rely on centralised monitoring for state-of-charge and performance, while safety and recycling protocols ensure system reliability and sustainability—positioning Sierra Leone's e-bus initiative as a cornerstone of its broader green-mobility transformation.

Targets for 2030 and 2035 and associated monitoring indicators:

Table 11: Outcomes & Indicators (2030 and 2035) – E-buses

Item	2030 Target (Indicators)	2035 Target (Indicators)
Fleet & service	50 e-buses in service; ≥7,500 pax/day; (Ind.: fleet registry; AFC/ticketing data)	100 e-buses; 15,000 pax/day; (Ind.: AFC; AVL/telematics)
Operational performance	Availability ≥ 90%; energy use ≤ 1.2–1.5 kWh/km (route-dependent); (Ind.: telematics)	Availability ≥ 92%; energy use ≤ 1.1–1.4 kWh/km; (Ind.: telematics)
Charging & depots	2 depots electrified; 10 chargers installed; (Ind.: charger uptime logs)	4 depots; 20 chargers; (Ind.: uptime logs)
GHG reductions	107 ktCO_2e/yr avoided (net of grid emissions); (Ind.: tCO_2e/yr)	214 ktCO_2e/yr avoided; (Ind.: tCO_2e/yr)

4.4.2 e-Compact Mobility Vehicles (Electric 3-wheelers and 2-wheelers)

Detailed Description

Sierra Leone's e-Compact Mobility Vehicles (e-CMV) initiative builds on the strong foundation established through the "Supporting Sierra Leone with the Shift to Electric Mobility" project, implemented by the EPA with support from UNEP, the EU SOLUTIONS Plus programme, and local partners. Over the past two years, the country has successfully piloted electric three-wheelers and developed a Comprehensive Implementation Plan that includes vehicle procurement, the installation of solar-powered charging and battery-swapping stations, and the collection of operational and social data. These pilots have confirmed the technical and economic viability of electric mobility in urban contexts, while demonstrating co-benefits such as improved air quality, lower transport costs, and enhanced gender inclusion—reflected in the target of 30% female drivers. The lessons learned from these early efforts have helped to establish a replicable framework for scaling electric mobility in Sierra Leone's transport sector and linking it with renewable energy deployment.

The measure now focuses on scaling and consolidating these achievements to transition from pilot projects to full market adoption. Priority areas include expanding e-kekeh and e-bike fleets in high-demand urban and peri-urban zones, extending solar-hybrid charging and battery-swapping infrastructure for energy resilience, and formalising maintenance, servicing, and safety systems with trained local technicians. Financing mechanisms such as leasing, pay-as-you-go, and concessional loans will make vehicle ownership more accessible to drivers and cooperatives, while integration into national transport planning will align e-CMV operations with e-bus and low-carbon public transport corridors. The deployment model—combining driver cooperatives and fleet-as-a-service arrangements—ensures affordability and operational efficiency, supported by clear vendor qualification, safety, and regulatory oversight from MoTA, FCC, and SLRSA. This measure, therefore, represents a key step toward a scalable, inclusive, and renewable-powered electric mobility ecosystem in Sierra Leone.

Targets for 2030 and 2035 and associated monitoring indicators:

Table 12: Outcomes & Indicators (2030 and 2035) – E-kekeh

Item	2030 Target (Indicators)	2035 Target (Indicators)
Fleet deployed	5,000 e-kekeh in operation, around 35% of kekehs; (Ind.: registration data; vendor sales)	10,000 e-kekeh, around 70%; (Ind.: registrations; telematics)
Service & performance	Average energy use ≤ 35–45 Wh/km; availability ≥ 92%; (Ind.: telematics)	Energy use ≤ 35–45 Wh/km; availability ≥ 94%; (Ind.: telematics)
Charging/swap points	150 neighbourhood charge points; 25 swap kiosks; (Ind.: uptime logs)	300 charge points; 50 swap kiosks; (Ind.: uptime logs)
GHG reductions	67.5 $ktCO_2e$/yr avoided (net of grid emissions); (Ind.: tCO_2e/yr)	141.5 $ktCO_2e$/yr avoided; (Ind.: tCO_2e/yr)

4.4.3 Fuel Efficiency and Standards

Detailed Description

This vehicle efficiency and emissions measure builds on Sierra Leone's earlier policy frameworks, particularly the National Energy Efficiency Action Plan (2015) and the National e-Mobility Strategy and Implementation Plan, which together laid the groundwork for improving transport-sector energy performance and aligning it with the country's clean mobility goals. While previous efforts—such as the World Bank–supported the Integrated and Resilient Urban Mobility Project (IRUMP)—have targeted the modernisation of Freetown's ageing public transport fleet, progress in implementing concrete fuel efficiency and emission standards has remained limited. Existing policies continue to permit the import of older, high-emission vehicles, and enforcement capacity, inspection systems, and vehicle labelling regimes are still underdeveloped. As a result, despite strong policy intent, the operationalisation of energy-efficient transport in Sierra Leone remains at an early stage.

The proposed measure seeks to translate policy into action by enforcing fuel economy, age, and emissions standards for vehicles, thereby complementing the ongoing e-mobility and renewable transport initiatives. It introduces phased age and emission limits—starting with a 10–12-year import cap for light-duty vehicles and tightening to 5–7 years by 2035—alongside minimum fuel-efficiency thresholds and mandatory inspection protocols for emissions and onboard diagnostics (OBD). Implementation will be supported by a digital vehicle registry capturing model year, fuel type, and odometer readings to improve fleet monitoring and policy planning. Enabling activities include enforcing labelling and inspection standards, aligning fuel-efficiency regulations with the e-mobility roadmap, and introducing fiscal incentives and green procurement policies for cleaner fleets. Together, these actions aim to curb emissions, modernise the national vehicle stock, and ensure coherence between energy efficiency and electric transport pathways.

Targets for 2030 and 2035 and the associated monitoring indicators are summarised below.

Table 13: Outcomes & Indicators (2030 and 2035) – Fuel Efficiency

Item	2030 Target (Indicators)	2035 Target (Indicators)
Policy adoption & enforcement	Import standards gazetted; max age 10 years (LDV); inspection coverage ≥ 70%; (Ind.: legal notices; inspection stats)	Max age 8 years; inspection coverage ≥ 90%; (Ind.: legal notices; inspection stats)
Fleet efficiency	Average fuel intensity reduced 10% vs 2025 baseline; (Ind.: cohort model; inspection data)	Average fuel intensity reduced 20%; (Ind.: cohort model)
Fuel savings	20–35 million litres/yr saved (range to be refined); (Ind.: fuel sales vs baseline; model outputs)	45–70 million litres/yr saved; (Ind.: same)
GHG reductions	77 ktCO_2e/yr avoided; (Ind.: tCO_2e/yr)	179 ktCO_2e/yr avoided; (Ind.: tCO_2e/yr)
Safety/quality co-benefits	Road-worthiness failure rate declines 30%; sulphur/spec standards enforced; (Ind.: inspection logs; fuel QA)	Failure rate declines 50%; (Ind.: inspection logs)

4.5 Forestry Sector

4.5.1 Forestry and Mangroves

Detailed Description

Sierra Leone's forest and mangrove management measures build on strong progress already achieved in the forestry sector rather than introducing new interventions in isolation. Foundational efforts such as the National Forest Inventory (NFI)—implemented by the Forestry Division with FAO support—are generating critical data on forest cover, condition, and carbon stocks, enabling more targeted restoration and sustainable forest management. Complementary initiatives, including FAO's REDD+ readiness programme, are enhancing national capacity for carbon accounting, benefit sharing, and governance, thereby aligning Sierra Leone with international reporting and climate frameworks. These institutional advances are reinforced by on-the-ground restoration projects such as community forestry in the Sherbro River Estuary, the "Freetown the Treetown" urban greening initiative, and carbon-financed efforts like the West Africa Blue project, which together demonstrate the effectiveness of integrating biodiversity protection, ecosystem restoration, and community participation.

The measure scales up these successes through a comprehensive framework for forest protection, restoration, and sustainable management, focusing on high-risk deforestation zones and coastal ecosystems such as Sherbro and Scarcies. Interventions include community forestry agreements with performance incentives, strengthened protected area management, assisted natural regeneration (ANR), mangrove rehabilitation, and sustainable woodfuel systems. It also incorporates gender-inclusive governance, benefit-sharing mechanisms, and the cultivation of nutrient-diverse indigenous tree species to enhance food security. Site prioritisation is guided by biodiversity value, carbon density—including blue carbon—community readiness, and threat level, with local nurseries and

contractors delivering seedlings and services. Enabling activities include consolidating NFI and REDD+ processes into a national forest monitoring backbone, aligning restoration plans across institutions, and expanding community livelihood programs to reduce dependency on forest exploitation. Collectively, this approach embeds forest conservation at the centre of Sierra Leone's climate resilience and sustainable development agenda.

Targets for 2030 and 2035 with associated indicators:

Table 14: Outcomes & Indicators (2030 and 2035) – Forestry

Item	2030 Target (Indicators)	2035 Target (Indicators)
Areas under improved management	100,000 ha forests; 30,000 ha mangroves (Ind.: signed community agreements; PA patrol logs; GIS)	200,000 ha forests; 60,000 ha mangroves (Ind.: agreements; GIS)
Reforestation/restoration (ANR/planting)	60,000 ha restored; survival ≥ 70% at year 3 (Ind.: plot surveys; nursery/planting records)	120,000 ha restored; survival ≥ 75% (Ind.: surveys)
Livelihoods & co-benefits	10,000 households with benefit-sharing/livelihood support (Ind.: program records)	20,000 households (Ind.: program records)
GHG reductions	400 $ktCO_2e$/yr avoided/removed (Ind.: tCO_2e/yr)	800 $ktCO_2e$/yr avoided/removed (Ind.: tCO_2e/yr)

4.6 Agriculture Sector

4.6.1 Food system transformation (Agroecology)

Detailed Description

Agroecology is an integrated approach to agriculture and food systems, combining ecological and social principles with agricultural management and food systems design. It conserves and restores carbon sinks by shifting from traditional farming and its inherently unsustainable practices towards the climate-sensitive Agroecology approach.

Agroecology can contribute to climate change mitigation through practices such as (i) zero burning; this will not only prevent CO2 introduction into the atmosphere, but it will also catalyse carbon sequestration by supporting in-soil microbial retention and activity. (ii) Soil-carbon retention; applying cover cropping, green manure, and other organic fertilisers increases soil-carbon retention, improves soil fertility as well as crop productivity and discourages shifting cultivation. (iii) Sedentary farming; this is the situation where farmers farm on a plot of land year in and year out. With sedentary farming, there will be more land available for forest regeneration and other sustainable land use practices. Forest regeneration will serve as a potential source for carbon trade. (iv) Non-use of inorganic chemical inputs; by not using the chemical inputs, GHG emission sources associated with these inputs will be limited.

Outcomes & Indicators
Targets for 2030 and 2035 with associated indicators:

Item	2030 Target (Indicators)	2035 Target (Indicators)
Areas not burnt during farming	30000 ha (Ind. Registered farmers in programme, GIS data, report of MAFS)	60000 ha (Ind. Registered farmers in programme, GIS data, report of MAFS)
An additional area accumulated from sedentary farming	30,000ha (Ind. Geospatial data, field notes, MAFS report, cadastral)	90,000ha (Ind. Geospatial data, field notes, MAFS report, cadastral)
Livelihoods & co-benefits	30,000 households benefit from increased livelihood (programme records)	60,000 households benefit from increased livelihood (programme records)
GHG reductions	370 $ktCO_2e$/yr avoided/removed (Ind.: tCO_2e/yr)	910 $ktCO_2e$/yr avoided/removed (Ind.: tCO_2e/yr)

4.7 Waste Sector

4.7.1 Waste Management Organics Diversion

Detailed Description
Sierra Leone's integrated waste management measure builds on the foundations of the Integrated National Waste Management Strategy (2012–2016) and the country's commitments under international conventions such as the Basel, Stockholm, Rotterdam, and Minamata Conventions, which together establish a strong legal and institutional framework for managing chemicals and waste. Recent initiatives—such as the C40-supported waste system upgrades in Freetown, the GCF-backed tricycle waste collection program, and the UN-Habitat Waste Wise Koidu pilot—have demonstrated practical models for improving waste collection, recycling, and community participation. These efforts, complemented by the World Bank's Integrated & Resilient Urban Mobility Project (IRUMP) and performance audits by the Audit Service of Sierra Leone, have begun addressing systemic urban waste challenges while generating valuable lessons for scaling. In parallel, health care waste management has improved through an updated National Health Care Waste Management Plan, and EPA-led initiatives under the UNEP Chemicals and Waste Programme and the National Pollutant Inventory (NPI) are strengthening capacity for hazardous waste tracking and pollution control.

The measure aims to update and integrate national waste management strategies to reflect new priorities in climate mitigation, circular economy, and pollution prevention while scaling successful pilots in Freetown, Koidu, and other cities. It will strengthen local council capacity for collection, segregation, and data monitoring, and fully integrate health care and hazardous waste management into resilience and pollution control frameworks. By linking waste management to climate goals, the program will quantify emission reductions from methane capture, composting, recycling, and biogas generation, turning waste systems into contributors to Sierra Leone's NDC targets. Enabling actions also include supporting public-private partnerships, promoting youth-led green enterprises, and ensuring environmental and occupational safety through weighbridges, compost quality testing,

anaerobic digestion sites, and mandatory OHS protocols. This integrated approach positions waste management as both a climate and development priority, advancing sustainable cities, cleaner environments, and circular economy pathways.

Targets for 2030 and 2035 associated with indicators:

Table 15: Outcomes & Indicators (2030 and 2035) – Waste Sector

Item	2030 Target (Indicators)	2035 Target (Indicators)
Organics diverted	≥60–100 kt/yr diverted from landfill (Ind.: weighbridge; audits)	≥120–180 kt/yr diverted (Ind.: weighbridge; audits)
Processing capacity	2–3 compost hubs (≥20–40 kt/yr total) + 2 AD sites (≥15–25 kt/yr)	4–5 hubs (≥60–90 kt/yr) + 4–5 AD sites (≥40–60 kt/yr)
Product quality & use	≥70% of compost meets Class A spec; ≥60% sold/used (Ind.: lab tests; sales)	≥85% meets Class A; ≥80% sold/used
Energy generation (AD)	≥8–12 GWh/yr electricity/heat (Ind.: meters)	≥20–30 GWh/yr (Ind.: meters)
GHG reductions	10402 $ktCO_2e$/yr avoided (net of process emissions)	18204 $ktCO_2e$/yr avoided

4.7.2 Landfill Methane Management

Detailed Description

Sierra Leone's methane mitigation and waste-to-energy measures build on strong analytical and project foundations established through the Resilient Urban Sierra Leone Project and related World Bank assessments, which have already underscored the urgent need for properly engineered landfill sites capable of supporting future methane capture and energy recovery. The proposed Infinitum Waste-to-Energy Project in Freetown represents a significant opportunity to convert landfill methane into usable power, directly aligning with national climate and energy transition goals. Sierra Leone's Biennial Update Report (BUR) and previous NDC submissions have already identified methane emissions from waste as a key mitigation target, setting the stage for integrating these systems into the national emissions inventory. Complementary pilot projects, such as The Waste Transformers' decentralised organic waste-to-energy systems at hospitals and markets, demonstrate the feasibility of small-scale methane reduction technologies and highlight how distributed waste management can reduce the organic fraction driving landfill emissions.

The measure focuses on upgrading existing dumps and open landfills into engineered facilities designed for safe operation, controlled emissions, and phased methane capture. Initial phases introduce daily cover, stormwater and leachate management, weighbridges, and passive venting, progressing to landfill gas (LFG) extraction systems with flaring, condensate control, and eventual energy recovery through generators or gas pipelines, depending on yield. The installations will feature blowers, enclosed flares, SCADA systems, and surface emissions monitoring using OGI or flux box technologies to verify methane performance. Enabling measures include explicit integration of methane management within national waste and energy frameworks, expansion of public–private partnerships for scaling waste-to-energy and biogas projects, and incentives for organic waste

diversion through composting and decentralised digestion. In addition, the strategy will incorporate EV battery management solutions, drawing on guidance from the GEF-funded "Supporting Sierra Leone with the Shift to Electric Mobility" report available at EPA-SL, ensuring coherence between waste, energy, and transport mitigation actions. Collectively, this measure positions methane recovery as both a climate mitigation priority and a clean energy opportunity for Sierra Leone.

Targets for 2030 and 2035 with associated indicators:

Table 16: Outcomes & Indicators (2030 and 2035) – Methane Management

Item	2030 Target (Indicators)	2035 Target (Indicators)
Engineered landfill cells	1 primary cell with daily cover, drainage, and weighbridge (Ind.: construction records; audits)	3 cells cumulative; maintained intermediate cover (Ind.: audits)
LFG system & flaring	Wellfield + enclosed flare operational; 50–90 Nm^3/h CH_4 average (Ind.: SCADA logs)	Expanded wellfield; 120–200 Nm^3/h CH_4 (Ind.: SCADA)
Energy recovery	Feasibility complete; pilot 0.5–1.5 MW if yields allow (Ind.: commissioning records)	1.5–3 MW cumulative (Ind.: generation meters)
GHG reductions	≥40–80 $ktCO_2e/yr$ avoided (net of flare/engine emissions)	≥90–160 $ktCO_2e/yr$ avoided

4.8 Cross-Cutting Sector

4.8.1 ETF/MRV System Strengthening

Detailed Description

This measure establishes and operationalises a national Enhanced Transparency Framework (ETF) and MRV system to generate timely, high-quality data for mitigation planning, tracking, and reporting. It creates a legally-mandated governance structure; standardised MRV protocols for all emitting sectors (Energy, Transport, Waste, IPPU, AFOLU); a digital Climate Data & MRV Platform for data intake, QA/QC, calculation, and reporting; and a Mitigation Outcomes & Article 6 Registry to avoid double counting and enable results-based finance. The system covers: (i) GHG inventory production (IPCC-aligned, with Tier upgrades where feasible), (ii) mitigation action tracking with unique IDs, baselines, and monitoring plans, (iii) finance tracking (tagging public/external climate finance against actions), and (iv) KPI dashboards for decision-makers. It embeds data-sharing MoUs with line ministries, utilities, regulators, local councils, and private operators, and builds a professional MRV cadre (sector focal points, data engineers, inventory compilers, verifiers). Outputs feed BTRs, NDC stocktakes, and domestic policy cycles.

Table 17: Outcomes & Indicators (2030 and 2035) – Cross-Cutting

Outcome Area	2030 Target & Indicators	2035 Target & Indicators
BTR & Inventory Timeliness	BTRs delivered on time; national inventory compiled annually; publication ≤ 6 months after year-end.	Continuous annual inventories; publication ≤ 4 months after year-end.
Coverage & Consistency	100% of emitting sectors with signed data-sharing MoUs; ≥90% of key activity datasets (energy balance, fuel sales, vehicle stock, solid waste tonnage, cement/clinker, land-use change) reported annually using standard templates.	≥95% key datasets via APIs/automated feeds; full time-series consistency maintained.

Data Quality (QA/QC)	Documented QA/QC plans for all sectors; EF Registry maintained; ≥2 sectors upgraded to Tier 2 parameters.	≥4 sectors at Tier 2; independent QC reviews completed biennially.
Mitigation Action Tracking	Registry lives with unique IDs; ≥50 priority actions tracked with baselines, MP&MR plans, and SDG co-benefit fields.	≥120 actions tracked; action-level verification summaries published annually.
Article 6 Readiness	Authorisation procedure & corresponding adjustment rules approved; registry able to flag first transfer and vintage.	≥3 programs authorized; adjustments reported in BTRs; public dashboard for issuance/transfer logs.
Capacity & Retention	40 staff certified (inventory, MRV, data engineering); ≥80% 2-year retention.	70 staff certified; ≥85% retention; partnerships with two universities for MRV curricula.

4.9 Policy Measures[9]

1. Resilient, Low-Carbon Mining
2. Fossil-to-Low-Carbon Transition — Manufacturing Sector
3. Fossil-to-Low-Carbon Transition — Mining Sector (Energy)
4. Critical Minerals Strategy (for the Energy Transition)
5. Treatment of Liquid Waste in the IPPU Sector

4.10 Energy Sector Mitigation Results

In 2024, the country's energy-system-wide baseline is 1788 Gg. More than half of that footprint is already locked into Transport (1,095 Gg); the power-generating and fuel-handling Energy Industries add 523 Gg, while Other Sectors (residential, commercial, agriculture, etc.) and Industry contribute 170 Gg and 14 Gg, respectively. This single-year snapshot is the yardstick against which every future saving is measured.

4.10.1 Business As Usual – BAU(Without Action) Scenario

In Sierra Leone, emission trajectory following the "business-as-usual" (BAU) track, the annual total would rise by another 1,318 Gg between 2024 and 2030, and by 2,921 Gg over the full decade to 2035. By 2030, the yearly flow would reach 3,120 Gg, and by 2035, it would hit 4,723 Gg, almost 2.6 times today's level. The transport sub-sector remains the runaway driver, adding 959 Gg in the first six-year period and 2,192 Gg in the eleven-year horizon.

4.10.2 Mitigation Measure Contributions

The following is a detailed description of energy-sector mitigation contribution in Sierra Leone, measure-by-measure (2030 vs 2035). All figures are Gg CO_2-eq avoided each year

a) Power generation – Mini-grids

Diesel mini-grids that today serve remote towns will be swapped for solar-battery kits. By 2030, this switch keeps 20.84 Gg of CO_2 out of the air; by 2035, the savings double to 41.62 Gg as more villages are connected.

b) Industry & manufacturing – Captive PV (CI PV)

[9] In the supporting document ***GHG Inventory and emissions baseline report*** a detailed description of the mitigation policy measures is given.

Factories and large processing plants will bolt captive rooftop PV onto their workshops. The panels trim 13.65 Gg in 2030 and 15 Gg in 2035, the smallest absolute slice but a high-visibility signal to private investors.

c) Households & institutions – Clean cooking triple-pack

1. Improved Cook-Stoves (ICS) deliver the single biggest domestic saving: 212.4 Gg in 2030 and 488.6 Gg in 2035 as efficient liners and rocket-stoves replace open three-stone fires.
2. LPG substitution adds another 25.9 Gg in 2030, rising to 50.8 Gg in 2035 when urban households and school canteens move from charcoal to bottled gas.
3. Solar Home Systems (SHS) for lighting and phone-charging chip in 0.5 Gg in 2030 and 0.6 Gg in 2035—tiny in tonnes, huge in welfare (no kerosene fumes, longer study hours).

Combined "Other Sectors" headline: 238 Gg in 2030 → 540 Gg in 2035.

d) Transport – Electrify & economise

1. E-buses on the Freetown–Lungi and Freetown–Waterloo corridors save 107 Gg in 2030 and 214 Gg in 2035.
2. E-CMV (three-wheel and two-wheel taxis) zipping through district capitals avoid 67.5 Gg in 2030 and 141.5 Gg in 2035.
3. Fuel-economy & scrappage standards (Fuel E&S) for the legacy diesel fleet trim 77 Gg in 2030 and 179 Gg in 2035.

Transport package total: 251 Gg in 2030 → 535 Gg in 2035.

If Sierra Leone deploys every measure in the table, annual energy-sector emissions will be roughly 595 Gg lower in 2030 and 1,270 Gg lower in 2035—turning projected growth into a 33 % and then 71 % cut against the 2024 baseline.

TABLE 18: GHG EMISSION ABATEMENT BY THE ENERGY SUB-SECTOR

Mitigation Measure	Sector	2030	2035
CI PV	Industry and manufacturing	13.65	15
Industry Sector Total		**13.65**	**23.87**
SHS	Other	0.509	0.635
LPG	Other	25.9	50.8
ICS	Other	212.4	488.6
Other Sector Total		**238.809**	**540.035**
E-Bus	Transport	107	214
E-Keke	Transport	67.5	141.5
Fuel E&S	Transport	77	179
Transport Total		**251.5**	**534.5**
Mini Grid	Energy Generation	20.84	41.62

4.10.3 Waste Sector Mitigation Measures Contribution

Sierra Leone's waste sector is transformed from the country's fastest-growing source of greenhouse gases into a net reducer of emissions. In 2030, the sector's total climate impact falls to 556 Gg CO_2-eq, 37 per cent below the business-as-usual trajectory of 663 Gg. By 2035, the reduction deepens to 386 Gg, a 54 per cent cut against the 739 Gg that would have been released had the 2024 practices continued unchecked.

Landfill Methane Management

Solid-waste disposal (category 4.A) drives the largest share of these savings. In the baseline year 2024, unmanaged dumps and crude landfills emitted 124 Gg; on a pure BAU track, this would climb to 145 Gg by 2030 and 163 Gg by 2035 as urban waste volumes grow 3-4 per cent a year. Instead, once the first engineered cell at Granville-Brook is fitted with a gas-collection well-field and 1 MW of gas engines, **60 Gg of methane are captured and destroyed in 2030**; **by 2035, 135 Gg** is captured by the same system, now expanded to three cells and 3 MW. These figures already include parasitic loads and a conservative 5 percent uncertainty discount, so the net abatement is robust enough to be reported to the UNFCCC.

Waste Organic Diversion

Open burning (category 4.C) is tackled through the organics-diversion programme. Because two-thirds of household refuse are currently set alight in streets or backyards, the **BAU outlook sees this source rise from 136 Gg in 2024 to 149 Gg in 2030 and 161 Gg in 2035**. By separating 80 kt of kitchen and market waste for composting and anaerobic digestion in 2030, and 150 kt by 2035, the country removes the very material that now fuels smoky fires; the burning sub-sector therefore plateaus at 149 Gg in 2030 and then falls to 83 Gg in 2035, an abatement of 78 Gg in the latter year.

Wastewater (category 4.D) is the third pillar. Septic tanks, latrines and direct river outfalls would push emissions from 337 Gg in 2024 to 369 Gg in 2030 and 401 Gg in 2035 under BAU conditions. Connecting large market and abattoir effluents to anaerobic digesters, and installing biogas capture on the new faecal-sludge treatment plants, **prevents 180 Gg of methane in 2030** and **300 Gg in 2035**.

Biogenic carbon dioxide—released when moist organic solid waste is burned—is reported for transparency but is not added to the national total. It nevertheless follows the upward curve as shown in the open burning, increasing from 157 Gg in 2024 to 174 Gg in both target years because absolute combustion volumes increase. This calls for policies that can enhance the collection of waste and restrict open burning.

5 Adaptation Contribution & Resilience Building[10]

5.1 Agriculture & Food Security

5.1.1 Climate-Smart Nutrition Sensitive Agriculture (CSA) and Extension Scale-Up

Detailed Description:
This measure connects explicitly to ongoing CSA work under the National Agricultural Transformation Programme (Feed Salone), the Climate-Smart Agriculture Investment Plan (CSAIP, 2021), and FAO's GCF-funded CSA scaling projects.

Scale national adoption of CSA practices—including integration of climate information in agricultural practices, promote the production of nutrition sensitive staples, fruit and vegetable crops including indigenous varieties, conservation tillage, mulching, crop rotation, intercropping with legumes/other vegetable or fruit crops, drought- and flood-tolerant rice, cassava and maize varieties including bio-fortified varieties, and soil moisture conservation—through a strengthened extension system.

Promote climate-smart food production and processing to increase the availability of nutritious and sustainable foods (targeting mainly MSMEs). Scaling up the availability of climate-smart processing technologies and/or energy sources (solar/mini grids, etc.)

Update food standards and guidelines, including strengthening food safety initiatives and capacity in the country.

The programme could create district CSA hubs, outreach sites where pilot models already exist (e.g., MAFFS/FAO's demonstration plots in Bombali and Bo), develop localised agronomic calendars using seasonal climate forecasts, and establish 200 demonstration plots with farmer field schools. Digital advisory (SMS/IVR: Short Message Service/Interactive Voice Response, i.e., automated phone calls with recorded menus) will deliver actionable guidance timed to local planting windows.

Vulnerability Addressed
High exposure of rain-fed smallholders to rainfall variability, dry spells, and floods; low adaptive capacity due to limited access to climate-informed extension and inputs.

5.1.2 Irrigation and Water Harvesting

Detailed Description
This measure is highly relevant given Sierra Leone's vulnerability to erratic rainfall. It will build upon solar-pumping programmes under the Smallholder Commercialisation and Agribusiness Development Project (SCADeP) and the Feed Salone irrigation roadmap.

It will focus on expanding community-managed schemes, strengthening Water User Associations, and linking solar-pumping to renewable energy initiatives under the Ministry of Energy.

Deploy community-managed irrigation on 45,000 hectares, including motorised solar pumps, gravity-fed schemes, and water harvesting structures (micro-dams, contour bunds, farm ponds). Establish

[10] All adaptation measures are described in a greater detail in the supporting document called ***Infrastructure vulnerability and adaptation assessment***.

water user associations, an integrated landscape management approach, maintenance funds, and technician training. Integrate soil moisture monitoring and deficit irrigation scheduling to maximise water-use efficiency.

The measure will strengthen maintenance models and cost recovery, which have been weak points in past irrigation projects.

Vulnerability Addressed
Increasing intra-seasonal dry spells and erratic rainfall reduce crop establishment and yields; limited irrigation coverage constrains dry-season production.

5.1.3 Seet Transformation Systems, Post-Harvest and Storage

Detailed Description
This measure builds upon the National Seed Policy (2021) and ongoing ECOWAS Rice Observatory-supported seed hubs and the Post-Harvest Loss Reduction Strategy (MAFFS, 2022)

Establish a national climate-resilient seed system with certified seed multiplication for stress-tolerant varieties, farmer-managed community and regional seed banks and regional knowledge HUBs, and quality assurance. Complement with post-harvest loss reduction—hermetic storage, improved drying floors, and cold chain pilots for perishables—to stabilise availability and prices.

Vulnerability Addressed
Seed insecurity after climate shocks and high post-harvest losses (pests, mould, aflatoxin) undermines food security and incomes.

5.1.4 Climate Resilient Water Supply and Sanitation

Detailed Description
This measure is based on the National Water Supply and Sanitation Policy (2020) and the Freetown WASH and Aquatic Environment Revamping Project led by MoWR and Freetown City Council. Many solar boreholes and rural WASH pilots are already being implemented by UNICEF, GIZ, and the World Bank.

This measure will build on these by strengthening monitoring and maintenance systems, especially through public-private contracts and digital monitoring. It would also help to specify how climate risk screening will be applied to new WASH infrastructure, not just expansion.

Expand access to safe water through Conventional methods: Solar-powered boreholes with elevated storage, chlorination, and climate-resilient distribution to rural communities.

Non-conventional methods: Harvested water from water springs and other sources

Introduce remote monitoring (flow, uptime) and preventive maintenance contracts with local enterprises; integrate hygiene promotion and drought contingency protocols.

Expand access to sustainable sanitation through:

a) Community mobilisation: build and improve toilets and thereby end open defecation, resulting in a clean and safe environment

b) Private sector engagement: for the construction of communal toilets in strategic locations across the country, including coastal areas, resulting in a safe marine ecosystem.

Vulnerability Addressed
Drought and rainfall variability compromise rural water security; hand-pump downtime and saline intrusion reduce safe access.

5.2 Water Resources & Coastal Management

5.2.1 Integrated Watershed Management for Rokel, Sewa, Jong/Panpana and Transboundary River Basins (Moa, Mano, Great and Little scarcies).

Detailed Description
This measure is linked to the ongoing National Integrated Water Resources Management (IWRM) Plan and the GCF-funded Water Security Readiness Project. The idea of basin committees and hydromet nodes is already being developed under the FAO and GWP programmes. There are also synergies with reforestation and soil restoration activities under the National Forest Inventory and REDD+ Readiness Programme for better alignment across sectors.

Develop and implement basin plans that integrate reforestation of critical slopes, riverbank stabilisation, erosion control, managed aquifer recharge, and water allocation rules across agriculture, domestic, and ecosystem needs. Establish basin committees with data-sharing agreements and hydromet nodes. Programs must include safe water access for children, protection from GBV during water collection, and child-sensitive safeguards in relocation and community forestry initiatives.

Vulnerability Addressed
Upstream deforestation and land degradation intensify flood peaks and dry-season scarcity; weak institutions for water allocation heighten conflict risk. Protection from GBV and strengthening of child safeguarding.

5.2.2 Coastal Resilience: Mangrove Restoration and Urban Flood Protection

Detailed Description
This program protects, restores, and sustainably manages Sierra Leone's wetlands, forests and mangroves, focusing on high-risk deforestation fronts and coastal ecosystems (e.g., Sherbro, Scarcies). Interventions include: (i) community forestry agreements with performance-based incentives; (ii) protected area strengthening (patrols, boundary demarcation, fire management, livelihood alternatives); (iii) assisted natural regeneration (ANR) and enrichment planting with native species; (iv) mangrove restoration and hydrological rehabilitation; (v) land-use planning and a basic land cadastre to reduce encroachment; and (vi) sustainable woodfuel measures where appropriate (efficient kilns, regulated harvest). Gender-inclusive governance and benefit-sharing are integrated across all activities.

Site selection prioritises biodiversity value, carbon density (including blue carbon), community readiness, and threat level. Nursery networks and local contractor models will deliver seedlings and ANR services. Social safeguards, FPIC principles, and grievance redress mechanisms apply across the program.

Vulnerability Addressed

Sea-level rise, storm surges, and unplanned urban expansion drive coastal erosion and frequent urban flooding and landslides. This adaptation measure is a co-benefit of the mitigation measure.

5.3 Health

5.3.1 Climate-Resilient Health Facilities (Power, Water, and Safe Siting) and Health Systems Strengthening

Detailed Description

This measure is linked to the Ministry of Health and Sanitation's Climate and Health Adaptation Plan (2023) and the World Bank/UNDP-supported Primary Health Care Resilience Project. The emphasis should be on scaling and standardising facility retrofits, using national construction codes already under review.

A strong and practical measure, but this should be tied to the Ministry of Health and Sanitation's Climate and Health Adaptation Plan (2023) and the World Bank/UNDP-supported Primary Health Care Resilience Project. The emphasis should be on Retrofit and construct climate-resilient facilities with elevated platforms in flood-prone zones, reinforced roofs and drainage, on-site solar with battery storage, and resilient WASH systems. Prioritise district hospitals and 50 high-traffic primary health units; include cold-chain reliability for vaccines. As well as the infrastructure, emphasis should be on strengthening the resilience of health systems across all key building blocks, with emphasis on supply chain system strengthening, human resources, financing and health information systems/surveillance strengthening.

Decarbonisation of health care services. Assess the barriers and perceptions surrounding climate change and its impacts on health and nutrition services, as well as diets. Use the barrier analysis to conduct social and behaviour change communication on the risks, as well as mitigation and adaptation measures to address climate change, on the overall health and well-being of the population, especially the most vulnerable.

Promote practices that reduce vulnerability to climate change.

Also, ensure resilient health systems include child-friendly services, psychosocial support, and safeguarding protocols during climate emergencies.

It has co-benefits with energy access, linking this with the Health Facility Electrification Plan led by the Ministry of Energy and UNOPS.

Vulnerability Addressed

Floods and heatwaves disrupt service delivery; unreliable power and water undermine essential care and vaccine cold chains.

5.3.2 Climate-Informed Disease Surveillance and Early Action

Detailed Description

This measure is linked to Sierra Leone's DHIS2 platform, which is already operational, and climate-linked modules for malaria and cholera surveillance are being piloted with WHO and CDC support.

Integrate meteorological data and seasonal forecasts into DHIS2-based surveillance for malaria, cholera, malnutrition and other climate-sensitive diseases. Deploy analytics for hotspot prediction, stock pre-positioning, and targeted community outreach. Establish district rapid response teams with clear SOPs. Conduct environmental impact assessments and track progress, including monitoring air pollution, low-carbon healthcare facilities and an early warning system for climate-sensitive diseases.

It also links to the Public Health Emergency Operations Centre (PHEOC), strengthening institutional relevance.

Vulnerability Addressed
Climate variability alters disease vectors and transmission pathways; current systems lack predictive capabilities and surge logistics.

5.3.3 Integrated Vector Management and Heat-Health Action Plans

Detailed Description
This measure builds on the National Malaria Strategic Plan (2021–2025) and the National Disaster Management Agency's (NDMA) work on heatwave preparedness. The focus is on cross-sector coordination (between health, meteorology, and local councils), avoiding parallel systems.

Expand integrated vector control (ITNs, indoor residual spraying where appropriate, larval source management) and establish heat-health action plans with early warnings, cooling shelters in high-risk urban wards, and public guidance for vulnerable groups (elderly, pregnant women).

It will set up collaboration pathways (e.g., district-level coordination units) and link with the existing WHO support for urban heat-health early warnings in Freetown.

Vulnerability Addressed
Rising temperatures and altered rainfall patterns increase vector habitats and heat stress risk, especially in dense urban settlements.

5.3.4 Environmental Health Management Action Plan

Detailed Description
Enhance proper environmental health intervention, reducing climate impact at health care facilities, households and communities. By addressing environmental health issues at healthcare facilities and the immediate environment, e.g. tree planting, household air pollution (indoor and outdoor), fumigation of healthcare facilities (vector control). Installation of a renewable energy system, regular monitoring, community awareness campaign, and research on environmental health impacts.

Vulnerability Addressed
The increase in use of fossil fuels, coal, and wood, rising temperatures and altered rainfall patterns increase the vulnerability of the population's health, which contributes to an unhealthy environment.

5.4 Education

5.4.1 Disaster and Climate Risk Management in Schools

Detailed description

Education continuity in Sierra Leone is increasingly at risk due to climate-induced disasters such as floods, landslides, and heatwaves that damage infrastructure and disrupt teaching and learning. To address this, the education sector will enhance system-wide resilience through stronger disaster preparedness, response, and recovery mechanisms across national, district, and school levels. Key interventions will include the development and implementation of school-based disaster-preparedness and learning-continuity plans; the re-establishment of the Emergency Education Taskforce as a standing coordination mechanism; the integration of schools into the national early-warning system; and the establishment of clear protocols for the safe use of schools as evacuation centres during emergencies. These actions will ensure that children—especially girls and learners with disabilities—can continue accessing safe, inclusive, and uninterrupted education during climate shocks, while schools also serve as key community hubs for disaster awareness and resilience building.

Vulnerability Addressed

- Frequent flooding, heatwaves, and landslides damage school infrastructure, leading to temporary or prolonged closures.
- Weak institutional preparedness: most schools lack contingency or learning-continuity plans.
- Gendered impacts: girls face increased risk of absenteeism or dropout when schools close due to climate shocks. All school disaster-preparedness and continuity plans should integrate child protection protocols, including safe use of schools as evacuation centres, referral systems, and GBV prevention.
- Limited coordination between MBSSE, NDMA, and local councils for school-level disaster response.

5.4.2 Climate-Resilient Infrastructure and Safe Access

Detailed description

This measure focuses on ensuring that school infrastructure, access routes, and learning environments are resilient to current and future climate risks. Actions include conducting a national school-infrastructure inventory through the Annual School Census and EMIS to map vulnerability; retrofitting and upgrading existing schools using climate-smart materials and designs; and ensuring new school construction complies with national climate-resilient building standards.

In parallel, WASH and energy facilities will be upgraded through rainwater harvesting systems, improved drainage, and solar electrification of public schools, enhancing safety and continuity of learning. Guidance will also be developed for the safe use of schools as evacuation centres during disasters.

Vulnerability Addressed

- Physical vulnerability: Many schools are constructed with non-permanent materials, exposing learners to flooding and wind damage.

- Unsafe access: poor roads and bridges hinder children's mobility during heavy rainfall, particularly in remote areas.
- Lack of data: absence of infrastructure inventory limits evidence-based planning and prioritisation of rehabilitation.
- Inefficient energy and WASH systems exacerbate school closures and unsafe conditions.

5.4.3 Climate and Environmental Education in Curricula and Teacher Training

Detailed description

Building knowledge and skills for climate action among learners and educators is central to long-term resilience. This measure supports the integration of climate and environmental education across curricula for primary, secondary, and non-formal education. It also includes national pre-service and in-service teacher training programmes on climate change, environmental stewardship, and disaster preparedness.

Vulnerability Addressed

- Low climate literacy limits understanding of environmental risks and adaptation options.
- Teachers lack training on integrating climate content into lessons.
- Students and communities have limited awareness of environmentally sustainable practices.

5.4.4 Greening School Communities and Operations

Detailed description

This measure promotes climate-smart operations within schools, linking environmental stewardship with community adaptation. Activities include school-based tree-planting, composting, and waste-management programmes, as well as integration of renewable energy and clean-cooking technologies into school operations and feeding programmes.

Vulnerability Addressed

- High waste generation and limited waste management in schools contribute to pollution and GHG emissions.
- Dependence on firewood for school feeding contributes to deforestation.
- Limited green spaces in school compounds reduce natural cooling and biodiversity.

5.5 Infrastructure

5.5.1 Infrastructure Resilience in the Energy Sector

Detailed Description

This measure builds upon the Energy Transition and Green Growth Plan and Hydropower Master Plan, both of which address climate resilience.

Sierra Leone's energy infrastructure is highly exposed to climate risks such as heavy rainfall, flooding, rising temperatures, and extreme weather events. Hydropower plants suffer from droughts and irregular rainfall, transmission and distribution lines are vulnerable to storms and landslides, and thermal generation facilities face risks from coastal flooding and sea-level rise. Without adaptation,

these risks could undermine energy security, disrupt supply to households and industries, and raise long-term maintenance and repair costs.

This measure focuses on enhancing the **climate resilience of energy infrastructure** through updated climate risk assessments, engineering standards, design standards, strategic planning, and investment in adaptive technologies. It includes reinforcing hydropower dams and reservoirs, elevating or rerouting transmission lines in flood-prone areas, integrating resilient materials into infrastructure, upgrading drainage systems around energy facilities, and strengthening coastal defences for generation plants near the shoreline. It also requires mainstreaming climate risk assessments into all energy planning, adopting disaster preparedness protocols, and building redundancy in supply systems, including decentralised renewable energy solutions.

Vulnerability Addressed

- Physical damage to hydropower, transmission lines, and thermal plants from floods, storms, and landslides.
- Reduced hydropower generation during droughts and erratic rainfall.
- Economic risks from frequent outages, high repair costs, and lost productivity.
- Social risks from unreliable electricity supply, particularly for health, education, and rural communities.

5.5.2 Risk-Informed Urban Planning and Safe Relocation

Detailed Description
This measure is linked to the NDMA Resettlement Policy Framework, MoPED's National Resettlement Policy and the Freetown Structure Plan (2023). Relocation and hazard mapping are already underway in several communities through SLURC and FCC projects.
Develop risk-informed land-use plans using hazard maps (flood, landslide, coastal erosion) and implement voluntary, dignified relocation from the most dangerous sites, paired with serviced plots and livelihood support. Establish social safeguards and grievance redress mechanisms.

Vulnerability Addressed
High-density informal settlements on steep slopes and floodplains create recurrent disaster losses and losses of life.

5.5.3 Climate-Proofing Roads and Bridges

Detailed Description
This aligns well with national infrastructure priorities, and it is linked to the National Road Maintenance Strategy, SLRA’s climate risk screening tool, and the World Bank’s Transport Infrastructure Resilience Project.

Upgrade resilient design codes, design standards, and rehabilitate priority corridors with improved drainage, higher bridge clearances, scour protection, and climate-resilient materials. Introduce asset management systems tha`t integrate climate risk and lifecycle maintenance budgeting.

Vulnerability Addressed
Intense rainfall and flooding cause frequent washouts and isolation of communities; transport disruptions impede emergency response and markets.

5.5.4 Upgrading and reinforcing existing industrial infrastructure

This measure builds on the Industrial Policy (2023) and the ongoing UNIDO/MAF projects that promote resource-efficient and cleaner production.
The industry typically employs outdated technologies and has a limited capacity for research and development. This measure involves the physical retrofitting and reinforcement of industrial facilities in the Industrial Processes and Product Use (IPPU) sector to protect them from climate-related damage and disruption.
The measure will also highlight how industrial retrofitting can be supported by green finance instruments and energy audits, linking directly with the National Energy Efficiency Policy for coherence.

Vulnerability Addressed
Flooding and Storm Surges: By protecting physical assets from damage and operational disruption.
Water Scarcity and Erratic Rainfall: By ensuring a consistent water supply for industrial processes.
Extreme Heat: By reducing the risk of equipment failure and productivity losses due to high temperatures.

5.5.5 Landfill Methane Management

Detailed Description
This measure builds on the already launched National Pollutant Inventory (NPI) and the National Plan for Pollution Prevention (N3P) under EPA-SL. The Freetown Waste Management Strategy and the upcoming Shifting to Zero Waste Against Pollution (SWAP) Project also address landfill upgrades and methane capture. This measure could be seen as a scaling effort, integrating methane recovery with renewable energy options (e.g., biogas for power).

This measure upgrades existing dumps/landfills to engineered cells with daily cover, stormwater/leachate control, a weighbridge, and landfill gas (LFG) collection. Phase 1 installs passive vents and surface emissions monitoring; Phase 2 adds vertical wells and horizontal collectors with a flare station; Phase 3 enables energy recovery (gensets or pipeline), subject to gas yield. Fire control, access control, and waste compaction will be enforced to reduce fugitive emissions and improve site safety.

The gas system will include blowers, enclosed flares, condensate management, and SCADA for flow and methane fraction. Periodic surface scans (OGI/flux box) will verify performance. Site operations will maintain intermediate cover and segregate incoming waste to protect gas infrastructure.

Vulnerability Addressed
Flooding and Extreme Rainfall: By preventing the overflow of dumpsites and the spread of leachates into rivers or streams.
Public Health Risks: By reducing the incidence of waterborne diseases and other health issues associated with unmanaged waste in flooded areas.
This is a co-benefit of the mitigation Measure.

5.6 Forestry & Land Use

5.6.1 Community Forestry and Co-Managed Protected Areas

Detailed Description

This measure is directly tied to the REDD+ Readiness Programme, National Forest Inventory (2024), and FAO's forest landscape restoration work. It focuses on scaling up community forestry models that already exist in Gola and Kambui Hills, not introducing new frameworks.

Establish community forest management agreements and co-managed protected areas over 50,000 hectares to reduce deforestation and enhance ecosystem services. Provide benefit-sharing, sustainable harvesting plans, and alternative livelihoods (beekeeping, ecotourism).

Vulnerability Addressed

Unsustainable fuelwood and timber harvesting, agricultural expansion, and weak enforcement accelerate forest loss and erosion.

5.6.2 Agroforestry and Climate-Smart Tree Crop Intensification

Detailed Description

This measure is consistent with the Tree Crop Master Plan and ongoing World Bank and IFAD-funded tree crop projects. The measure focuses on

- Improved extension, market access, and processing facilities, creating economic incentives for smallholders to adopt agroforestry rather than treating it as a purely environmental intervention.
- Scale agroforestry systems integrating cocoa, cashew, oil palm, and timber species with food crops, using contour hedgerows and shade management.
- Promote farmer cooperatives and climate-resilient processing to increase value-added and reduce land pressure.

Vulnerability Addressed

Declining soil fertility and income variability drive encroachment into forests; monocultures are vulnerable to climate stress.

5.6.3 Wetland and Mangrove Restoration

Detailed Description

This measure is linked to Coastal Resilience. It recognises that Sierra Leone already has a Wetlands Policy, ongoing FAO blue carbon assessments, and restoration pilots supported by Wetlands International.

This program protects, restores, and sustainably manages Sierra Leone's wetlands, forests and mangroves, focusing on high-risk deforestation fronts and coastal ecosystems (e.g., Sherbro, Scarcies). It consolidates and expands current programs, ensuring long-term financing and clear community co-management frameworks. Interventions include: (i) community forestry agreements with performance-based incentives; (ii) protected area strengthening (patrols, boundary demarcation, fire

management, livelihood alternatives); (iii) assisted natural regeneration (ANR) and enrichment planting with native species; (iv) mangrove restoration and hydrological rehabilitation; (v) land-use planning and a basic land cadastre to reduce encroachment; and (vi) sustainable woodfuel measures where appropriate (efficient kilns, regulated harvest). Gender-inclusive governance and benefit-sharing are integrated across all activities.

Site selection prioritises biodiversity value, carbon density (including blue carbon), community readiness, and threat level. Nursery networks and local contractor models will deliver seedlings and ANR services. Social safeguards, FPIC principles, and grievance redress mechanisms apply across the program.

Vulnerability Addressed
Loss of wetlands and mangroves increases flood and erosion risk and undermines coastal livelihoods and water quality. **This is a co-benefit of the Mitigation Measure**

5.7 Disaster Risk Reduction & Early Warning

5.7.1 National Multi-Hazard Early Warning System with Last-Mile Delivery

Detailed Description
This measure builds on existing efforts led by SLMet, NDMA, and EPA-SL under the Early Warning for All (EW4All) initiative and the UNDP-supported Disaster Risk Reduction Programme. Sierra Leone has already developed the first phase of a multi-hazard early warning platform, but gaps remain in data integration and last-mile communication.

This measure focuses on consolidating and scaling what is in progress, such as the national EW4All roadmap, the SLMet modernisation project, and community-level alert systems piloted in Freetown, Bo, and Kambia.

Build an integrated platform linking meteorological, hydrological, and geospatial data to produce actionable alerts for floods, landslides, coastal storms, and heat. Deliver last-mile warnings via SMS, radio, sirens, and community focal points with standardised colour-coded protocols.

Vulnerability Addressed
Delayed warnings magnify disaster losses; last-mile communication gaps in informal settlements and rural areas.

5.7.2 NDMA Capacity, Equipment, and Emergency Logistics

Detailed Description
This measure aligns with existing investments under the World Bank–funded IRUMP and UNDP's resilience support to NDMA. It is also linked with the Emergency Operations Centres (EOCs) established under the Ministry of Health and SLMet's national response coordination framework, ensuring interoperability and joint simulation exercises.

The focus of the measure is on

- Standardising training curricula, equipment specifications, and stockpiling procedures across districts.
- Strengthening logistics and coordination systems through digital platforms (e.g., incident tracking and rapid mapping tools).
- Equip NDMA and district emergency units with command-and-control tools, emergency operations centres, boats and high-clearance vehicles, temporary shelters, and stockpiles of essential supplies.
- Institutionalise regular drills and incident command training.

Vulnerability Addressed
Limited response capacity and logistics prolong disaster impacts and recovery times.

5.7.3 Community-Based Disaster Risk Management (CBDRM) and Safe Infrastructure

Detailed Description
This measure is aligned with ongoing community DRR programmes under NDMA, FAO, and Red Cross. Many chiefdoms already have local disaster committees, so the measure focuses on revitalising and resourcing these structures.

It is also linked to the school safety and education in emergencies programme, led by the Ministry of Basic Education and UNICEF.

Establish and train community DRM committees, SLMet volunteers in high-risk wards and chiefdoms, prepare evacuation routes and signage, construct micro-infrastructure (footbridges, culverts) and safe assembly points, and integrate contingency planning in school curricula.

The education sector will be systematically integrated into national and district DRR planning. Schools serve as first-response centres and information hubs for early warning dissemination.

Vulnerability Addressed
Households in hazard-prone zones lack organised preparedness, interpretation of climate information, early warning and safe evacuation options.

5.7.4 Strengthening Climate Observation and Early Warning Systems for Sierra Leone

Detailed Description
This measure is linked to the ongoing work by SLMet under the World Meteorological Organisation's Systematic Observations Financing Facility (SOFF) and the AFDB-funded hydromet modernisation project. These already aim to increase observation coverage and forecast reliability.

This measure addresses key gaps such as maintenance of automatic weather stations, data sharing between SLMet and NDMA, and human capacity for forecast interpretation and communication.

Vulnerability Addressed
- Limited capacity of SLMet to monitor and forecast extreme weather events (floods, droughts, storms).
- Inadequate early warning systems for climate-sensitive sectors (agriculture, fisheries, health, infrastructure).

5.7.5 AI-Based Climate and Weather Forecasting System for Resilient Development in Sierra Leone

Detailed Description
This measure is framed as a long-term extension of SLMet's modernisation efforts, once baseline infrastructure and data systems are fully operational.

The measure, after strengthening basic data reliability and partnering with regional climate centres like ACMAD or universities under WASCAL, would lend technical credibility and open opportunities for South–South cooperation and hence modernising SL Met.

Vulnerability Addressed

- Low accuracy and timeliness of forecasts affecting agriculture, energy, water resources, and disaster preparedness.
- High reliance on traditional methods with limited use of advanced technologies like AI and big data.

5.8 Cross-Cutting

5.8.1 Integration of Human Rights-Based Approach (HRBA) into Climate-Induced Disaster Recovery Programmes for Disproportionately Impacted Groups

Detailed Description
This measure is based on existing frameworks such as the National Resettlement Policy (2021), the Gender Equality and Women's Empowerment Act (2022), and the Human Rights Commission's climate justice framework.

Mainstream a Human Rights-Based Approach (HRBA) into all climate-induced disaster recovery programmes to ensure that the dignity, rights, and protection of disproportionately impacted groups (including women, children, persons with disabilities, the elderly, human rights defenders, migrants/displaced persons and marginalized rural communities) are safeguarded through the integration of the principles of equality, participation, accountability, and non-discrimination into recovery planning, relief distribution, relocation, rehabilitation, and rebuilding processes after climate-related disasters such as floods, landslides, droughts, and coastal erosion.

Vulnerability Addressed
Disproportionate exposure of women, children, persons with disabilities, and the elderly to climate-induced disasters, and inequality and equity in access to recovery resources.

5.8.2 Adaptation MRV/Tracking System and Indicator Framework

Detailed Description

This measure establishes and operationalises a national Enhanced Transparency Framework (ETF) and MRV system to generate timely, high-quality data for mitigation planning, tracking, and reporting. It creates a legally-mandated governance structure; standardised MRV protocols for all emitting sectors (Energy, Transport, Waste, IPPU, AFOLU); a digital Climate Data & MRV Platform for data intake, QA/QC, calculation, and reporting; and a Mitigation Outcomes & Article 6 Registry to avoid double counting and enable results-based finance. The system covers: (i) GHG inventory production (IPCC-aligned, with Tier upgrades where feasible), (ii) mitigation action tracking with unique IDs, baselines,

and monitoring plans, (iii) finance tracking (tagging public/external climate finance against actions), and (iv) KPI dashboards for decision-makers. It embeds data-sharing MoUs with line ministries, utilities, regulators, local councils, and private operators, and builds a professional MRV cadre (sector focal points, data engineers, inventory compilers, verifiers). Outputs feed BTRs, NDC stocktakes, and domestic policy cycles.

Vulnerability Addressed

Lack of visibility on adaptation progress hampers resource allocation and accountability; weak data systems limit learning. **This is a co-benefit of the Mitigation Measure.**

5.8.3 Integrating Conflict Sensitivity and a Climate Security Lens to Address Climate-Induced Conflict, Fragility, and Vulnerability

Detailed Description

This measure aligns with Sierra Leone's National Security Policy and Strategy (2024) and the Independent Commission for Peace and National Cohesion's Roadmap, both of which integrate environmental risks and promote community resilience to address conflict and fragility, including those driven by climate change. It also supports SDGs 10 and 16 and is reinforced by the National Action Plans on Women, Peace and Security and Youth, Peace and Security, which emphasise the disproportionate impacts of climate-induced instability on women and youth. Given the country's high exposure to hazards such as floods, landslides, erosion, and epidemics—often intensifying competition over resources—this approach embeds a conflict-sensitive and climate security perspective within adaptation and mitigation efforts. By linking environmental action with social cohesion and institutional stability, the NDC 3.0 seeks to enhance national resilience, reduce climate-related tensions, and ensure that climate measures contribute to lasting peace and inclusive development.

Vulnerability Addressed

- Limited data and knowledge on climate-induced fragility and vulnerabilities, particularly regarding how climate impacts exacerbate resource competition, social tensions, and the risk of violent conflict
- Institutional weakness across government and civil society to support community-based resilience and prevent climate-related violence and instability in high-risk communities and districts.
- Insufficient climate adaptation efforts focused on natural resource management and climate-resilient livelihoods in areas most affected by climate-induced fragility, vulnerability, and conflict.
- Social exclusion of marginalised groups—especially youth and women in climate adaptation, peacebuilding, and resilience efforts.

5.9 Policy Measures[11]

1. Climate Finance Mobilisation and Project Pipeline Facility
2. Local Government Capacity and Gender & Social Inclusion Mainstreaming
3. Mainstreaming child protection in climate resilience planning
4. Energy source diversification
5. Climate-Resilient Infrastructure Policies in the Transport Sector
6. Integrated Planning and Policy Development in the Transportation Sector
7. Institutional Capacity Building in the Waste Sector
8. Institutional Capacity building in the IPPU sector
9. Agroecology policy and strategy

5.10 Gender-transformative adaptation indicators

The gender-transformative adaptation indicators provide the need to move beyond basic measures of inclusion. It measures meaningful progress in shifting power dynamics, enhancing individual agency, challenging discriminatory social norms and increasing women's leadership and ownership in climate-related decision-making. These indicators focus on ensuring equitable access to the benefits of and participation in climate adaptation and mitigation efforts. The indicators are devised to help the country evaluate whether climate actions are not only gender sensitive but are also actively addressing and transforming the social, economic and political structures that drive gender inequality.

Table 19: Gender-transformative adaptation indicators

Indicator Area	Gender-Transformative Indicator	Target for 2030
Leadership & Decision-Making	Percentage of women and marginalised groups in leadership roles in NDC climate/adaptation committees/projects	Increase to at least 40% by 2030
Policy & Legal Reform	Number of climate policies/reforms that explicitly strengthen women's land/resource rights	Revised policies adopted by 2030
Resource Access & Control	Reduction in the gender gap in access to land, credit, technology, or adaptation resources	Reduce the gap to at least 10% by 2030
Agency & Empowerment	Percentage of women reporting increased decision-making power over adaptation/mitigation actions.	Increase to at least 60% by 2030
Capacity Building	Percentage of women, youth, and marginalised groups trained in climate-smart skills or leadership	At least 50% of all trainees are women/youth/marginalised.
Benefits Equity	Percentage of climate project beneficiaries who are women, youth, PWDs, or marginalised groups	At least 50% of all direct beneficiaries by 2030

[11] In the supporting document called ***Infrastructure vulnerability and adaptation assessment***, a detailed description of the adaptation policy measures is given.

Social Norms & Attitudes	Percentage of change in community attitudes supporting women's climate leadership (via survey)	Increase positive attitudes to 70% by 2030
Voice & Inclusion	Percentage of NDC projects with documented participatory planning involving women/marginalised groups	100% of new NDC projects by 2030
GBV Prevention & Response	Percentage of climate projects with GBV prevention/response components; reported GBV cases addressed	100% of projects reported GBV cases addressed
Economic Empowerment	Percentage increase in women's income or livelihood security from NDC investments	Achieve a 30% increase in target areas by 2030
Monitoring & Accountability	Frequency of sex, age, and disability disaggregated reporting in the NDC MRV system.	Annual comprehensive disaggregated reporting in all sectors
Transformative Outcomes	Number of interventions leading to significant policy/legal/resource changes for women/groups	At least 10 documented cases by 2030

5.11 Loss & Damage

In the absence of additional adaptation, climate impacts could reduce Sierra Leone's GDP by around 9–10% by 2050. The largest losses are expected to arise from declining crop and labour productivity, urban and coastal flooding, and erosion. With well-targeted adaptation, these projected GDP losses could be reduced to below 2% by mid-century (World Bank, 2025). Annual damages to buildings and infrastructure from floods, landslides, windstorms, and fires are in the order of USD 5.7–10 million per year, while the exposure of coastal assets is valued between USD 131–261 million through 2050, depending on scenario and methodology (World Bank/IMF technical reports, 2024).

Event-based assessments provide more concrete figures. Following the August 2017 Freetown landslide and floods, a Rapid Damage and Loss Assessment (DaLA) calculated the total economic impact at USD 31.65 million, with the housing, social protection, and health sectors hardest hit (World Bank & Government of Sierra Leone, 2017). At a macro-economic level, the IMF (2024) estimates that the annual average welfare cost of sea level rise—absent adaptation—could amount to about 0.3% of GDP for Sierra Leone, highlighting the ongoing burden of slow-onset climate processes (IMF, 2024). Finally, an equity-oriented calculation of climate damages suggests that, under a social-cost-of-carbon framing, Sierra Leone could be "owed" a hypothetical USD 1.46 billion annually between 2022 and 2050. While this figure is illustrative rather than an official accounting of loss and damage, it underscores the justice dimension of the debate (AfDB, 2022).

As such, current loss and damage accounting for Sierra Leone is still partial and evolving.[12].

Notably, Sierra Leone is increasingly confronting slow-onset climatic and environmental changes—deep-running processes that unfold over years and decades. While shocks like floods and landslides often grab headlines, slow-onset events erode resilience, undermine livelihoods, degrade ecosystems, and exacerbate loss & damage in ways that are often less visible until tipping points are crossed.

[12] Current loss and damage estimates for Sierra Leone are indicative rather than definitive, as methodologies vary, assumptions are uncertain, and non-economic losses remain largely unquantified.

Table 20: Proxy monetary estimates of climate-related loss & damage

Phenomenon	Proxy & Information Basis	Estimated Range & Confidence
1. Increasing temperatures & heat stress	Labour productivity losses applied as % of GDP. West Africa studies (ILO, Saeed 2022, Lancet Countdown) report 1–5% GDP losses due to reduced working hours and heat stress. Sierra Leone GDP (2023) = US$6.41bn.	**US$64m – 160m – 256m / yr** (low–central–high). **Confidence: Moderate.** Strong evidence for regional losses; national allocation uncertain.
2. Desertification, land & forest degradation	National and continental ELD/UNEP cost studies. Rapid deforestation (~100,000 ha/yr loss, <5% forest cover remaining). Continental cost of degradation = US$58–68bn/yr; apportionment by population share yields upper bound. Landslide DaLA 2017 = US$31.6m (illustrative event).	**US$32m – 150m – 420m / yr. Confidence: Low–Moderate.** Episodic events documented; scaling to annual flow has high uncertainty.
3. Loss of biodiversity & ecosystem services (mangroves, forests, fisheries)	Sierra Leone mangroves ~170,000 ha; ~25% lost since 1990 (~42,500 ha). Per-ha ES value US$1,000–5,000/ha·yr. Fisheries sector ≈US$200m/yr; 10–30% dependent on mangroves. Avoided double-counting by blending.	**US$42m – 80m – 273m / yr. Confidence: Moderate-Low.** Valuation per ha varies; overlap of fisheries & ES possible.
4. Sea level rise & coastal erosion	National Adaptation Plan / World Bank projection: by 2050, ~1,881 buildings lost, US$46.8m replacement cost. Coastline retreat ~4–6 m/yr in some sites. Broader infrastructure & land losses likely higher.	**US$46.8m (to 2050, buildings only).** Broader annualised risk could add **US$10–100m. Confidence: High** for cited figure; lower for broader extrapolation.
5. Salinisation of soils & groundwater	Proxy: estimate crop yield loss on coastal cropland. Yield decline 10–50%; coastal rice/vegetable area is limited. Based on crop value, the annual impact is in low millions.	**US$2m – 8m – 30m / yr. Confidence: Low.** No national study; proxy relies on area assumptions.
6. Ocean acidification (impact on fisheries)	Proxy: assume 5–25% reduction of fisheries value (~US$200m/yr). Global/West African studies warn of shellfish & coral decline, but no local valuation.	**US$10m – 20m – 50m / yr. Confidence: Low.** Long-term risk plausible; magnitude uncertain.

The Cancún Agreements (COP16, 2010) recognised the importance of slow-onset events in shaping climate vulnerability. In Sierra Leone, these processes are already evident, undermining livelihoods, ecosystems, and national development.

Rising average temperatures are contributing to longer dry spells, reduced soil moisture, and increased health risks, particularly for vulnerable populations. Deforestation and land degradation, driven by logging, agriculture, and mining, have reduced forest cover to less than 5% of its 1990 level, while mangroves have declined by about 25% since 1990, undermining both biodiversity and natural protection against coastal hazards (Government of Sierra Leone, NAP, 2021). This ecological degradation has heightened risks of landslides and flooding, as tragically illustrated by the 2017 Freetown disaster.

Sea level rise and coastal erosion represent the most visible and immediate slow-onset threat. In some communities along the coast—such as Konakridee, Lakka, and Hamilton—shoreline retreat is occurring at rates of 4–6 metres per year. A World Bank estimate suggests that by 2050, sea level rise could cause losses of USD 46.8 million in building stock, with nearly 1,900 buildings directly affected (World Bank, 2025). Entire communities, such as those on Plantain Island, are already experiencing displacement due to land loss and saltwater intrusion (Prevention Web, 2022).

Other slow-onset processes further compound these risks. Salinisation of groundwater and agricultural soils in low-lying areas is reducing crop productivity and threatening drinking water quality. Loss of biodiversity, including declines in mangrove ecosystems, wetlands, and forest habitats, weakens ecosystem services critical to fisheries, food security, and cultural identity (Government of Sierra Leone, NAP, 2021). Ocean acidification, though less studied locally, poses a growing risk to marine ecosystems and fisheries that sustain coastal livelihoods.

Taken together, the available evidence confirms that Sierra Leone already faces significant, measurable loss and damage from both sudden- and slow-onset climate processes. The combination of recorded economic losses from past disasters, modelled projections of GDP and asset exposure, and ongoing ecological degradation presents a clear and urgent challenge. While estimates vary by method and scope, the trajectory is consistent: without scaled-up adaptation and international support, loss and damage in Sierra Leone will continue to rise. Addressing both the immediate impacts of sudden-onset disasters and the insidious erosion caused by slow-onset events must therefore remain at the heart of Sierra Leone's climate strategy.

Establishment of a National Climate Relocation and Resettlement Fund

Sierra Leone aims to the establishment of a National Climate Relocation and Resettlement Fund, designed to provide dedicated resources for the protection of communities that face unavoidable displacement as a result of climate change. The Fund will support the planned and dignified relocation of households, villages, and coastal populations threatened by sea level rise, coastal erosion, salinisation, and other slow-onset processes identified under the UNFCCC.

This commitment is built on three foundations. First, Sierra Leone recognises that relocation and managed retreat from climate-exposed areas is not an abstract future scenario but an urgent reality, particularly for coastal and island settlements already losing land and cultural assets to the sea (PreventionWeb, 2022; Noticias Ambientales, 2023). Second, the country acknowledges that relocation cannot be ad hoc or reactive; it requires a dedicated financing mechanism that can acquire land, construct housing and infrastructure, and restore livelihoods in a manner consistent with human rights and development priorities. Third, Sierra Leone affirms that relocation must be guided by the principle of equity, ensuring that vulnerable communities are not left behind and that resettlement strengthens, rather than undermines, long-term resilience.

This new Fund builds upon and consolidates the foundations that already exist within Sierra Leone's institutional landscape. In 2023, the Government and the International Organisation for Migration signed a Plan of Action on Human Mobility in the Context of Climate Change, which prioritises governance, data, technology, and financing for climate-related displacement (IOM, 2023). In parallel, Sierra Leone has already adopted a National Resettlement Policy, developed with support from the Millennium Challenge Corporation, which provides normative guidance on compensation, livelihood restoration, and fair treatment of displaced populations (MCC, 2021). Furthermore, ongoing adaptation programmes, including the Coastal Resilience Project supported by the Green Climate Fund (GCF, 2019) and the UNDP-led initiative on climate-induced coastal risks (UNDP Sierra Leone, 2015), have demonstrated both the urgency of coastal threats and the capacity of local communities to respond when supported. These experiences show that the institutional and policy groundwork for relocation already exists; what has been missing is a dedicated financing instrument to enable full implementation at scale.

Through the launch of the National Climate Relocation and Resettlement Fund, Sierra Leone signals its determination to address the human dimensions of climate change in a proactive and rights-based manner. The Fund will allow the nation to plan, finance, and manage relocations systematically,

ensuring that communities retain their dignity, security, and opportunities for development, even in the face of climate impacts that can no longer be avoided. In advancing this commitment, Sierra Leone will also seek to leverage international support, including access to the new Loss and Damage Fund agreed under COP28 (Sierra Leone Press, 2023), in order to complement national resources and ensure that relocation efforts are adequately financed.

6 Means of Implementation & Tracking Framework[13]

Climate finance is the engine that turns ambition into action. Sierra Leone's NDC3.0 provides an opportunity to align country development priorities with a credible, sequenced financing strategy that mobilises state resources, concessional international funds, private capital and innovative instruments at scale. The finance chapter of NDC3.0, therefore, aims to (1) quantify the investment required across priority mitigation and adaptation strategies, (2) propose a pragmatic mobilisation and sequencing plan that catalyses private investment while protecting fiscal sustainability and ensuring equity.

The financial roadmap rests on three pillars: (i) the state as a catalyst — using budget tagging, sovereign green instruments, and guarantees to create a market; (ii) donors and MDBs as de-riskers — providing concessional finance and first-loss capacity to make projects bankable; and (iii) the private sector as scaler — deploying commercial capital where returns are viable and concessional funds have reduced risk. Complementary revenue and sustainability streams — carbon credits, Payment for Environmental Service (PES), tariffs, and insurance — are deployed to sustain operations beyond initial donor phases. The remainder of this chapter sets out the investment envelope, the barriers to closing the gap, and a practical set of recommendations to operationalise finance for NDC3.0.

The mitigation and adaptation finance architecture under NDC 3.0 establishes a balanced and credible framework that safeguards fiscal stability while enabling large-scale climate investment. By integrating earmarked domestic revenues into the national contribution, the Government limits new indebtedness and reinforces fiscal responsibility. At the same time, the structured engagement of multilateral, philanthropic, private, and market actors distributes risk across instruments, ensuring that no single source or mechanism bears undue exposure. Dedicated de-risking components and blended arrangements convert potential fiscal and investment risks into predictable, shared commitments. As a result, the overall NDC finance system operates as a self-balancing mechanism—protecting public finance while securing sustained confidence from international and private partners.

The mitigation and adaptation finance frameworks under NDC 3.0 form a single, coherent architecture built on shared principles of fiscal prudence, partnership diversification, and results-based accountability. Both systems combine domestic resource mobilisation with structured international engagement, ensuring that public commitments are matched by sustainable revenue sources and that risk is distributed across a wide range of actors and instruments. Public derisking and concessional finance create predictable foundations, while private blending, bond markets, and innovative mechanisms extend reach and performance. Together, these two pillars balance transformation and resilience—aligning growth-oriented mitigation investments with stability-focused adaptation measures—and establish a unified, credible, and fiscally sound climate finance system capable of sustaining long-term implementation of the NDC.

Together, these institutional and readiness achievements consolidate Sierra Leone's integrated climate finance architecture under NDC 3.0. The coherence between mitigation and adaptation financing—reinforced by solid national systems and internationally recognised readiness platforms—ensures that all financing flows operate within a single, transparent, and accountable framework. This integration allows the Government to channel domestic and external resources efficiently toward both transformational and resilience objectives, while maintaining fiscal discipline and investment credibility. By aligning readiness, risk management, and partnership coordination, Sierra Leone demonstrates that it has moved beyond planning to a phase of structured, scalable, and implementable climate finance—anchored in national ownership and sustained by international confidence.

[13] All the financial analysis, hypothesis and detailed calculations can be found in the supporting document called "Climate finance and investment roadmap" as indicated in Section 1.

6.1 Finance Mix and Finance Roadmap Overview

6.1.1. Financial Needs 2025-2035

(Amount - USD (Percent % domestic, Percent % external)
Based on the costed measures (mitigation & adaptation) by sector; total CAPEX & O&M needs for the NDC 3.0 are:

Mitigation Final Aggregates (**2025–2035**) require the following financial needs:

- Total CAPEX: US$ **815** million[14]
- Total OPEX over the period: US$209 million
- Total Cost of Mitigation Measures: US$ **1,024 million (1.024 billion)**

Adaptation Final aggregates (**2025-2035**) require US$ **1,950 million (1.95 billion)**.

The total cumulated needs for the NDC 3.0 over the period 2025-2035 are US$ 2,974 million (2.974 billion).

Tables below recall the Capex & Opex evaluations for mitigation that emerged from national consultation process, as well as the targeted contribution for each actor in the funding of adaptation, that emerged from the same process.

Table 21: Capex and Opex for Mitigation

Measure	CAPEX 2025–2026	CAPEX 2026–2030	CAPEX 2031–2035	OPEX 2025–2026	OPEX 2026–2030	OPEX 2031–2035
Mini-grids	3,5	75	75	0,3	1,25	1,75
Commercial/Industrial PV	1,5	80	30	0,3	0,75	0,75
Solar Home Systems	0,75	1	0,2	0,5	0,5	0,5
Improved Cookstoves	1,15	6	3	0,15	0,8	1
LPG	1,25	17,5	17,5	0,4	1	1
Biogas	0	40	100	0	0	0
E-buses	2	16	16	0,15	0,6	0,6
E-kekeh	1,5	45	45	0,15	1,15	1,15
Fuel efficiency & standards	10,15	2,25	3	1,55	0,65	0,8
Forestry & Mangroves	8	40	55	0,8	4	7
Food Systems transformation (Agroecology)	3,5	9	12,5	0,35	0,9	1,85

[14] For those measures where an estimate range was provided, the mean has been taken for both CAPEX and OPEX.

Waste Organics Diversion	2,25	35	11,5	0,4	6	1,85
Landfill Methane Mgmt	1,5	21	4,5	0,3	2,4	0,65
Cross-Cutting — ETF/MRV System Strengthening		10	6,5			
CAPEX TOTAL	**37**	**398**	**380**		**OPEX TOTAL**	
815					**209**	

Table 22: Respective Targets for Actors Contributions to Adaptation Finance (in %, in amount) (source: consultations workshops)

	Contributing share (%)					Contributing share (USD M)			
MEASURE	**COST**	**GOVT**	**DOM PVT**	**INT PVT**	**PARTNERS**	**GOVT**	**DOM PVT**	**INT PVT**	**PARTNERS**
Climate-Smart Agriculture & Extension Scale-Up (CSA)	132	10	10	10	70	13	13	13	92
Irrigation & Water Harvesting	180	10	5	15	70	18	9	27	126
Climate-Resilient Seed Systems & Post-Harvest Storage	120	10	10	10	70	12	12	12	84
Climate-Resilient WASH / Water Supply	100	10	5	15	70	10	5	15	70
Integrated Watershed Management	120	20	5	5	70	24	6	6	84
Coastal Resilience: Mangrove & Urban Flood Protection	150	10	10	0	80	15	15	0	120
Climate-Resilient Health Facilities	75	10	15	15	60	8	11	11	45
Climate-informed Disease Surveillance & Early Action	30	10	15	15	60	3	5	5	18
Integrated Vector Management & Heat-Health Action Plans	45	10	15	15	60	5	7	7	27

Environmental Health Management Action Plan	30	10	15	15	60	3	5	5	18
Disaster and Climate Risk Management in Schools	10	15	5	10	70	2	1	1	7
Climate-Resilient Infrastructure and Safe Access	20	15	5	10	70	3	1	2	14
Climate and Environmental Education in Curricula and Teacher Training	10	15	5	10	70	2	1	1	7
Greening School Communities and Operations	10	15	5	10	70	2	1	1	7
Climate-resilient education system	30	15	10	5	70	5	3	2	21
Infrastructure Resilience in Energy, Transmission	200	10	10	0	80	20	20	0	160
Risk-informed Urban Planning & Safe Relocation	50	10	10	5	75	5	5	3	38
Climate-Proofing Roads & Bridges	200	10	5	5	80	20	10	10	160
Upgrading and reinforcing existing industrial infrastructure	40	5	10	5	80	2	4	2	32
Landfill	40	15	0	5	80	6	0	2	32
Community Forestry & Co-managed Protected Areas	80	10	20	20	50	8	16	16	40
Agroforestry & Climate-Smart Tree Crop Intensification	90	10	10	30	50	9	9	27	45
Wetland & Mangrove Restoration (Co-benefit of Mitigation Measure)	0	5	5	30	60	0	0	0	0
National Multi-Hazard Early Warning System	40	15	15	0	70	6	6	0	28

NDMA Capacity, Equipment & Emergency Logistics	35	30	0	0	70	11	0	0	25
Community-Based DRM & Safe Infrastructure	20	15	15	0	70	3	3	0	14
Strengthened Climate Observation and Early Warning Systems	5	15	15	0	70	1	1	0	4
AI-based Climate and Weather Forecasting System for Resilient Development	6,5	15	15	0	70	1	1	0	5
Integration of Human Rights-Based Approach (HRBA) into Climate-Induced Disaster Recovery Programmes for Disproportionately Impacted Groups	35	25	10	15	50	9	4	5	18
Adaptation MRV & Indicator Framework (cobenefit)	0	30	0	20	50	0	0	0	0
Climate Finance Mobilisation & Project Pipeline Facility	18	15	15	20	50	3	3	4	9
Local Government Capacity & Gender & Social Inclusion Mainstreaming	18	0	0	20	80	0	0	4	14
Mainstreaming child protection in climate resilience planning	2	30	0	20	50	1	0	0	1
Energy Source Diversification (Solar, Hydropower) (cobenefit)	0	0	0	0	100	0	0	0	0
Climate-Resilient Infrastructure Policies in the Transport Sector	2	0	0	0	100	0	0	0	2

Integrated Planning and Policy Development in the Transportation Sector	2	0	0	0	100	0	0	0	2
Institutional Capacity Building in the Waste Sector	2	0	0	0	100	0	0	0	2
Institutional Capacity building in the IPPU sector	2	0	0	0	100	0	0	0	2

6.1.2. A fair, credible and sustainable ambition

The NDC 3.0 is characterised by three financial points: it is fair and ambitious, with a clear and credible national ownership and a sustainable public finance path.

A Fair and Ambitious Mitigation–Adaptation Balance for a Developing Economy

The Government reaffirms its commitment to a balanced and just climate response by adopting a fair **1:2 financing ratio** between mitigation and adaptation actions in the 2025–2035 NDC 3.0 financial roadmap. With a total of USD 2.964 billion mobilised over ten years, USD 1.014 billion is allocated to mitigation and USD 1.950 billion to adaptation. This strategic prioritisation reflects the country's developmental status and high vulnerability to climate impacts, while maintaining responsibility in reducing emissions. The financing structure ensures mitigation actions remain adequately resourced to contribute to global emission reduction efforts, while acknowledging the urgent need for investments in resilience and climate-proof development to protect populations, infrastructure and ecosystems.

A Clear and Credible National Ownership

The NDC 3.0 demonstrates strong national ownership. For mitigation, Sierra Leone as a nation targets a domestic contribution of 20 per cent of total financial needs—equivalent to USD 205 million—through domestic resources and policy instruments. For adaptation, the Government targets budgeting USD 400 million, representing 20.5 percent of total adaptation financing needs.

Along with national GHG mitigation unconditional commitment, these financial efforts reflect a credible, fair and responsible contribution from a developing country with limited fiscal space. They signal the country's serious engagement in climate action while transparently highlighting the financing gap that must be addressed through international climate finance, concessional instruments and technology transfer in line with the principles of equity and common but differentiated responsibilities.

A Sustainable Public Financing Pathway and Innovative Domestic Resource Mobilisation

The Government has established a sustainable and realistic financing pathway that secures USD 605 million in national contribution over the decade—USD 400 million for adaptation and USD 205 million for mitigation.

Of this amount, USD 304 million will be mobilised directly by the Government (USD 225 million for adaptation and USD 79 million for mitigation), while the remaining USD 301 million will be generated through private sector participation and community-based mechanisms.

Importantly, to some part of it will be associated new collected infrastructure resilience levy, early warning service fees, landfill taxation and public income public–private partnership models. This approach safeguards fiscal sustainability while integrating climate finance into national systems through climate budget tagging and strategic public investment planning.

Ultimately, the NDC 3.0 is in full alignment with the National Finance Policy and Macroeconomic Frameworks. The NDC 3.0 financing roadmap is fully consistent with Sierra Leone's macroeconomic direction and national fiscal architecture, ensuring coherence with medium- and long-term development objectives. It aligns with the Medium-Term National Development Plan (MTNDP) 2024–2030, which establishes climate resilience, green industrialisation and sustainable growth as national priorities, as well as the Green Growth and Climate Finance Strategy, which provides the framework for mobilising climate-aligned investments. The roadmap is also anchored in the Public Financial Management Act (2016) and **complements the Medium-Term Revenue Strategy (2021–2024), the Fiscal Strategy Statement, the Medium-Term Expenditure Framework (MTEF), and the Medium-Term Debt Management Strategy**, ensuring prudent fiscal management and debt sustainability. Through the integration of climate budget tagging, public investment management reforms and innovative domestic resource mobilisation measures, the NDC 3.0 financing framework strengthens macroeconomic stability while embedding climate action at the core of public policy and national economic planning.

6.1.3. Public / Private and National / International breakups

The mitigation finance structure under NDC 3.0 demonstrates a balanced and sustainable blend of domestic commitment and international partnership, anchored in strong private-sector engagement. Out of a total of USD 1.024 billion, 20 percent (USD 205 million) represents a domestic effort—comprising USD 79 million in public expenditure and USD 126 million from private investment—reflecting firm national ownership and a credible domestic contribution.

The remaining 80 percent (USD 819 million) is conditional on international support, structured to maximise leveraging and de-risking effects. Within this, USD 126 million is expected from public derisking instruments such as guarantees and concessional finance, designed to crowd in USD 693 million of international finance investment for low-carbon infrastructure, clean energy, and sustainable transport. This public–private and national–international architecture ensures long-term financial sustainability by coupling domestic accountability with global solidarity, reducing dependence on grants while fostering transformative private capital flows into mitigation.

Table 23: Mitigation Portfolio: Domestic & International funding; public vs. private breakup

Category	Amount (M USD)	% of Total Mitigation
DOMESTIC	**205**	**20.0%**
Public	79	7.7%
Private & Market	126	12.3%
INTERNATIONAL (conditional)	**819**	**80.0%**
Public	126	12.3%
Private & Market	693	67.7%
TOTAL	**1,024**	**100%**

The adaptation finance portfolio totals **USD 1,950 million**, structured to reflect the distinct logic of adaptation action—where the emphasis lies in building resilience and managing climate risk across systems, rather than delivering direct emission reductions.

- **Domestic resources** amount to **USD 400 million (20.5%)**, reflecting actions that can be undertaken with domestic or already-secured financing. Within this, **public finance (USD 225 million, 11.5%)** will support baseline resilience measures, institutional capacity, and public goods such as climate information systems. The **private component (USD 175 million, 9.0%)** represents market-driven adaptation investments, particularly in agriculture, infrastructure, and insurance—areas where resilience and profitability can align without concessional support.
- **International finance**, totalling **USD 1,550 million (79.5%)**, demonstrates the scale of ambition contingent upon enhanced international support and risk-sharing mechanisms. Within this structure, **public finance (USD 349 million, 17.9%)** is dedicated to **de-risking instruments**, such as guarantees, concessional loans, and blended funds that lower the cost of capital and attract private participation. Meanwhile, **private finance (USD 1,201 million, 61.6%)** represents the **leveraged investment potential**—mobilised once enabling conditions and risk mitigation frameworks are in place.

This balance of **public de-risking and private leveraging** provides a **credible and structured pathway** for scaling adaptation action. It recognises that adaptation investments often yield diffuse or long-term benefits, requiring strong public frameworks to crowd in private actors. The portfolio's design thus reflects both fiscal realism and strategic ambition—anchored in a partnership model where public support unlocks private resilience finance at scale.

Table 24: Adaptation Portfolio: Domestic & International funding; public vs. private breakup

Category	Amount (M USD)	% of Total Adaptation
DOMESTIC	**400**	**20.5 %**
Public	225	11.5%
Private & Market	175	9.0%
INTERNATIONAL (conditional)	**1550**	**79.5 %**
Public	349	17.9%
Private & Market	1,201	61.6%
TOTAL	**1,950**	**100%**

6.1.4. A roadmap anchored on budget sanity, national commitment, derisking-leverage, blended and finetuned innovative finance

The total mitigation envelope of **USD 1,024 million** is structured to strengthen both fiscal responsibility and the credibility of international engagement under NDC 3.0. The updated breakdown reflects the distinct functions of **domestic fiscal management** and **international partnership mechanisms**, ensuring alignment with national budgetary frameworks and sustainable debt management practices.

On the domestic side, resources amount to **USD 205 million (20.0%)**, combining public and private contributions. **Budget will mobilise USD 79 million (7.7%)**. The **domestic private investment (USD 126 million, 12.3%)** reflects national market capacity and confidence in the mitigation framework, based on current projects in the pipeline and credible weak signals that arose from consultations, contributing to the overall resilience of the domestic financing base.

On the international side, resources total **USD 819 million (80.0%)**, representing the structured mobilisation of external support and private capital. The **public and private derisking components (USD 99 million and USD 116 million, respectively)** are designed to sustain confidence across blended finance arrangements, maintaining steady and predictable frameworks for risk-sharing. The participation of **multilateral development banks (MDBs) (USD 167 million, 16.3%)** and of **philanthropic and bond market partners (USD 220 million, 21.5%)** reflects a broad-based partnership platform capable of scaling up investment flows in alignment with national priorities.

Furthermore, the inclusion of **incentives and innovative finance instruments (USD 217 million, 21.2%)** underscores the Government's commitment to credible innovation in climate finance—ranging from performance-based mechanisms to structured bond facilities and results-based payments. Together, these modalities consolidate a balanced approach in which domestic fiscal discipline is complemented by stable and diversified international engagement, ensuring that mitigation finance under NDC 3.0 remains both **ambitious and fiscally sustainable**.

Table 25: Breakup for mitigation finance by financial function (derisking, leveraging, innovative)

Category / Subcategory	Amount (M USD)	% of Total Mitigation (1,024 M USD)
DOMESTIC– TOTAL	**205**	**20.0%**
Public Budget	**79**	**7.7%**
Domestic Private	**126**	**12.3%**
INTERNATIONAL – TOTAL (conditional)	**819**	**80.0%**
Public Derisking	**99**	**9.7%**
Private Sector Derisking	**116**	**11.3%**
MDB Scaling Up	**167**	**16.3%**
Philanthropy & Bonds Market Scaling Up	**220**	**21.5%**
Incentives & Innovative Finance	**217**	**21.2%**
GRAND TOTAL	**1,024**	**100%**

The total adaptation envelope of **USD 1,950 million** has been structured to reflect the nature of adaptation action, where public investment, resilience-building, and long-term risk management require strong public frameworks and predictable international cooperation. The structure provides a coherent balance between **domestic commitment** and **international partnership mechanisms**, ensuring both fiscal discipline and the credibility of national adaptation financing under NDC 3.0.

On the domestic side, resources amount to **USD 400 million (20.5%)**, combining **public finance (USD 225 million, 11.5%)** and **private domestic investment (USD 175 million, 9.0%)**. Public resources will support essential resilience measures, institutional strengthening, and social protection systems, while domestic private finance will complement these through investments in adaptive infrastructure, agri-resilience, and insurance. This distribution reflects the Government's sustained engagement in adaptation as a public responsibility, combined with the growing participation of national private actors in resilience-oriented activities.

On the international side, resources reach **USD 1,550 million (79.5%)**, structured around differentiated partnership functions. **Public good de-risking (USD 337 million, 17.3%)** and **public scaling-up (USD 456 million, 23.4%)** represent the commitment of development partners and multilateral institutions to support predictable, programmatic adaptation funding. These categories anchor long-term cooperation and ensure stability in financing flows.

The **private blending segment (USD 224 million, 11.5%)**, together with **bond market participation (USD 430 million, 22.0%)**, reflects the progressive inclusion of private and capital market actors within structured, risk-mitigated frameworks. The presence of these blended instruments confirms the steady maturation of adaptation finance toward market-compatible models without compromising public oversight.

Finally, **results-based and innovative finance (USD 103 million, 5.3%)** introduces a credible layer of performance-linked mechanisms—aligning disbursements with measurable resilience outcomes and national monitoring frameworks.

Overall, this composition ensures that adaptation financing under NDC 3.0 rests on **sound public accountability, credible blending structures, and innovation grounded in measurable results**, offering a robust platform for scaling climate resilience across sectors and communities.

Table 26: Breakup for adaptation by financial function (derisking, leveraging, innovative)

Category / Subcategory	Amount (M USD)	% of Total
DOMESTIC– TOTAL	**400**	**20.5%**
Public Finance	225	11.5%
Private Domestic	175	9.0%
INTERNATIONAL– TOTAL (conditional)	**1,550**	**79.5%**
Public good Derisking	337	17.3%
Public Scaling-up	456	23.4%
Private Blending	224	11.5%
Sub-total Bonds Scaling up	430	22.0%
Results-based (Innovative) Finance	103	5.3%
GRAND TOTAL	1,950	100%

Taken together, the mitigation and adaptation finance structures presented under NDC 3.0 establish a coherent and fiscally sound architecture that both safeguards and enhances the credibility of public climate finance, while the Government's fiscal exposure remains controlled and sustainable. The broad-based partnership model on the international side—spanning multilateral development banks, philanthropic sources, bond market actors, and results-based mechanisms—creates a diversified and steady inflow structure that spreads risk across instruments and institutions rather than concentrating it on the public budget. The presence of dedicated derisking segments on both sides—public and private—further stabilises the financing environment by converting uncertainty in project-level cash flows and investment horizons into structured, manageable commitments under blended arrangements. This approach not only derisks individual investments but also reduces sovereign

exposure by leveraging concessional, catalytic, and market-aligned resources in tandem. In combining fiscal discipline and credible blending mechanisms, the overall NDC 3.0 finance architecture transforms risk into partnership—establishing a self-reinforcing system where each actor's participation lowers the vulnerability of the others, ensuring that national climate objectives are advanced within a framework of financial stability and long-term creditworthiness.

6.1.5. National Institutional Framework

Sierra Leone is actively building the institutions and processes needed to mobilize, track and deploy climate finance in a fiscally prudent way, notably a National Climate Finance Strategy (published July 2025) and an operational Climate Finance Unit within the Ministry of Finance; development and piloting of a climate budget-tagging framework to identify and track climate-relevant public expenditures; strengthening Public Investment Management (PIM) through new national PIM guidance and manuals that integrate climate criteria into project appraisal and selection; and a Climate Finance Taskforce mechanism that coordinates the Ministry of Finance, sector line ministries, and development partners to pipeline, appraise and monitor climate investments. These reforms are being supported by the IMF, World Bank and Green Climate Fund readiness activities.

Additionally, Climate budget tagging is being designed to make climate-relevant public spending visible in Sierra Leone's budgetary system so that the Government can (i) quantify domestic climate expenditure, (ii) report on the mix of mitigation vs adaptation spending, and (iii) target resources more effectively. Technical reviews and IMF/partner advice recommend a phased approach: develop clear tagging definitions/taxonomies; pilot tagging in priority ministries; and publish a short "climate budget chapter" within the budget documentation as tagging matures. Recent fiscal reform documents and technical assistance reports note the intent to institutionalise climate tagging as part of the medium-term budget and fiscal reporting cycle. Pilots and capacity building are underway, and the tagging workstream is explicitly linked to the National Climate Finance Strategy and the Climate Finance Unit.

Sierra Leone is formalising a strengthened PIM framework (new National PIM Policy and a PIM Manual) that standardises project identification, appraisal, selection, financing and ex-post review. The NPIMP and the PIM Manual create an institutional pathway (PIM Unit / Public Investment Committees / standardised appraisal templates) to ensure that public investments undergo consistent economic, fiscal and environmental appraisal—including, increasingly, climate vulnerability and resilience criteria. This PIM reform is a key channel for ensuring that climate finance (both domestic and donor resources) is allocated to high-impact, technically sound projects and that climate co-benefits are systematically captured during appraisal and budget submission. The PIM reforms also enable more robust tracking of contingent liabilities and improve ex-post evaluation—critical for reporting climate outcomes and protecting fiscal sustainability.

The Climate Finance Taskforce (and the Climate Finance Unit as its operational anchor) functions as the national coordination mechanism to align sector plans with fiscal policy, to prioritise a pipeline of bankable climate projects, and to coordinate donor/partner interventions. The Taskforce brings together MoF (including budget and PIM functions), line ministries (e.g., Energy, Agriculture, Environment, Works), development partners (World Bank, GCF, UN agencies) and private sector stakeholders to (a) validate project pipelines, (b) agree financing instruments (grants, concessional loans, PPPs), (c) supervise climate budget tagging pilots, and (d) ensure consistency between sector planning and the MTEF/budget submissions. This cross-ministerial coordination is explicitly designed to avoid fragmentation: sector ministries prepare and justify projects through the PIM and MTEF processes while the CFU/Taskforce negotiates external finance and tags climate relevance in the budget.

6.2 Pipeline of bankable projects and instruments in the financial roadmap

From the characteristics of measures and clusters of measures supra in mitigation and adaptation sections, this section brings the array of possible financial instruments and exemplifies some target DFIS and funding sources to match the following drivers of a sustainable and effective climate strategy:

- The strategy seeks to **maximise leverage of private and international finance**, thereby reducing reliance on scarce domestic budget resources while mobilising capital at scale.
- It will **deploy de-risking instruments**—such as guarantees, concessional loans, and results-based financing—targeted especially at early-stage investments in the energy and clean cooking transitions where perceived risks are highest.
- To broaden the funding base, Sierra Leone will **tap carbon markets and issue green and blue bonds**, using these instruments to attract long-term impact investors.
- Interventions will be **phased strategically in pilot, Wave 1, and full-scale-up stages**, ensuring that operational systems are tested, investor confidence is built, and capacity grows in line with financial commitments.
- Finally, the strategy will **strengthen Environmental Tracking Frameworks (ETF) and Monitoring, Reporting and Verification (MRV) systems** so that finance flows are transparent, outcomes are measurable, and access to results-based climate finance is facilitated.

The section ultimately ensures alignment with the **Project-readiness criteria (EPA — Climate Change Secretariat) of Sierra Leone.**

Project readiness—has for core criteria :
• Strategic alignment and policy clearance.
• Robust problem statement and theory of change.
• Technical feasibility and baseline data.
• Preliminary financial plan and value-for-money.
• Environmental, social and governance (ESG) safeguards and compliance road map.
• Project management and institutional capacity in coordination arrangement (linking the line ministry, PIM Unit and the Climate Finance Unit/Taskforce).
• Bankability/readiness actions.

Sierra Leone's EPA/CCS and the Ministry of Finance operate in a coordinated pipeline model: the CCS helps define climate rationale and sector screening, while the Ministry's PIM and Climate Finance Unit sequence technical and fiduciary readiness actions required by each financier, with practical linkages with:
• GCF Readiness ↔ National (EPA/CFU/PIM) workflow
• AfDB – Africa Climate Change Fund (ACCF) ↔ early concept and TA
In Sierra Leone's pipeline, ACCF support is typically used to close technical gaps identified by EPA/CCS or by PIM appraisal checklists before submitting to larger funds.
• UNDP's NDC Implementation Support Programme ↔ programmatic NDC/sector integration and technical assistance

6.2.1. Breakup of financial instruments in the NDC3.0 financial roadmap for mitigation and adaptation

The detailed structure of the mitigation finance envelope under NDC 3.0 confirms a coherent and integrated financial ecosystem, where each cluster of instruments reinforces the others

and contributes to an overall architecture of fiscal prudence, market activation, and international partnership. The underlying logic is cumulative rather than fragmented: each cluster serves as a distinct but interconnected pillar within a continuum that extends from domestic resource mobilisation to globally blended and performance-linked finance.

At the domestic core, funding combines public budget expenditure and domestic private investment. The coherence of this group lies in its fiscal integrity: public outlays are balanced by corresponding inflows—such as user fees and earmarked revenues—thereby containing fiscal exposure. The domestic private segment complements this logic by providing parallel investment channels—through debt, equity, and insurance—anchored in national markets and institutions, including environmental funds. This mix creates a stable foundation of locally generated finance that both signals national ownership and reduces reliance on external debt or concessional flows.

The domestic segment builds upon this foundation through successive layers of partnership and leverage, maintaining a clear internal progression from derisking to scaling up and finally to innovation. Within this framework, **public derisking instruments**—comprising grants, guarantees, and readiness support—constitute the enabling layer, designed to absorb early-stage risk and to ensure project viability. They directly connect with **private derisking instruments**, where private debt and equity, green credit lines, consumer finance, fleet-as-a-service models, and insurance instruments demonstrate the operational extension of risk mitigation into market activity. The coherence of this linkage lies in its continuum of risk transfer: from public grants that de-risk the enabling environment, to private financial instruments that internalise and manage residual risk within viable commercial models.

Building upon these, the **scaling-up clusters**—through multilateral development banks (MDBs), philanthropy, and bond markets—consolidate the flow of capital into structured, medium- to large-scale investments. MDB concessional credit and microfinance operations ensure accessibility and reach, while the philanthropic and bond market segments, including green bonds and private net-zero commitments, translate de-risked opportunities into long-term finance at scale. The diversity of actors—development banks, institutional investors, and mission-driven funds—provides both depth and stability, ensuring that scaling-up mechanisms are not dependent on any single channel or instrument.

Finally, the **incentives and innovative finance cluster**—including REDD+, carbon finance, and results-based financing (RBF)—closes the loop by linking financial flows to verified performance outcomes. These mechanisms ensure that investments across all preceding clusters ultimately align with measurable mitigation results, thereby reinforcing accountability and sustaining investor and partner confidence. The credibility of innovation in this cluster lies in its diversity: it accommodates both market-based carbon transactions and non-market, results-driven disbursements, ensuring flexibility while maintaining integrity in outcome measurement.

Taken together, the interconnection of these clusters forms a coherent mitigation finance system in which **public instruments secure fiscal space, private participation extends market reach, development partners scale the flow of resources, and innovation ensures sustained performance**. This sequencing effectively derisks not only individual instruments but also the NDC's overall financial implementation—by distributing exposure across actors, instruments, and time horizons, ensuring both financial stability and strategic resilience of the national mitigation effort.

Table 27: Mitigation funding instruments structure, to maximise the derisking-leveraging blending and innovative finance

Category / Subcategory	Instrument / Subcategory	Amount (M USD)	% of Total Mitigation (1,024 M USD)
DOMESTIC – TOTAL		**205**	**20.0%**
Public Budget		**79**	**7.7%**
Domestic Private		**126**	**12.3%**
	Private Debt	54	5.3%
	Private Equity	49	4.8%
	Private expenditure	5	0.5%
	Private insurance	15	1.5%
	Pvt through National environment funds	3	0.3%
INTERNATIONAL – TOTAL (conditional)		**819**	**80.0%**
Public Derisking		**99**	**9.7%**
	Grants & Assistance	58	5.7%
	Guarantees	22	2.1%
	Readiness (GCF & other funds)	19	1.9%
Private Sector Derisking		**116**	**11.3%**
	Pvt Debt / Equity	45	4.4%
	Green credit lines	25	2.4%
	Consumer micro-finance	10	1.0%
	Fleet-as-a-service	25	2.4%
	PAYGo receivables financing	1	0.1%
	Private Insurance	10	1.0%
MDB Scaling Up		**167**	**16.3%**
	Concessional credit	64	6.3%
	Concessional loans	45	4.4%
	Micro-leases and micro loans	58	5.7%
Philanthropy & Bonds Market Scaling Up		**220**	**21.5%**
	Private net-zero & impact	100	9.8%
	Green bonds	120	11.7%
Incentives & Innovative Finance		**217**	**21.2%**
	REDD+	30	2.9%
	Carbon finance	75	7.3%
	RBF	112	10.9%

The detailed adaptation finance structure under NDC 3.0 demonstrates a consistent and interconnected system designed to sustain resilience-building over time, distribute risk across diverse instruments and actors, and preserve fiscal and financial stability. Its internal logic progresses from domestically anchored measures to internationally blended and performance-linked financing, ensuring that adaptation finance evolves as a coherent continuum rather than a set of isolated interventions.

At the domestic level, **public finance** and **private contributions** together form the foundation of nationally led resilience investment. The coherence of this cluster lies in its balance between **budgetary control and targeted incentives**: output-based subsidies, infrastructure resilience taxes, and early warning fees and accountability mechanisms that strengthen public capacity without

overburdening fiscal accounts. These measures are complemented by domestic private participation from NGOs, ESG investors, private equity and debt, industrial equity, and insurance actors. This variety not only broadens the financing base but also embeds adaptation objectives into local markets, civil society action, and private sector planning. The inclusion of NGO and ESG capital within the domestic cluster reflects the expanding role of non-state actors in delivering social and environmental resilience through community-based and impact-driven models.

The international finance segment extends this logic through a structured layering of international support and market participation. The **public good derisking cluster**—comprising multilateral and UN system grants, GCF contributions, and technical assistance—anchors the system by reducing uncertainty in early-stage or high-vulnerability areas. MDB insurance instruments provide an additional layer of financial protection, ensuring that adaptation investments remain viable even under adverse climate conditions. These derisking elements create the enabling environment for the subsequent cluster, **public scaling-up**, which consolidates large-scale concessional lending, syndications between the GCF and MDBs, and long-maturity concessional loans. This structured partnership between public financiers offers predictability and scale, translating de-risked opportunities into tangible resilience infrastructure and systems.

Private blending mechanisms deepen this structure by extending adaptation finance into semi-commercial and impact-oriented domains. The presence of NGOs, philanthropic donor pools, ESG funds, agribusiness bonds, and parametric insurance demonstrates both functional diversity and coherence: together, they channel risk-adjusted capital to sectors such as agriculture, coastal resilience, and housing while maintaining transparency and measurable outcomes. The inclusion of **parametric insurance** links this cluster directly to the derisking layer, reinforcing systemic stability and closing the risk-transfer loop between public and private instruments.

Building on these foundations, the **bond cluster**—including SDG, green, blue, and urban resilience bonds—represents a mature scaling instrument connecting domestic resilience priorities with international capital markets. The diversity of bond types reflects the breadth of adaptation themes covered—from ecosystem protection and water resilience to sustainable cities—while ensuring alignment with global sustainability benchmarks. These bonds create long-term financing channels with risk-sharing across investors, thereby reducing sovereign exposure and enhancing creditworthiness.

Finally, the **results-based and innovative finance cluster** introduces a performance dimension that unites the entire system. Debt swaps, results-based finance (RBF), REDD+, and ecosystemic payment mechanisms link disbursement directly to verified adaptation outcomes, ensuring that financing remains accountable, transparent, and impact-driven. The presence of multiple actor types—sovereign creditors, environmental funds, and private intermediaries—illustrates the system's capacity to blend concessional and market-based logic within measurable frameworks.

Overall, the interconnection among these clusters forms a **comprehensive and resilient adaptation finance architecture**, where public derisking lowers systemic vulnerability, concessional lending and bonds provide scale and continuity, and innovative mechanisms reinforce accountability and sustainability. This layered, actor-diverse approach derisks the entire NDC 3.0 adaptation finance portfolio—protecting public resources, stabilising private participation, and ensuring that resilience investments remain both fiscally sustainable and operationally credible across time.

Table 28: Adaptation funding instruments structure, to maximise the derisking, leveraging, blending and innovative finance

Category / Subcategory	Instrument / Subcategory	Amount (M USD)	% of Total
	DOMESTIC – TOTAL	**400**	**20.5%**
Public Finance		**225**	**11.5%**
	Output-based subsidies	50	2.6%
	Budget	130	6.7%
	Infrastructure Resilience Tax + Early Warning Fee	45	2.3%
Private Domestic		**175**	**9.0%**
	NGOs	60	3.1%
	ESG	38	1.9%
	Pvt Equity / Debt	44	2.3%
	Equity (industrial)	20	1.0%
	Insurance	13	0.7%
	INTERNATIONAL (conditional) – TOTAL	**1,550**	**79.5%**
Public good Derisking		**337**	**17.3%**
	GCF & Funds	10	0.5%
	Technical assistance	30	1.5%
	UN System Grants	70	3.6%
	Grants	205	10.5%
	MDB Insurance	22	1.1%
Public Scaling-up		**456**	**23.4%**
	Concessional debt	106	5.4%
	GCF-MDB Loan syndication	200	10.3%
	Concessional Loans (grace period, long maturity)	150	7.7%
Private Blending		**224**	**11.5%**
	NGO	25	1.3%
	Philanthropy/ Donor Pool	57	3.0%
	ESG	41	2.1%
	Private Agribusiness bonds	55	2.8%
	Parametric insurance	46	2.4%
Sub-total Bonds		**430**	**22.0%**
	SDG Bond	100	5.1%
	Green Bond	150	7.6%
	Blue Bond	60	3.1%
	Urban Resilient Housing Bonds	120	6.2%
	Results-based (Innovative) Finance	**103**	**5.3%**
	Debt Swap	10	0.5%
	RBF	28	1.4%
	REDD+	45	2.3%
	Ecosystemic payments	20	1.0%

6.2.2. Integrated Perspective: Coherence Between Mitigation and Adaptation Finance

The mitigation and adaptation finance architectures developed under NDC 3.0 are designed as two distinct yet mutually reinforcing systems. Each responds to a specific logic—mitigation driven by transformation of productive and energy systems, and adaptation focused on resilience and protection of assets and livelihoods—but both rest on a shared financial philosophy: fiscal prudence, partnership diversification, and innovation linked to measurable results. This common foundation ensures that resources mobilised for one pillar strengthen the credibility and sustainability of the other, creating a unified NDC finance framework rather than parallel tracks.

At the **structural and partnership level**, both portfolios exhibit a coherent sequence that moves from public derisking to private engagement, and from concessional scaling-up to innovative, performance-based finance. In each case, the early-stage risk absorption performed by public or multilateral actors—through grants, guarantees, and technical assistance—creates the enabling conditions for private participation. This symmetry strengthens the entire NDC ecosystem by standardising risk-sharing principles, allowing similar blended structures and instruments to operate efficiently across mitigation and adaptation sectors. Moreover, the participation of comparable categories of actors—MDBs, philanthropic funds, ESG investors, NGOs, and insurance providers—creates institutional coherence and operational continuity between the two agendas.

In terms of **financial innovation and accountability**, both mitigation and adaptation clusters converge on the principle of results-based disbursement and verified impact. Carbon finance, REDD+, ecosystem payments, and results-based financing mechanisms apply the same logic of linking capital flows to performance indicators, ensuring that finance mobilised under either pillar delivers tangible outcomes consistent with national and global commitments. This alignment enhances transparency and allows for integrated monitoring systems across both areas of work.

Finally, from a **strategic perspective**, the interplay between the two systems enhances the resilience of the national climate finance framework as a whole. Mitigation attracts forward-looking, investment-oriented capital, while adaptation secures stability and social protection—together forming a balanced risk-return profile for the country's overall climate portfolio. This balance enables the Government to negotiate, structure, and sequence financing in a way that supports both growth and resilience, demonstrating that climate finance under NDC 3.0 operates as a **unified, risk-managed, and fiscally credible national investment framework**.

6.2.3. Strengthening Credibility through Readiness and Institutional Linkages

Sierra Leone has consolidated significant progress in advancing project readiness and institutional capacity under the leadership of the **Environmental Protection Agency (EPA)** through its **Climate Change Secretariat (CCS)**. The Government has established a well-structured and operational framework for the identification, preparation, and prioritisation of climate investments, ensuring that all projects align with national priorities and meet international investment standards. The CCS has effectively bridged the gap between policy and implementation by developing a robust pipeline of mitigation and adaptation initiatives ready for financing. This maturity in project preparation and coordination demonstrates that Sierra Leone's NDC 3.0 finance system rests on strong institutional foundations and a credible, nationally owned platform for sustained delivery.

In parallel, Sierra Leone is deepening its engagement with key international readiness mechanisms, notably the **Green Climate Fund (GCF) readiness programme**, the **African Development Bank's Africa Climate Change Fund (ACCF)**, and the **UNDP NDC Implementation Support Programme**. These partnerships are now fully integrated into the country's national climate finance framework, reinforcing coherence between domestic institutions and international support systems. By aligning readiness efforts across these mechanisms, Sierra Leone ensures consistency in standards, accelerates access to concessional finance, and enhances coordination among technical and financial partners. Together, these advances affirm the Government's ability not only to mobilise resources but also to manage them effectively and transparently—demonstrating that Sierra Leone is well positioned to deliver on its NDC 3.0 commitments with both credibility and confidence.

6.2.4. Detailed Funding structure of measures and clusters of measures

Table 29: Mitigation Measures: Needs (2025–2035) & Financing Instruments[15]

Measure & Cost (M USD)	Instrument Category	Component / Instrument	Amount (M USD)	% of Total
Mini-grids	**Domestic – Private**	Private Equity	18	10.7%
169	**International – Public (Derisking)**	Capacity building	11	6.5%
		Concessional credit	40	23.7%
	International – Private (Leveraging)	Private equity	10	5.9%
		RBF	10	5.9%
		Green bonds	80	47.3%
Commercial / Industrial PV	**Domestic – Private**	Private Equity	10	8.4%
119		Private Debt	15	12.6%
	International – Public (Derisking)	Grants	20	16.8%
		Private debt/equity	10	8.4%
	International – Private (Leveraging)	RBF facilities	10	8.4%
		Green credit lines	25	21.0%
		Leasing structures	20	16.8%
		Carbon credit	9	7.6%
Solar Home Systems	**Domestic – Private**	Pvt Equity	1	14.3%
7	**International – Public (Derisking)**	Concessional guarantees	1	14.3%
		Grant towards concessionalising loans	1	14.3%
		Vendor equity/debt	1	14.3%
	International – Private (Leveraging)	PAYGo receivables financing	1	14.3%
		Micro-loans	2	28.5%
Improved Cookstoves (Charcoal)	**Domestic – Public**	Pro-poor vouchers	2	22.2%
9	**International – Public (Derisking)**	Micro-loans & leasing	3	33.3%
	International – Private (Leveraging)	Article 6 RBF	4	44.5%
Improved Cookstoves (Biomass)	**Domestic – Public**	Pro-poor vouchers	2	20.0%
10	**International – Public (Derisking)**	Donor grants	3	30.0%
	International – Private (Leveraging)	Article 6 RBF	3	30.0%
		RBF per verified stove	2	20.0%
LPG	**Domestic – Private**	Private marketer investment	8	17.0%
47	**International – Public (Derisking)**	Concessional loans	10	21.3%
		Equity/Debt	9	19.1%
	International – Private (Leveraging)	Consumer micro-finance	10	21.3%
		RBF incentives	10	21.3%
Biogas	**Domestic – Private**	Equity	7	5.0%
140		Debt	14	10.0%
	International – Public (Derisking)	Concessional credit	19	13.6%
		Guarantees	20	14.3%
		Grant	10	7.1%
	International – Private (Leveraging)	Result-Based Funding	50	35.7%
		Carbon revenue	20	14.3%

[15] Calculated by taking Capex, Opex for preparatory phase, and Opex for 5 years of phase 1

E-buses	**Domestic – Public**	Public procurement	10	25.0%
40	**Domestic – Private**	Pvt Equity / Debt / Insurance	15	37.5%
	International – Public (PPP; Leveraging)	PPP model (public-private capex/opex mix)	15	37.5%
E-kekeh	**Domestic – Private**	Pvt Equity / Debt / Insurance	30	29.1%
103	**International – Public (Derisking)**	Concessional credit lines	5	4.9%
	International – Private (Leveraging)	Micro-leases	33	32.0%
		Fleet-as-a-service	25	24.3%
		Results-based payments	10	9.7%
Fuel Efficiency & Standards	**Domestic – Public**	Budget	2	8.3%
24	**International – Public (PPP/Derisking)**	Inspection fee revenues	5	20.8%
		Concessional/DFI support	7	29.2%
	International – Private (Leveraging)	Carbon market Article 6	10	41.7%
Forestry & Mangroves (Total 159)	**International Private**	Net-zero impact philanthropy & impact capital	100	62.9%
	Domestic – Public	Budget	2	1.3%
	Domestic – Private	Nature environment funds	3	1.9%
	International – Public (Derisking)	Grants	4	2.5%
	International – Private (Leveraging)	REDD+	30	18.9%
		Green bonds	20	12.6%
Food System Transformation (Agroecology)	**Domestic – Public**	Budget allocation	8	20.5%
39	**Domestic – Private**	Private expenditure	5	12.8%
	International – Public (Derisking)	Grants	2	5.1%
	International – Private (Leveraging)	Green bonds	20	51.3%
		Carbon trade	4	10.3%
Waste Organics Diversion	**Domestic – Public**	Municipal budgets	5	5.7%
88		User fees	28	31.9%
	International – Public (Derisking)	Concessional/DFI loans	20	22.7%
	International – Private (Leveraging)	RBF incentives	20	22.7%
		Carbon revenue financing	15	17.0%
Landfill Methane Management	**Domestic – Public**	Municipal budgets	5	11.6%
		Landfill tipping fees	10	23.3%
43	**International – Public (Derisking)**	Concessional/DFI loans	8	18.5%
	International – Private (Leveraging)	Carbon finance	10	23.3%
		Private Insurance	10	23.3%
Cross-Cutting	**International – Public (Capacity)**	Technical assistance	4	25.0%
16		Readiness GCF	12	75.0%
Policy Measures	**International – Public (Capacity)**	Technical assistance	3	30.0%
10		Readiness GCF	7	70.0%

Table 30: Adaptation Measures by Cluster: Needs (2025–2035) & Potential Financing Instruments

Cluster Total & Cost (M USD)	Instrument Category	Component / Instrument	Amount (MUSD)	% of Cost
Agriculture & Food Security	Domestic – Public	Output-based subsidies	50	9.4%
		Budget support	3	0.6%
	Domestic – Private	Pvt Equity / Debt	40	7.5%
532	International – (Derisking)	Bilateral Grants	50	9.4%
		Conc. Loans (grace period, long maturity)	150	28.2%
		MDB Insurance	22	4.1%
	International – (Leveraging)	Green Bond	150	28.2%
		Agribusiness bonds	55	10.3%
Water & Coastal Management	Domestic – Public	Budget	39	14.4%
	Domestic – Private	NGOs	21	7.8%
270	International – (Derisking)	Bilateral Grants	30	11.1%
		MDB concessional credit	90	33.3%
	International – (Leveraging)	Blue Bond	60	22.2%
		Ecosystemic payments	20	7.4%
		ESG	10	3.7%
Health	Domestic – Public	Budget	18	10.0%
	Domestic – Private	NGOs	27	15.0%
180	International – (Derisking)	UNICEF	20	11.1%
		Grants	50	27.8%
	International – (Leveraging)	SDG Bond	20	11.1%
		RBF / Health Impact Schemes	18	10.0%
		Philanthropy	27	15.0%
Education	Domestic – Public	Budget	12	15.0%
	Domestic – Private	NGOs	6	7.5%
	International – (Derisking)	Grants	10	12.5%
80		Concessional debt	16	20.0%
	International – (Leveraging)	SDG Bonds	20	25.0%
		Debt Swap	10	12.5%
		Pvt ESG	6	7.5%
Infrastructure & Energy Resilience	Domestic – Public	Budget	13	2.5%
		Tax	40	7.5%
530	Domestic – Private	Equity (industrial)	20	3.8%
		ESG	10	1.9%
		Insurance	10	1.9%
		Private ESG	17	3.2%
	International – (Derisking)	Grants	50	9.4%
		UN Habitat	50	9.4%
	International – (Leveraging)	Urban Resilient Housing Bonds	120	22.6%
		GCF-MDB Loan syndication	200	37.7%
Forestry, Land Use & Ecosystems	Domestic – Public	Budget	17	10.0%
	Domestic – Private	ESG	25	14.7%
170	International – (Derisking)	Parametric insurance	18	10.6%
		Bilateral Grant	15	8.8%

	International – (Leveraging)	REDD+	45	26.5%
		Philanthropy	25	14.7%
		NGO Grants	25	14.7%
Disaster Risk Reduction & Early Warning	Domestic – Public	Budget	16	15.0%
		Fee	5	4.7%
107	Domestic – Private	Equity	4	3.7%
		Insurance	3	2.8%
		ESG	3	2.8%
	International – (Derisking)	Grants, parametric insurance, contingent credit facilities	16	15.0%
	International – (Leveraging)	SDG Bond	60	56.1%
Cross-cutting & Policy	Domestic – Public	Budget	12	14.8%
	Domestic – Private	NGOs	6	7.4%
81	International – (Derisking)	Grants, technical assistance	30	37.0%
		GCF & Funds	10	12.3%
		RBF / Capacity Incentives	10	12.3%
	International – (Leveraging)	ESG / Donor Pool	13	16.0%
TOTAL	**Domestic – Public**		**225**	**11.5%**
1,950	**Domestic – Private**		**175**	**9.0%**
	International (Derisking)		**349**	**17.9%**
	International (Leveraging)		**1,201**	**61.6%**

6.3 Innovative instruments

Sierra Leone's revised Nationally Determined Contribution (NDC3.0) sets ambitious mitigation and sustainable development targets for 2025–2035. Achieving these goals requires not only technical solutions and policy frameworks but also a robust climate finance roadmap that mobilises public, private, and international resources.

The country faces specific challenges:

- High upfront investment needs for infrastructure-heavy sectors such as energy, transport, waste management, and forestry;
- A mix of revenue-generating and public-good interventions with varying bankability;
- Limited fiscal space, requiring government funds to be highly leveraged;
- A need to attract private sector investment while mitigating perceived risks;
- Opportunities to leverage international climate finance, concessional loans, carbon markets, and green/blue bonds.

To operationalise innovative finance, the Government of Sierra Leone has designated lead institutions for key instruments. The Ministry of Finance (MoF) will oversee sovereign green and blue bond issuance, ensuring alignment with fiscal policy and debt sustainability frameworks. The Environmental Protection Agency (EPA) will lead the development of carbon market mechanisms, including voluntary carbon markets and Article 6 readiness, building on ongoing GCF readiness support and the Commonwealth Climate Finance Access Hub. Public-Private Partnerships (PPPs) will be structured and managed by the Sierra Leone Revenue Authority (SLRA), the Ministry of Transport and Aviation (MTA), and the National Investment Bank (NIB), providing the legal, financial, and operational frameworks to attract private investment into infrastructure-heavy mitigation and adaptation measures.

Sierra Leone's participation in global climate finance readiness initiatives further strengthens the credibility and efficiency of its innovative finance instruments. Engagement with the GCF Readiness

Programme on blended finance tools, technical assistance, and project preparation support ensures that both domestic and international capital are channelled to bankable, high-impact projects. Similarly, involvement in the Commonwealth Climate Finance Access Hub provides targeted support for structuring green bonds, accessing concessional debt, and leveraging private capital, building a pipeline of projects that are investment-ready and aligned with national priorities.
By clearly defining institutional responsibilities and linking each innovative instrument to established readiness programs, Sierra Leone ensures that its climate finance strategy is both credible and actionable, enabling the mobilisation of diverse funding sources while maintaining strong oversight, transparency, and alignment with NDC3.0 targets.

6.3.1 The financial roadmap with the backdrop of the Climate Finance Strategy (2025) of Sierra Leone

The **July 2025 Sierra Leone Climate Finance Strategy** seeks to integrate climate finance into national development planning, promote a low-carbon and climate-resilient economy, and mobilise resources through blended finance and de-risking mechanisms, including deployment of innovative financing instruments, debt-for-nature swaps, carbon credit mechanisms, and a strengthened policy and regulatory framework.

It has three priorities:

- ***Scaling direct investment in resilience and adaptation***, particularly in agriculture, water, urban infrastructure, and coastal protection. These areas offer high social and economic returns but are unlikely to attract private capital without public finance.
- ***Building a contingency financing architecture***, through pre-arranged, quick-disbursing instruments that provide liquidity following climate shocks. Instruments like catastrophe drawdowns, climate risk insurance can mitigate budgetary volatility and protect development gains.
- ***Derisking private sector investments*** through catalytic use of concessional finance. For instance, grant-based viability gap funding or offtake price guarantees can crowd in private capital for decentralised renewable energy, climate-smart agriculture, or nature-based tourism. Public finance can absorb risks that private actors cannot price or accept, making investments viable in the Sierra Leonean context.

It aims to **incorporate non-concessional and market-based instruments :**

- ***Green bonds and sustainability-linked loans (SLLs):*** These can be used to raise capital for climate-aligned infrastructure, especially when backed by a credible repayment stream or when issued by development finance institutions (DFIs) or state-owned enterprises (SOEs) rather than the central government. For now, these should be considered for future issuance via regional platforms or via blended structures that embed guarantees.
- ***Climate insurance and risk pooling:*** Sovereign risk insurance and parametric products can provide rapid liquidity in the event of climate disasters. Instruments such as the African Risk Capacity (ARC) offer parametric insurance products that can be pre-arranged, with disbursement triggered by defined climatic events. While the cost of premiums is a constraint, these can be subsidised or paid through concessional support.
- ***Sovereign guarantees and performance guarantees:*** Though constrained under current IMFIDA programs, such instruments can be deployed selectively and strategically in the future to enable large-scale public-private partnerships (PPPs) or blended infrastructure transactions. When used sparingly and transparently, such guarantees can unlock significant private capital.
- ***Carbon markets and results-based climate finance (RBCF):*** While nascent in Sierra Leone, participation in voluntary or compliance carbon markets (e.g., through jurisdictional REDD+ or blue carbon credits) could generate performance-based revenues over time. These flows are non-debt, but require investment in MRV systems, legal frameworks, and safeguards.

In the spirit of the July 2025 Sierra Leone Climate Finance Strategy, the finance roadmap for the NDC 3.0 aligns with the strategy's ambition to mobilise diverse instruments—including green bonds, sustainability-linked loans, climate insurance, sovereign guarantees, and carbon markets—to advance a low-carbon, climate-resilient economy. At the same time, the roadmap recognises practical constraints and adopts a ground-anchored, phased approach. In the near term, it focuses on tools that are immediately deployable and credible: concessional finance, grants, public budget, technical assistance, MDB scaling, results-based finance (RBF), and targeted private equity/debt supported by blended structures. Instruments that require further institutional and market readiness—such as sovereign guarantees, large-scale green/blue bonds issued by the central government, parametric climate insurance, and full-scale participation in voluntary or compliance carbon markets—are mobilised reasonably and credibly, are incorporated as medium- to longer-term priorities, **to be activated once enabling frameworks, MRV systems are fully established.**
This sequencing, **arising from a dense consultation process with actors,** ensures that the roadmap stays faithful to the 2025 strategy's logic and ambition while maintaining feasibility, credibility, and investor confidence, gradually building Sierra Leone's innovative finance ecosystem.

In the table below, the **mitigation + adaptation** financing envelope has been allocated across eleven categories of instruments. Each category reflects the realities of the least developed country (LDC) context, drawing on the strengths of multilateral institutions, bilateral donors, DFIs, private capital, and domestic public resources.

Instrument Group	Amount (M USD)	% of Total
Concessional finance, loans, guarantees	365	12%
Public budget	304	10%
Grants, GCF & MDB funds, green credit lines & guarantees	639	21%
Bonds (Blue + Green, Urban + SDG, Agribusiness)	605	20%
Private equity, debt, ESG-linked & net-zero investments	394	13%
Carbon finance, REDD+, RBF	320	11%
Micro-finance, household finance, NGOs, philanthropy	241	8%
Insurance	106	4%
Households & service delivery (fleet-as-a-service)	31	1%

The roadmap approach integrates classical and innovative finance instruments, ensuring both stability and performance-driven mobilisation of resources. **Classical finance instruments**, including concessional finance, grants, public budgets, and technical assistance, provide the backbone of the portfolio, accounting for **USD 1,308 million (44% of total)**. These instruments ensure predictability, policy alignment, and de-risking for high-capex and high-risk interventions. **Innovative finance instruments**, such as green bonds, private equity, ESG-linked investments, carbon markets, microfinance, insurance, and results-based finance, contribute **USD 1,666 million (56% of total)**, mobilising private capital and linking financing to measurable performance outcomes.

Concessional finance, loans, and guarantees total USD 365 million (12% of total). Multilateral Development Banks (World Bank, AfDB, regional DFIs) provide the majority (~60%), offering long maturities, scale, and risk absorption. Regional DFIs and development banks contribute ~20%, with bilateral concessional facilities and export finance adding the remaining 20%. These instruments are critical for enabling bankable projects and attracting private sector participation.

Public budget amounts to USD 304 million (10%). The national government contributes approximately 70%, municipal or local budgets 20%, and earmarked taxes or service fees 10%. These flows underpin e-bus deployment, municipal waste management, and fiscal incentive schemes for climate-aligned measures.

Grants, GCF and MDB funds, and green credit lines/guarantees total USD 639 million (21%). Multilateral climate funds contribute about one-third, bilateral donors approximately 30%, and UN agencies, trust funds, municipal co-grants, and smaller philanthropic actors make up the remaining 37%. This financing supports early-stage project development, transaction cost coverage, and measurable climate and development outcomes.

Green bonds, urban/SDG bonds, and agribusiness bonds contribute USD 605 million (20%). DFIs and commercial banks are expected to provide half of these proceeds, sovereign and municipal issuances add ~30%, and blended finance or concessional support contributes 20%. These instruments are particularly suited for high-capex, creditworthy projects such as resilient housing, mini-grids, and forestry interventions.

Private equity, debt, ESG-linked and net-zero investments total USD 394 million (13%). Impact investors and private equity funds provide ~60%, DFIs contribute 25%, and corporates or strategic partners add 15%. These resources are directed toward commercially viable renewable energy, resilient agriculture, and infrastructure projects.

Carbon finance, REDD+ mechanisms, and RBF amount to USD 320 million (11%). Voluntary carbon market buyers supply ~50%, multilateral carbon facilities 20%, project-level monetisation and private purchasers 20%, and national co-financing 10%. These instruments target forestry, landfill methane, and biogas interventions.

Micro-finance, household finance, NGOs, and philanthropy total USD 241 million (8%). Microfinance institutions provide 60%, DFIs and local intermediaries 25%, and donors or philanthropic actors 15%. These instruments support consumer-facing measures such as solar home systems, improved cookstoves, and water/sanitation initiatives.

Insurance instruments contribute USD 106 million (4%). These mechanisms provide risk coverage for both private and public sector interventions, including climate-resilient infrastructure and agricultural portfolios.

Finally, households and service delivery mechanisms, including fleet-as-a-service, account for USD 31 million (1%). These instruments ensure the financial sustainability of consumer-facing and municipal services.

6.3.2 Barriers, leveraging approach & innovative instruments - Mitigation

This section presents a **grouped approach** to financing Sierra Leone's mitigation measures (based on financial characteristics, revenue potential, risk profile, and investor interest. Grouping measures allows policymakers and financiers to design tailored strategies, maximise leverage, and prioritise interventions that can catalyse private investment while minimising direct fiscal burden.

Mitigation Measures may be grouped as follows towards distinct levers of Financing Strategy:

1. **Group 1 – Distributed RE (Mini-grids, Commercial / Industrial PV, Solar Home Systems)**
    - High CAPEX with strong potential for private investment.
    - Moderate risk; high leverage via blended finance.
    - Grants mainly for preparation, regulation, and access gaps.
2. **Cluster 2 – Clean Cooking (Improved Cookstoves, LPG, Biogas)**
    - Medium CAPEX, small-scale consumer devices (stoves, LPG kits, digesters).
    - Significant use of RBF, vouchers, and microfinance.

- Carbon credit potential for biogas; grants target behaviour change and tech adoption.

3. **Cluster 3 – Electric Transportation**
   - Capex-intensive; public-private service contracts.
   - PPPs reduce upfront public budget requirements.
   - Carbon revenues can help offset operational costs.
   - Mix of concessional debt and green bonds to minimise state burden.
   - Assurance instruments for risk reduction for private investors
4. **Cluster 4 – Land & Forest Carbon**
   - Long-term, ecosystem-based interventions.
   - High grant and results-based payments; lower private leverage.
   - REDD+/Article 6 mechanisms maximise finance without increasing the state budget.
5. **Cluster 5 – Waste & Methane**
   - Mixed infrastructure and operational costs.
   - Carbon finance can cover ~25–30% of costs.
   - PPPs reduce upfront public budget requirements.
   - Assurance instruments for risk reduction for private investors

The above clusters lead to various leverage potential, therefore leading to a preliminary selection of instruments, as the next two tables below show.

Table 31: Financial Analysis of mitigation cluster

Cluster & Measures	Relevance	Financing Strategy	De-risking Instruments
Decentralised & Distributed Renewable Energy**: Mini-grids, Commercial/Industrial PV, Solar Home Systems**	Provides reliable electricity to rural, peri-urban, and commercial consumers; generates bankable revenue streams	Private sector: Equity/debt from developers, EPCs, PAYGo vendors; International donors/DFIs: Concessional credit, grants, RBF; State: Regulatory enablement, site preparation, minor CAPEX; International markets: Green bonds, impact funds, carbon credit monetisation	Guarantees, RBF, concessional debt, carbon credit monetisation
Clean Cooking Transition**: Improved Cookstoves, LPG, Biogas**	Reduces firewood/charcoal use, improves health, lowers GHG emissions; partial revenue from households, MSMEs, institutions	Private sector: Manufacturer/distributor equity/debt, PAYGo/micro-leasing; International donors: Grants, RBF, technical assistance; State: Targeted subsidies, regulatory support; International markets: Carbon credits, green bonds	RBF per unit, microloans, consumer finance, concessional guarantees
Electric & Efficient Transport**: E-buses, E-kekeh, Fuel Efficiency & Standards**	Reduces diesel consumption and GHGs; provides operational savings; PPPs are essential for high-CAPEX infrastructure.	Private sector: Operators, leasing firms, charging infrastructure; State: Subsidies, route redesign, depot upgrades, enforcement; International donors/DFIs: Concessional loans, grants, technical assistance; International markets: Green bonds, carbon finance	Concessional loans, guarantees, PPAs, carbon credit monetisation, leasing/fleet-as-a-service
Land & Forest / Blue Carbon**: Forestry and Mangroves**	Mitigation via carbon sequestration and methane reduction; ecosystem and	State: Enabling frameworks, land-use planning, community engagement; Private sector: Service delivery, nurseries, O&M, AD/compost operations; International donors/DFIs: Concessional finance, grants, technical assistance; International markets:	Carbon credits, green/blue bonds, PPPs for service delivery, RBF

	community co-benefits	Carbon credits, REDD+/Article 6 payments, green/blue bonds	
Waste & Methane Management**: Waste diversion, landfill methane management**	Reduces methane emissions, improves waste management; revenue mainly from contracted services	Private sector: Service providers; State: Subsidies, regulatory oversight; International donors/DFIs: Concessional loans, grants, technical assistance; International markets: Green bonds, carbon finance	RBF/Article 6 fees, readiness grants, private systems integration, and micro-leasing, where applicable

6.3.3 The Role of Innovative Finance in the Strategy for Mitigation

While concessional finance from MDBs and bilateral partners remains the backbone of this strategy, innovative finance instruments are deliberately embedded across measures to diversify sources and enhance sustainability. Roughly half of the overall envelope is expected to come from instruments beyond traditional grants and loans, reflecting both necessity and opportunity in an LDC context.

Green bonds and credit lines (USD 330 million) are used to mobilise institutional and commercial capital for creditworthy, higher-capex projects such as mini-grids, e-bus fleets, and forestry initiatives. By combining bond proceeds with concessional guarantees from the GCF and DFIs, these instruments make it possible to attract private and domestic savings that would otherwise not enter climate sectors.

Carbon finance and REDD+ revenues (USD 160 million) also constitute a significant share of the plan. These instruments shift part of the financing burden to performance-based payments for verified emission reductions, especially in forestry, biogas, and landfill methane projects. Though volatile, they provide long-term revenue streams that help close viability gaps and align national actions with global climate markets under Article 6.

Equally important is the reliance on **market-proximate mechanisms** such as micro-loans, PAYGo receivables, and fleet-as-a-service models (USD 94 million). These instruments directly engage households, micro-entrepreneurs, and vehicle operators, creating repayment structures aligned with income flows rather than upfront subsidies. Donor guarantees and first-loss facilities further lower the risks for lenders and leasing companies.

Public procurement and fiscal incentives remain critical, but they are carefully blended with private participation. For instance, e-bus programs combine capped public procurement with carbon finance and green bonds, while LPG access relies on private marketer investment matched with consumer microfinance and RBF incentives.

Overall, the strategy can be considered **hybrid in nature**: roughly half the resources are drawn from classical concessional grants and loans (USD 1,081 million), while the remainder explicitly leverages innovative finance—green bonds, carbon revenues, leasing, PPPs, and market-based consumer finance. This balance reflects the dual imperative of securing predictable concessional support while also embedding the transition toward sustainable, scalable financing mechanisms that can grow with market maturity.

The financing strategy for the 12 mitigation measures demonstrates a balanced hybrid approach. Classical instruments such as concessional loans, grants, public budgets, and technical assistance

account for USD 1,081 million. These provide the predictable foundation needed in an LDC context, where affordability and institutional capacity remain major constraints.

At the same time, innovative finance mechanisms—green/blue bonds, carbon markets, impact investment, microfinance, leasing, and PPPs—sum to USD 1,893 million. Such instruments are specifically targeted toward commercially viable activities—mini-grids, mobility, forestry, waste-to-energy—and are designed to mobilise private participation, align repayment with revenue flows, and tap into global climate finance markets.

This proportion underscores that while concessional and grant-based finance is still indispensable, a substantial share of the strategy now rests on market-based and performance-linked tools. This shift reflects both the urgency of scaling finance and the opportunity to crowd in non-traditional partners, reducing reliance on limited grant resources over time.

Monitoring, Performance Metrics, and Pilot Integration

To ensure the effectiveness of the hybrid financing strategy, Sierra Leone will implement a robust monitoring and performance framework. Leveraged private capital will be tracked through co-financing ratios, disbursement reports, and portfolio-at-risk indicators for each instrument class. Green and climate-aligned investments will be classified and reported consistently in line with Sierra Leone's Sustainable Finance Taxonomy, currently being developed with the IFC.

Performance indicators will be tailored to instrument type: for green bonds and credit lines, mobilized private capital per unit of concessional support will be measured; for carbon finance and REDD+ mechanisms, MRV-compliant emissions reductions and verified carbon unit issuance will be tracked; for micro-loans, PAYGo receivables, and fleet-as-a-service models, repayment rates, adoption metrics, and impact on energy access or mobility will be monitored.

The roadmap builds on proven pilot initiatives to ground projections in real progress. Examples include e-mobility programs demonstrating fleet conversion and operational viability, clean cooking RBF projects validating repayment-linked subsidy structures, and early REDD+ interventions providing measurable carbon benefits while engaging communities. These pilots serve both as proof of concept and as benchmarks for scaling hybrid finance mechanisms across the NDC3.0 roadmap.

6.3.4 Barriers, Leveraging strategy & innovative instruments - Adaptation

De-risking is central to mobilising capital for adaptation, particularly in least developed and climate-vulnerable contexts where private investors often perceive high uncertainty and limited returns. The objective is not only to reduce exposure to financial and operational risks, but also to create the enabling conditions that make adaptation projects bankable, scalable, and attractive for a mix of public and private partners.

Blended finance plays a catalytic role by deploying grants for early-stage infrastructure or pilot interventions, concessional loans for scale-up, and gradually drawing in private capital once confidence in the model has been established. Insurance products, especially parametric climate insurance, provide a safeguard for agriculture, infrastructure, and communities, ensuring resilience against climate shocks while improving creditworthiness.

Risk is further managed by aggregation—pooling smallholder farmers, cooperatives, or community-based assets—which not only lowers transaction costs but also strengthens collective bargaining power and financial viability. Results-based financing aligns incentives by linking disbursements

directly to measurable adaptation outcomes, such as restored ecosystems, climate-resilient households, or improved health indicators.

Finally, guarantees, credit enhancements, and transaction platforms are critical instruments to unlock private participation. Donor or government guarantees reduce the perceived risk of default, while dedicated climate finance facilities support project origination, pipeline preparation, and accelerate approval processes. Together, these instruments form an integrated de-risking approach that transforms adaptation from a high-risk, low-return activity into an investable opportunity aligned with both development and climate resilience goals.

In practice, Sierra Leone's Disaster Risk Financing Strategy (DRFS) provides a national framework for anticipating, financing, and responding to climate-related shocks. Integrating DRFS instruments into the adaptation finance roadmap ensures that both public and private resources are deployed efficiently and predictably in the event of disasters, complementing blended finance and insurance-linked interventions.

The Ministry of Agriculture's weather-indexed insurance schemes offer a practical model for transferring climate risk from smallholder farmers to the financial sector. By linking payouts to objectively measured weather triggers, these instruments enhance the resilience of agricultural production, stabilise farmer incomes, and create a bankable portfolio for private insurers and lenders.

The National Insurance Commission plays a pivotal role in climate risk pooling and regulatory oversight, facilitating the development of parametric products, aggregation mechanisms, and multi-stakeholder risk-sharing arrangements. Aligning adaptation finance with these instruments strengthens the overall de-risking ecosystem, ensures readiness for insurance-linked and blended finance solutions, and enhances investor confidence in the Sierra Leonean context.

Table 32: Strategic objectives of each type of instrument for adaptation finance

Instrument	Strategic Objective
Blended Finance	Deploy grants for pilot interventions, concessional loans for scale-up, and progressively mobilise private capital; ensure alignment with DRFS and NDC priorities.
Insurance Products	Provide parametric climate insurance and weather-indexed products to safeguard agriculture, infrastructure, and communities; link payouts to verified climate events to stabilise incomes and creditworthiness.
Aggregation & Cooperatives	Pool smallholder farmers, cooperatives, and community-based assets to lower transaction costs, spread risk, and enhance financial viability; strengthen collective bargaining and bankability.
Results-Based Financing (RBF)	Tie disbursements to measurable adaptation outcomes such as restored ecosystems, climate-resilient households, or improved health and livelihood indicators; ensure transparency and accountability.
Guarantees & Credit Enhancements	Reduce perceived risk for private investors through government and donor backstops; enable participation of DFIs, commercial banks, and private sector actors in adaptation projects.
Transaction Platforms & Readiness Support	Facilitate project pipeline development, streamline approvals, provide technical assistance, and lower origination risk; align with GCF Readiness, DRFS, and National Climate Finance Fund processes.
Climate Risk Pooling & Regulatory Oversight	Utilise National Insurance Commission frameworks and DRFS mechanisms to aggregate risk across sectors and actors, enabling scalable insurance-linked and blended finance solutions.

6.3.5 National pipeline and fiduciary standards

Direct access to climate finance windows (GCF, Adaptation Fund and future Article 6 arrangements) will offer Sierra Leone material benefits: greater ownership of priorities, lower transaction costs, faster disbursement, and the ability to design instruments specifically suited to national needs. However,

accreditation and direct-access eligibility are conditional on demonstrable national systems for fiduciary management, procurement, safeguards, project management and MRV. Strengthening these systems, therefore, converts strategic ambition into tangible access to larger and more flexible funding instruments.

To meet accreditation standards and donor due diligence, Sierra Leone aims at functioning and durable systems across several domains:
• Public financial management and fiduciary controls
• Procurement systems aligned with transparent, competitive and documented procedures acceptable to multilateral funds.
• Environmental & social safeguards policy
• Project management and grant/loan implementation capacity, including financial reporting, internal controls and independent audit readiness.
• MRV and registry functions (for mitigation outcomes under Article 6 and for reporting on climate finance flows).

These elements will be institutionalised in the Climate Finance Unit, the PIM Unit and in the Ministry of Finance's corporate processes so that accreditation is based on sustained systems rather than on ad hoc project-level fixes.

A credible, investable pipeline is a precondition to both accreditation and to attracting scaled finance. Key reforms: (a) common project concept templates and a standardized readiness checklist; (b) a pipeline MIS (hosted by the Climate Finance Unit) that tracks milestones, co-financing commitments and readiness funding needs; (c) mandatory PIM screening (economic, fiscal, climate risk) before budget or donor submission; and (d) systematic use of project-preparation facilities (ACCF, GCF readiness, UNDP NDC support) to close technical and fiduciary gaps. These measures reduce time-to-funding, demonstrate fiduciary discipline to funders, and improve value-for-money in the use of concessional finance.

In this line, EPA's NDC Tracker under CEDAS provides the national system for collecting and managing data on climate actions and results, including greenhouse gas reporting and adaptation outcomes. To ensure transparency in climate finance, this system must be linked with the adaptation finance tracking led by the Ministry of Finance through climate budget tagging and project reporting. By integrating activity-level data (from EPA) with expenditure and financing data (from MoF), Sierra Leone will be able to produce evidence-based reporting for the NDC, Biennial Transparency Reports (BTR), and National Communications. This linkage strengthens accountability to citizens and development partners and aligns with international MRV requirements for adaptation finance tracking under the Paris Agreement.

6.3.6 The Role of Innovative Finance in the Strategy for Adaptation

Sierra Leone faces pressing adaptation challenges across agriculture, health, coastal zones, water management, and climate-resilient infrastructure. To meet these challenges effectively, the Government recognises the critical role of innovative finance in complementing traditional concessional funding. These instruments enable the mobilisation of resources at scale, diversify financial risk, and catalyse private sector participation in national adaptation efforts.

Anchoring Sectors with Concessional Support, grants and concessional loans from the Green Climate Fund (USD 310 million) provide the foundational financing for key sectors, including agriculture and

health, ensuring the implementation of priority adaptation programs. These resources serve as a catalyst to attract additional public and private capital.

Mobilising Scaled, Innovative Instruments

To address the magnitude of adaptation needs, Sierra Leone will actively leverage a suite of innovative financing mechanisms. **Green, Urban, and SDG Bonds** (total of USD 370 million) will co-finance resilient energy systems, hydropower, urban, health, education and climate-proofed transport infrastructure. **Blue bonds and payments for ecosystem services** (USD 80 million) will support watershed management, coastal resilience, mangrove restoration, and WASH services. **REDD+ and forest conservation finance** (total USD 45 million) will strengthen community forestry, agroforestry, and carbon revenue streams. At the sovereign level, **debt-for-climate swaps** (USD 10 million) will convert debt obligations into dedicated investments in resilient infrastructure and energy diversification. **Results-based financing** instruments (USD 28 million) will link funding directly to measurable adaptation outcomes, including agricultural productivity, disaster risk management, urban planning, and climate-resilient health systems.

Enhancing Resilience and Risk Management

Parametric insurance (USD 46 million) will provide rapid liquidity for disaster response and early warning systems, reducing vulnerability to climate shocks. **Concessional and syndicated finance** (USD 456 million) will expand climate-resilient energy, transport, and water infrastructure, with public instruments strategically deployed to de-risk and crowd in private capital.

Strategic Objectives

Through this multi-layered financing approach, Sierra Leone seeks to:

- Maximise the mobilisation of both public and private capital for adaptation.
- Align funding with measurable climate resilience outcomes.
- Diversify financial instruments to reduce reliance on concessional aid alone.
- Strengthen fiscal resilience while fostering long-term private sector engagement.

By integrating concessional and innovative finance, Sierra Leone will secure a sustainable, diversified financing framework to implement its national adaptation priorities, ensuring resilience, inclusivity, and long-term development impact.

7 Capacity & Technology

7.1 Technology Needs Assessment (TNA)[16]

The *Technology Needs Assessment (TNA)* for Sierra Leone will outline a comprehensive framework to identify, prioritise, and operationalise the technologies required to achieve the targets of the Nationally Determined Contribution (NDC 3.0). Rooted in the Energy Transition and Green Growth Plan (ETGGP) and the Renewable Energy and Energy Efficiency Policy (REEEP, 2022), the TNA will emphasise clean energy generation, green industrialisation, and inclusive economic growth. It will align with the Feed Salone Strategy, Medium-Term National Development Plan (MTNDP 2024–2030), and the Climate Change Policy (2021), reinforcing Sierra Leone's commitment to a low-emission and climate-resilient future.

What follows serves as a foundational synthesis of Sierra Leone's current technological priorities across mitigation and adaptation sectors. The next phase will build on this assessment to conduct an in-depth Technological Needs Assessment (TNA), which will further analyse technology options, cost–benefit implications, and implementation pathways in alignment with national and international climate frameworks.

It has to be mentioned here that a depth analysis of the technologies needed to implement NDC 3.0 is given in the supporting document called: "***Report on technological requirements***". What follows is a summary of such analysis.

7.1.1 Energy Generation and Access

Sierra Leone's electricity sector remains underdeveloped, with less than 30% national access and heavy reliance on diesel. The TNA prioritises solar mini-grids, small hydro, rooftop solar, and biomass systems as core mitigation technologies. Implementation gaps include inadequate tariff frameworks, weak technical capacity, limited financing, and dependency on imported components. By 2030, the plan targets over 500 solar mini-grids, 150,000 solar home systems, and 20 MW of small hydropower, expected to serve more than 400,000 people.

Technical education institutions such as NCTVA and Polytechnic Institutes play vital roles in capacity-building, ensuring certified technicians and engineers are trained for renewable deployment. Institutional reforms are equally critical, especially standardising mini-grid tariffs, improving regulatory oversight, and building after-sales supply chains. Regional integration through the Côte d'Ivoire–Liberia–Sierra Leone–Guinea (CLSG) network will enhance grid stability and facilitate renewable power trading within the West African Power Pool (WAPP).

7.1.2 Clean Cooking Transition

Over 80% of Sierra Leonean households still rely on biomass fuels, creating deforestation and health risks. The TNA promotes alignment with the National Clean Cooking Strategy (NCCS) to accelerate the transition toward LPG, biogas, ethanol, and efficient biomass stoves. Priority measures include scaling up stove distribution (Tier 3+), expanding LPG micro-distribution networks, and piloting institutional biogas systems. By 2030, approximately 315,000 households could adopt efficient stoves and 125,000 transition to LPG.

A tripartite coordination structure, the Ministry of Energy, **the** Ministry of Environment and Climate Change (MoECC), and **the** Petroleum Regulatory Agency (PRA), will ensure environmental integrity and market safety. Gender-sensitive approaches remain central, recognising that women are

[16] A more detailed analysis

disproportionately affected by energy poverty and indoor air pollution. The TNA underscores the use of results-based financing (RBF), carbon credits, and subsidies to expand market access and incentivise private participation.

7.1.3 Agriculture, Forestry and Land Use (AFOLU)

The AFOLU sector employs over 60% of Sierra Leone's population yet remains vulnerable to climate shocks, poor mechanisation, and limited irrigation (<2%). The Feed Salone Strategy (2023–2030) and the Climate-Smart Agriculture (CSA) Roadmap underpin mitigation and adaptation priorities. Technological solutions include drought-tolerant seeds, solar-powered irrigation, soil carbon restoration, cold-chain systems, and agroforestry and mangrove restoration. By 2030, Sierra Leone aims to place 30,000 hectares under CSA, restore 30,000 hectares of degraded and mangrove land, and install 30 cold storage hubs.

Institutional reforms—like strengthening agricultural extension services, securing land tenure, and developing credit schemes—are needed for sustainable adoption. These technologies will enhance productivity, food sovereignty, and carbon sequestration, aligning AFOLU interventions with NDC 3.0 emission reduction targets and adaptation goals.

7.1.4 Waste Management

Waste management in Sierra Leone remains informal, with open dumping and negligible methane capture. The TNA highlights anaerobic digestion, landfill gas recovery, and decentralised composting as key mitigation technologies, integrated into the National Waste Management Policy (NWMP). Partner initiatives, such as AfDB's SWAP Project and GEF's PlanetGOLD+, will support waste valorisation, methane reduction, and green job creation.

To implement these measures, the TNA recommends establishing engineered landfills, source segregation bylaws, PPP models, and operator training programs. By 2030, Sierra Leone could install 6–8 anaerobic digesters, introduce landfill gas-to-energy pilots, and divert 30% of organic waste for composting, cutting methane emissions while generating fertiliser for agriculture.

7.1.5 Transport Sector

The E-Mobility Strategy (2023) and NDC 3.0 prioritise vehicle efficiency and electrification. Sierra Leone's fleet, composed mainly of second-hand imports, lacks inspection systems and contributes heavily to emissions. The TNA proposes electric two- and three-wheelers, minibuses, and solar-powered charging depots, complemented by duty waivers and concessional leasing. Pilot electric transport corridors in major cities will demonstrate viability.

By 2030, the government aims for 50% vehicle inspection compliance, 35% of new two/three-wheelers to be electric in pilot areas, and two to three electric bus corridors in Freetown and regional capitals. These efforts will cut fuel consumption, improve air quality, and support the broader Energy Transition and Green Growth Plan.

7.1.6 Water, Cities, and Infrastructure

Rapid urbanisation and inadequate drainage have made cities such as Freetown highly vulnerable to floods. The TNA identifies permeable pavements, flood-resilient bridges, retention ponds, and solar water pumping systems as priority adaptation technologies. Aligning with the Freetown Climate Action Plan and the Urban Resilience Programme, implementation will require hazard mapping, updated

building standards, and sustainable operation budgets. By 2030, at least ten flood hotspots could be upgraded and 100+ solar water systems installed, improving urban service resilience and reducing climate risks.

7.1.7 Climate Information and Early Warning

The Sierra Leone Meteorological Agency (SLMet) and National Disaster Management Agency (NDMA) are expanding observation networks under the Hydromet Modernisation Project and WMO's CREWS initiative. The TNA recommends installing 50+ automatic weather and tide stations, modern forecasting systems, and CAP-compliant communication platforms to deliver early warnings to 80% of the population by 2030. Integration through the Climate and Environmental Data Analysis System (CEDAS) will enable real-time data-sharing across agriculture, water, and disaster management sectors.

7.1.8 Coastal Resilience and Blue Carbon

Coastal ecosystems face severe erosion and sea-level rise. The TNA prioritises mangrove restoration, hybrid coastal defences, and LiDAR-based monitoring. By 2030, 3,000–30,000 hectares of mangroves could be rehabilitated, generating blue carbon credits and strengthening community livelihoods. These initiatives align with the National Fisheries and Aquaculture Policy and open opportunities under Article 6 for blue carbon transactions.

7.1.9 Technology Priority Matrix

The purpose of this section is to serve as a practical tool for policymakers, technical agencies, development partners, and the private sector. By providing a concise yet comprehensive overview of the technological requirements, the matrix below supports decision-making, resource mobilisation, and the alignment of national efforts with international support mechanisms such as the Green Climate Fund, the Global Environment Facility, and the Technology Mechanism of the UNFCCC.

Achieving the ambition of Sierra Leone's NDC 3.0 will require not only new investments and financing but also the strategic deployment of technologies that directly address the country's mitigation and adaptation gaps. The Priority Technological Needs Matrix provides a structured overview of the technologies most critical to the Energy Transition and Green Growth Plan, as well as the FEED SALONE Strategy. It identifies where technological innovation and transfer can generate the highest impact on reducing greenhouse gas emissions, building resilience, and supporting inclusive development.

The matrix covers a range of sectors including energy, clean cooking, agriculture, transport, and monitoring, reporting and verification (MRV). For each sector, priority technologies have been selected based on their relevance to national circumstances, their potential to accelerate universal access and climate resilience, and their ability to leverage co-benefits such as health improvements, job creation, and food security. The selected technologies include both mitigation solutions, such as solar mini-grids, commercial and industrial rooftop solar, improved cookstoves, and LPG distribution systems, as well as adaptation measures such as climate-resilient transmission lines, solar irrigation systems, stress-tolerant seeds, and resilient road materials.

Importantly, the matrix also recognises that technology deployment cannot succeed in isolation. Each entry identifies enabling needs in policy frameworks, institutional capacity, financing, and human resources that must be addressed to ensure technologies are not only imported but effectively localised, maintained, and scaled. These enabling conditions provide a roadmap for targeted capacity-building and policy reform.

The prioritisation of technologies and measures identified through the TNA process will directly inform the NDC Implementation Plan and guide the Phase V TNA pipeline, ensuring that investment and capacity-building efforts are strategically aligned with national mitigation and adaptation priorities. This approach enables Sierra Leone to channel resources toward high-impact, ready-to-implement actions that advance both climate goals and sustainable development outcomes.

Also, the Green Climate Fund (GCF) Technology Action Plans and UNEP-CCC's Technical Needs Assessment (TNA) support provide a structured framework for translating Sierra Leone's identified technology priorities into actionable, finance-ready interventions. By aligning national priorities with these mechanisms, the country can strengthen access to international climate finance, accelerate technology deployment across key sectors, and ensure that the outcomes of the TNA are effectively integrated into the NDC Implementation Plan and broader low-emission, climate-resilient development strategies.

South–South and triangular cooperation is embedded throughout this framework. Sierra Leone's technological priorities are aligned with opportunities for peer-to-peer exchanges with countries in Africa, Asia, and Latin America that have developed proven models in areas such as renewable mini-grids, LPG recirculation, biogas digesters, climate-resilient infrastructure, and MRV systems. By pursuing these partnerships, Sierra Leone will ensure that technology transfer is coupled with knowledge transfer, regional standard-setting, and joint access to climate finance.

By presenting a clear set of technological priorities alongside measurable 2030 and 2035 targets, this matrix translates Sierra Leone's NDC 3.0 into a practical roadmap for action. It offers government institutions, private investors, and international partners a common reference point for directing resources and cooperation efforts where they can deliver the greatest impact on Sierra Leone's transition to a low-carbon, climate-resilient, and food-secure economy.

Table 33: Sierra Leone Priority Technology Matrix (2025–2035)

Sector / Sub-Sector	Priority Technology	Rationale / Gap Addressed	Enabling Needs (Capacity, Policy, Finance)
Energy – Electricity Access & Reliability	**Solar PV Mini-Grids with Battery Storage (PV-BESS)** D2 Mitigation Measures v1.2	Rural/peri-urban reliance on diesel & kerosene; need for affordable, reliable power	Standardised O&M, tariff frameworks, RBF/PPP financing, capacity for community energy committees
Energy – Commercial/Industrial	**C&I Rooftop Solar + BESS** D2 Mitigation Measures v1.2	High self-generation costs; reliance on diesel	Net-billing rules, concessional credit lines, and SME leasing facilities
Energy – Grid Infrastructure	**Climate-Resilient Transmission & Distribution Lines** DRAFT-D3 Adaptation Measures 1.3	Vulnerability to floods, storms, and landslides	Updated design codes, storm/flood standards, and training for engineers
Clean Cooking	**Improved Biomass Cookstoves (ICS)** D2 Mitigation Measures v1.2	>80% households use wood/charcoal; health & deforestation impacts	Regional stove labs, usage monitoring systems, voucher-based subsidies
	LPG Distribution & Cylinder Recirculation Models	Reliance on unsafe traditional fuels, high upfront LPG costs	Safety curriculum, CRM pilots, concessional LPG import financing
	Household/Community Biogas Digesters	Abundant organic waste; reduce	O&M training, microcredit for

		methane; co-benefits for cooking/fertiliser	households, standardised MRV protocols
Agriculture (FEED SALONE)	**Solar-Powered Irrigation Pumps** DRAFT-D3 Adaptation Measures 1.3	Limited irrigation; rainfall dependence	Regional service-parts pool, farmer water-user associations, concessional loans
	Climate-Resilient Seed Systems (Certified & Stress-Tolerant Varieties)	Low local seed production; vulnerability to droughts/pests	Regional seed certification, aflatoxin testing labs, and private-sector investment
	Hermetic Storage & Aflatoxin Testing Technologies	Post-harvest losses >30%; weak QA infrastructure	Regional labs, capacity-building, and PPPs for storage
Transport	**Climate-Resilient Road & Bridge Materials** DRAFT-D3 Adaptation Measures 1.3	Roads/bridges damaged by floods & erosion	Updated design codes, resilient materials supply chain
MRV & Article 6	**Digital MRV Registries (Action & EF)** D2 Mitigation Measures v1.2	Fragmented MRV; no Article 6 registry	IT infrastructure, training, and legal frameworks
	Remote Sensing & Data Platforms for LULUCF	Deforestation & land degradation monitoring gaps	Satellite partnerships, GIS training, data-sharing protocols

7.2 South-South & triangular cooperation targets

Sierra Leone's *NDC 3.0* positions **South–South and triangular cooperation** as a central driver of its green-growth and energy-transition agenda. The Ministry of Environment and Climate Change, through the EPA, will coordinate an annual cooperation forum under ECOWAS or the Mano River Union to mobilise peer learning, technology transfer, and co-financing for adaptation and mitigation priorities. Partnerships with countries such as Ghana, Rwanda, Kenya, Morocco, and Côte d'Ivoire will accelerate renewable-energy deployment, grid integration, and resilient infrastructure standards. By 2035, at least six bilateral MoUs are expected to yield 50 MW of decentralised renewable capacity and ensure that over 80 per cent of critical assets meet climate-resilience norms.

Cooperation extends beyond power generation to **clean cooking, MRV, and agriculture**. Regional stove-testing networks and biogas partnerships aim to provide modern cooking access to nearly 900,000 households by 2035, while an "MRV Academy" with African and Asian universities will train seventy national analysts in GHG accounting and Article 6 readiness. In agriculture, the FEED SALONE Strategy will leverage joint ventures with Nigeria, Ghana, Benin, and Côte d'Ivoire to harmonise seed certification, improve aflatoxin control, and expand solar irrigation to 45,000 hectares—meeting 70 per cent of seed demand and cutting post-harvest losses by 30 per cent. These measures integrate knowledge sharing with tangible production and resilience outcomes.

Institutional cooperation will further embed **governance, gender, and inclusion** standards. All district councils will adopt climate-responsive and gender-sensitive budget tagging by 2030, with annual audits institutionalised by 2035. Progress will be tracked through a *South–South Cooperation Tracker* within the national NDC Tracker, ensuring transparency, measurable indicators, and accountability. Collectively, these initiatives demonstrate how collaboration within the Global South—supported by

triangular finance and knowledge exchange—can translate commitments into measurable action, advancing Sierra Leone's vision of a low-carbon, climate-resilient, and food-secure future.

A more detailed analysis is in Annexe E.

7.3 Education

7.3.1 Background

Globally, education and children's rights have thus far been systematically overlooked in the conceptualisation of national climate programming, despite being among the most vulnerable groups to climate impacts. This systematic underinvestment is affecting essential services critical to their resilience – such as ensuring a safe learning environment - and there is a growing need to ensure NDCs are child-responsive. In Sierra Leone, the urgency of protecting children's rights from climate change is acute, with 41% of the population under 15.

Education is a sector that is both severely affected by the impacts of climate change as well as a key sector for addressing and responding to those impacts. Education can be a powerful tool with which to propel climate action at scale, but in order to do so, it urgently needs to adapt to the impacts of climate change.

Climate hazards are already severely disrupting schooling in Sierra Leone, undermining the system's ability to deliver safe, continuous learning. Foundational learning outcomes are being eroded by days lost due to school closures and extreme conditions (such as heat waves and heavy rainfall), making it difficult for children to effectively learn. Climate change is also threatening the safety of students and teachers, with commutes to school during periods of climate shocks becoming dangerous, and school infrastructure buckling under the stress of intensified storms and rainfall. Such climate shocks are making it harder for children—particularly girls and rural students—to access quality education.

To protect education and leverage its role in building long-term resilience, Sierra Leone's revised NDC must account for education at a sector level and integrate it across adaptation and mitigation in parallel sectors, to ensure school communities are climate-resilient and positioned to support broader adaptation efforts.

7.3.2 Rationale for education's inclusion in NDCs

In Sierra Leone's NDC 2.0 (2021), education was recognised as a cross-cutting enabler for both adaptation and mitigation efforts. The upcoming 2025 revision presents an important opportunity to deepen this approach by explicitly focusing on enhancing the education system's capacity to adapt to climate-related shocks and stressors. Building a more climate-resilient education system presents three key advantages that strengthen the case for its inclusion in national climate planning and budgeting:

- Protecting the education system from climate shocks is a strategic, long-term investment in Sierra Leone's future, critical for reaching national development goals. Without a climate-resilient education sector, progress on national economic and social goals is at risk of being eroded. Climate-related disruptions are already affecting key education outcomes such as school enrolment and foundational learning, undermining efforts toward future workforce readiness.
- Education is a transformative tool for strengthening the adaptive capacity and climate resilience and is a vital enabling factor for achieving many objectives of an NDC. Equipping

youth with the knowledge and skills to understand, adapt to, and mitigate climate risks strengthens household and community-level resilience. Education has been proven to be critical for pro-climate adaptation behaviour change in low-income countries: those with more education often exhibit greater disaster preparedness and response, experience reduced adverse effects and recover more quickly from disasters.

- Education is a key enabler in unlocking inclusive and equitable green growth, by equipping youth with the foundational skills needed to drive the transition to a low-carbon economy, whilst contributing to national economic development. Beyond foundational learning, higher education provides the knowledge and qualifications required for emerging green industries such as solar energy and sustainable agriculture.

8 Governance & MRV

8.1 Institutional matrix

The institutional matrix provides a structured overview of the key actors responsible for implementing, coordinating, and monitoring Sierra Leone's NDC 3.0 measures. It clarifies mandates across line ministries, agencies, local councils, civil society, and the private sector, ensuring that roles are complementary and not overlapping. By identifying "who does what," the matrix enhances accountability, strengthens coordination, and ensures that data flows and responsibilities are clearly mapped.

This matrix also serves as a tool for aligning Sierra Leone's institutional arrangements with international transparency obligations under the Paris Agreement. It assigns responsibilities for data collection, reporting, verification, and policy oversight, directly linking sectoral actors with the Environmental Protection Agency–Sierra Leone (EPA-SL) as the MRV Secretariat and the Ministry of Environment and Climate Change (MoECC) as the policy lead.

Importantly, the matrix captures the multi-level governance approach required for effective climate action. National institutions provide strategic oversight and reporting, while local councils and community-based organisations support implementation and grassroots MRV. Development partners and the private sector are included as enablers of finance, technology transfer, and capacity building.

By explicitly mapping mandates, the institutional matrix reduces duplication, highlights capacity gaps, and provides a basis for targeted technical and financial support. It also ensures coherence between mitigation and adaptation efforts, and between climate policy instruments such as the NAP 2023, NBSAP, REDD+ Strategy, and Blue Economy Policy. In this way, the matrix is not just an administrative tool, but a governance instrument that underpins Sierra Leone's ability to deliver on its NDC 3.0 commitments in a transparent, coordinated, and effective manner.

Table 34: Institutional Mapping Matrix

Institution	General Role / Mandate	Role in NDC 3.0 Implementation	Role in MRV (Monitoring, Reporting & Verification)
Ministry of Environment and Climate Change	Cross-sectoral NDC leadership. Formulates, coordinates and oversees national policies on environment, climate change and natural resource management. Promotes sustainable development, enforces environmental laws and leads national climate action	Provides overall leadership and coordination for NDC 3.0 across all sectors; ensures integration of climate adaptation and mitigation in national plans; mobilises resources and guides policy alignment.	Designs and manages national MRV systems; coordinates collection, verification and reporting of climate data; prepares national reports to the UNFCCC; provides capacity building for MRV across sectors.
Environment Protection Agency - Sierra Leone (EPA-SL)	Lead national environmental regulator, coordinating climate change and environmental policy	National Focal Point for UNFCCC; overall coordination of NDC 3.0 implementation	Consolidates sectoral reports; prepares national GHG inventory; submits reports to UNFCCC

Ministry of Finance	Oversees fiscal policy, budgeting, and resource mobilisation	Integrate climate financing into the national budget; mobilise resources for NDC activities.	Track and report on climate finance flows (domestic & international); verify expenditure alignment with NDC priorities.
Ministry of Planning and Economic Development (MoPED)	Oversees national development planning and policy alignment	Mainstream NDC actions into the Medium-Term National Development Plan and SDG frameworks	Monitor integration of NDC into development plans; provide planning data for MR.
Ministry of Agriculture and Food Security	Food security, agriculture, and land management	Implement adaptation and mitigation measures in agriculture (climate-smart agriculture, land restoration, soil fertility management)	Report on emissions reductions and adaptation progress in the agriculture sector
Sierra Leone Meteorological Agency (SLMet)	Provides weather, climate, and early warning services	Generate climate data and projections to inform adaptation and resilience-building	Supply climate and meteorological data for GHG inventory, impact monitoring, and the MRV system
Ministry of Local Government and Rural Development	Oversees local councils and community-level governance	Facilitate local-level NDC activities (community adaptation projects, awareness campaigns)	Collect and report local data on NDC implementation to central agencies; validate grassroots-level progress.
Ministry of Transport & Aviation	Oversees policy, planning, and regulation of all transport modes (road, rail, air, maritime); ensures safe and efficient transport systems.	Integrates low-carbon and climate-resilient transport strategies into national policies; implements NDC actions for sustainable mobility and infrastructure.	Collects and reports data on transport emissions and adaptation measures; supports sector-specific MRV for GHG and resilience.
National Water Resources Management Agency	Manages water resources, monitors hydrology, oversees allocation and use of water for all sectors; ensures sustainable supply	Implements water-related adaptation measures (e.g., watershed protection, flood/drought management) in NDC; supports climate-resilient water governance.	Provides data on water resource status, usage, and climate impacts; reports adaptation outcomes; supports MRV of water-related NDC targets.
Ministry of Water Resources & Sanitation	Develops policy and oversees water supply and sanitation services; ensures access to safe, affordable water and adequate sanitation.	Leads NDC actions on expanding climate-resilient water and sanitation infrastructure; coordinates investment and community outreach for water adaptation.	Monitors and reports on water access, infrastructure coverage, and adaptation investments; provides sectoral data for national MRV systems.
Ministry of Social Welfare, Gender & Children's Affairs	Promotes social protection, gender equality, child rights, and the welfare of	Mainstream gender and social inclusion in NDC actions; ensures adaptation/mitigation measures address the needs of	Provides disaggregated data on gender, age, and social vulnerability; tracks and reports on

	vulnerable groups; enforces related laws and policies.	women, children, PWDs, and marginalised groups.	inclusive participation and equitable outcomes in MRV.
Ministry of Youth Affairs	Designs and implements youth development, empowerment, and employment programs, and advocates for youth.	Mobilises youth engagement in climate action (e.g., green jobs, climate education, entrepreneurship); integrates youth-focused initiatives in NDC initiatives	Gathers and reports data on youth participation and benefits in NDC programs; supports MRV of youth-specific indicators in adaptation/mitigation.
Ministry of Information and Civic Education	Overseeing ICT and digital transformation	Support digital platforms for NDC awareness, knowledge sharing, and MRV systems.	Provide ICT infrastructure for data collection, storage, and dissemination within the MRV framework.
Ministry of Basic and Senior Secondary Education (MBSSE) and Teacher Service Commission (TSC)	Leads the education sector in Sierra Leone, overseeing policy, curriculum, teacher management, and school governance. Ensures inclusive, equitable, and quality education for all children and youth.	Integrates climate change education, school safety, and resilience into national education policies and plans. Implements NDC actions related to climate-smart schools, curriculum development and teacher training on climate education, and disaster risk management in the education system.	Monitors and reports on education-related adaptation outcomes, including school resilience, continuity of learning, and climate education indicators. Provides data on climate impacts on education and contributes to national MRV through sectoral reporting and collaboration with EPA and Statistics SL.
Ministry of Tourism & Cultural Affairs	Manages tourism development, cultural heritage, and eco-tourism promotion; protects natural and historical sites	Promotes sustainable and climate-resilient tourism practices; supports eco-tourism and conservation as part of NDC adaptation/mitigation strategies.	Monitors eco-tourism and conservation impacts; reports on GHG reductions, ecosystem adaptation, and sustainable tourism for MRV purposes.
Ministry of Health	Oversees public health policy, healthcare delivery, and disease prevention; ensures health system resilience and emergency preparedness.	Leads climate-health NDC actions (e.g., disease surveillance, climate-resilient infrastructure, health adaptation); addresses health co-benefits of mitigation.	Collects health and climate impact data; reports on climate-sensitive health outcomes, adaptation interventions, and co-benefits in MRV processes.
National Disaster Management Agency (NDMA)	Coordinates disaster preparedness, response, recovery, and risk reduction; oversees national disaster risk management policies and systems.	Integrates disaster risk reduction and climate adaptation in NDC initiatives; leads rapid response and resilience-building for climate-induced disasters.	Provides disaster occurrence and response data; reports on adaptation/resilience outcomes; supports MRV of loss and

			damage and early warning.
National Public Health Agency	Conducts disease surveillance, health emergency response, and public health research; monitors emerging health threats.	Supports NDC health adaptation actions (e.g., vector control, public health preparedness for climate-sensitive diseases, health education).	Monitors and reports on climate-related public health trends; supplies data for MRV on health adaptation and resilience outcomes
Forestry Division (Ministry of Environment)	Manages forestry policy, conservation, reforestation, and sustainable forest resource use; enforces forestry laws.	Leads NDC actions on forest conservation, REDD+, afforestation, and sustainable land management; supports ecosystem-based adaptation and mitigation.	Monitors forest cover, deforestation, and reforestation rates; reports GHG removals and adaptation benefits; provides forestry sector MRV data.
National Fire Force	Provides fire prevention, firefighting, and rescue services; responds to fire and related emergencies nationwide.	Supports NDC actions to reduce fire risks in climate-exposed areas (e.g., wildfires, urban fires); engages in community-based fire prevention for resilience.	Collects and reports fire incident data, including climate-driven events; contributes to MRV on loss/damage, adaptation, and emergency readiness.
Ministry of Energy	Energy policy, power generation and distribution	Lead renewable energy and energy efficiency programs under NDC 3.0	Report on emissions reductions from energy projects; track renewable energy uptake
Statistics Sierra Leone (Stats SL)	National statistics and data management authority	Provide population, socio-economic, and sectoral baseline data to inform NDC targets.	Collect, validate, and disaggregate data for MRV (incl. gender, age, disability)
Civil Society Organisations (CSOs) & NGOs	Advocacy, community mobilisation, project implementation	Support NDC implementation at the community level (awareness, capacity building, pilot projects)	Provide independent monitoring; generate community-based evidence for MRV.

8.2 MRV Framework

The **MRV Framework** provides the institutional, technical, and procedural backbone required to ensure coherence, consistency, and transparency across all sectors.

This framework addresses several critical dimensions:

- **Institutional Governance:** It establishes the Environment Protection Agency–Sierra Leone (EPA-SL) as the national MRV Secretariat, coordinating with line ministries, Statistics Sierra Leone, and local councils. MoECC will provide high-level policy oversight to ensure coherence with NDC 3.0, LT-LEDS, and international reporting obligations. Line ministries will function as data custodians within their respective sectors. Statistics Sierra Leone will validate datasets, ensure quality and methodological rigour, and address uncertainties. Local councils and communities will contribute to data collection and validation, particularly for adaptation and

community-level projects. This ensures clarity of roles, minimises duplication, and strengthens accountability through a whole-of-government approach.

- **Legal and Policy Alignment:** It integrates MRV activities within Sierra Leone's broader climate governance architecture, linking directly with the National Adaptation Plan (NAP), the updated Nationally Determined Contribution (NDC 3.0), and the forthcoming Climate Change Act.
- **Data and Digital Systems:** A centralised digital MRV platform forms the core of data collection, consolidation, and reporting. This platform enables interoperability across ministries, integrates community-based monitoring. This platform will feature dashboards for energy, transport, AFOLU, waste, IPPU, and coastal/urban systems. It will enable near real-time data integration, facilitate public access to information, and ensure interoperability with UNFCCC reporting systems. The platform will also integrate geospatial tools, mobile data collection applications, and climate finance tracking modules.
- **Verification and Quality Assurance**
  Verification will be conducted through a tiered approach: (i) internal QA/QC within line ministries; (ii) statistical harmonisation by Statistics Sierra Leone; and (iii) independent third-party verification for large-scale projects, including renewable energy, REDD+, and landfill methane capture. Community-based participatory verification will be applied to adaptation measures such as CSA adoption, mangrove restoration, and resilient infrastructure.
- **Finance Tracking:** The framework embeds climate budget tagging and finance MRV to ensure that financial flows supporting mitigation and adaptation are transparently tracked. The mechanism will be managed by the Ministry of Finance, using budget tagging and donor reporting. This will allow Sierra Leone to transparently report support received and needed, and to align domestic climate budget allocations with international commitments. The finance tracking system will also be linked to Article 6 readiness, enabling Sierra Leone to participate effectively in international carbon markets.
- **Capacity Building:** Training programs, institutional strengthening, and partnerships with academic and regional institutions are central to ensuring that the system is resilient to staff turnover and capable of sustaining long-term MRV operations. Technology transfer, especially in digital MRV platforms, mobile-based monitoring, and GIS-based data management, will be pursued through international cooperation.
- **Community and Inclusivity:** The framework emphasises the role of local councils, civil society, and community-based organisations in data collection and validation, ensuring that MRV is inclusive, participatory, and reflective of local realities.

By embedding these elements, Sierra Leone's MRV system will move beyond sectoral silos to operate as an integrated, nationally owned, and internationally credible framework. The MRV Framework ensures that all sectoral data feeds into a unified system, producing outputs such as **Biennial Transparency Reports (BTRs), national climate dashboards, and consolidated MRV summaries** that align with the Enhanced Transparency Framework of the Paris Agreement.

In summary, the MRV Framework provides the backbone of Sierra Leone's national climate transparency system, ensuring that sectoral efforts are harmonised and that the country can reliably measure, report, and verify progress towards its climate commitments.

A detailed description of an MRV Framework for both mitigation and adaptation is included in the supporting document: "***MRV Framework***", as informed in Section 1. In NDC 3.0 is presented just a summary.

8.3 MRV Governance

This section elaborates on the responsibilities of each agency within the MRV framework, which depend on clear mandates, coordinated data flows, and robust quality control. The Environment Protection Agency–Sierra Leone (EPA-SL) serves as the MRV Secretariat, while the Ministry of Environment and Climate Change (MoECC) provides overarching policy oversight. Statistics Sierra Leone (Stats SL) ensures statistical quality and conducts uncertainty analyses. Line ministries collect and validate sectoral data, supported by local councils at the community level. Accredited verifiers and academic institutions provide independent review, and the Ministry of Finance (MoF) manages climate finance tracking.

Operational responsibilities are structured across weekly, monthly, quarterly, and annual cycles. EPA-SL conducts weekly quality assurance checks and compiles consolidated data monthly. MoECC convenes quarterly coordination meetings and prepares the annual submissions to the UNFCCC. Stats SL harmonises datasets across sectors, while line ministries focus on site-level data collection and validation. Local councils facilitate grassroots monitoring and reporting.

Effective implementation of this MRV system requires sustained investment in institutional capacity, digital platforms, equipment, surveys, verification, and training. Estimated costs for 2025–2035 are in the range of USD 50–60 million. Financing is expected from a combination of sources, including GCF Readiness grants, GEF projects, AfDB and World Bank support, bilateral donor funding, and revenues from Article 6 transactions. Domestic resources, such as national budget allocations and sector-based levies, will ensure long-term sustainability.

8.3.1 Institutional Responsibilities and Outputs for Mitigation MRV

The table below:

- Clarifies institutional roles across all emitting sectors.
- Demonstrates accountability and transparency in data collection, QA/QC, and reporting.
- Provides government reviewers with a clear one-page map of who does what and what outputs to expect.

Table 35: Institutional Responsibilities and Outputs for Mitigation MRV

Institution / Actor	Core Responsibilities	Key Outputs
Environment Protection Agency – SL (EPA-SL)	Acts as MRV Secretariat via the **National Climate Change Secretariat**; manages national MRV platform; consolidates sectoral mitigation data; oversees QA/QC and verification processes	Consolidated mitigation MRV reports; BTR mitigation annexes; national dashboards; Validate documents
Statistics Sierra Leone (Stats SL)	Validates statistical quality of activity data and emission factors; ensures consistency across datasets and reporting cycles	Quality-checked datasets; harmonised emission indicators
Line Ministries **(Energy, Transport, Agriculture/Forestry, Waste, Industry)**	Collect sector-specific mitigation data; apply standardised methodologies; maintain sectoral data pipelines.	Sectoral mitigation MRV reports; sector-specific dashboards and inventories
MoE	Provide energy generation and fuel consumption data; track renewable and clean cooking interventions.	Energy sector MRV datasets; renewable capacity and clean cooking reports
MoTA	Collect transport activity and fuel use data; oversee e-mobility and efficiency monitoring.	Transport MRV reports; e-mobility performance dashboards.

Ministry of Agriculture & Food Security / REDD+ Unit Min Env and CC Min of Lands	Collect forestry and land-use data; manage permanent sample plots and satellite-based MRV.	AFOLU mitigation reports; REDD+ MRV and safeguards summaries
Municipal and District Councils (Waste Sector)	Monitor landfill gas, composting, recycling, and waste-to-energy activities; collect facility-level data.	Waste MRV reports; methane capture and diversion records
Ministry of Trade & Industry (MoTI)	Gather data from industrial facilities; track clinker substitution, process emissions, and refrigerant use.	IPPU mitigation reports; facility-level emission summaries
Independent Verifiers (third parties)	Conduct audits of sectoral and project-level data; verify high-value mitigation outcomes, especially under Article 6	Verification statements; corrective action reports
Private sector	Gather data from projects	Data providers
Academic & Research Institutions	Provide technical support for emission factors, baselines, and uncertainty analysis.	Peer-reviewed emission factor studies; independent methodological reviews
Development Partners&CSO	Provide technical and financial support; fund pilots and capacity building, and advocacy.	Project MRV evaluations; results-based finance reports

8.3.2 Institutional Responsibilities and Outputs for Adaptation MRV

The Table below:

- Distils the complex design features into a concise institutional map.
- Shows clearly who is responsible, accountable, and what outputs they must deliver.
- Reinforces transparency and accountability for government reviewers.

Table 36: Institutional Responsibilities and Outputs for Adaptation MRV

Institution / Actor	Core Responsibilities	Key Outputs
Environment Protection Agency – SL (EPA-SL)	Acts as MRV Secretariat via the **National Climate Change Secretariat**; consolidates sectoral adaptation data; manages national MRV platform; ensures overall coherence.	Consolidated national adaptation MRV reports; BTR adaptation annexes; dashboards.
Statistics Sierra Leone (Stats SL)	Ensures statistical rigour; validates datasets; integrates adaptation data with national statistics	Quality-checked adaptation indicators; harmonised datasets
Line Ministries **(Energy, Transport, Agriculture/Forestry, Urban Development, Fisheries)**	Collect sector-specific data; apply MRV protocols; ensure sectoral QA/QC processes.	Sectoral adaptation MRV reports; sector-specific scorecards
National Disaster Management Agency (NDMA)	Provides hazard, disaster-loss, and vulnerability data; validates climate risk indicators.	Annual disaster-loss databases; risk assessment inputs for MRV
Local Councils & Community Monitors	Collect local-level adaptation data (e.g., flood events, resilience practices); support participatory verification.	Community reports; grassroots validation of resilience outcomes
Academic & Research Institutions	Conduct independent assessments and evaluations; provide technical support for indicator development.	Verification reports; independent evaluation studies
Civil Society & NGOs	Facilitate community-based MRV; ensure inclusivity and gender-sensitive data collection.	Equity-focused adaptation reports; qualitative evidence of outcomes
Development Partners	Provide financial and technical support; support capacity building	Results-based finance reports, training modules, and donor evaluation reports

8.4 Gender & Social Inclusion

Integrating Gender and Social Inclusion (GESI) indicators into the Monitoring, Reporting, and Verification (MRV) system for Sierra Leone's Nationally Determined Contribution (NDC) 3.0 is essential. This integration ensures that climate mitigation efforts across the energy, transport, waste, and Industrial Processes and Product Use (IPPU) sectors are equitable and do not inadvertently marginalise vulnerable populations.

Table 37: GESI Indicators for MRV

Sector	GESI MRV Indicator	Data Source	Reporting Frequency	Lead / Supporting Agency
Energy	% of women-headed/vulnerable households with new access to clean/renewable energy	Household surveys, utility records, project reports	Annual	Ministry of Energy, MoE, Statistics SL, CSOs
	% of women/youth employed or trained in renewable energy/green jobs	Training programs, employer records	Annual	Ministry of Energy, Ministry of Youth, Private Sector
	% of off-grid/mini-grid projects with inclusive community consultations (women, youth, PWDs)	Project documentation, stakeholder records	Annual	Ministry of Energy, MoE, Local Councils
Transport	% of public transport routes/facilities accessible to women, the elderly, and PWDs	Ministry of Transport records, field surveys	Annual	Ministry of Transport, Local Councils
	% of women/youth employed in transport sector projects (planning, maintenance, operation)	HR data, project reports	Annual	Ministry of Transport, Ministry of Youth
	% of climate-resilient transport projects reflecting GESI priorities in design/implementation	Project design documents, audits	Annual	Ministry of Transport, MoE
Waste	% of women/youth participating in formal/informal waste management & recycling initiatives	Waste sector surveys, cooperative records	Annual	Local Councils, Ministry of Health, NGOs
	% of vulnerable households with improved waste collection services	Municipal records, household surveys	Annual	Local Councils, Ministry of Health
	Number of public awareness campaigns on waste & sanitation targeting women,	Project reports, media monitoring	Annual	Ministry of Health, CSOs

	youth, and marginalised groups			
IPPU	% of women/youth employed or in leadership in manufacturing/industrial processes (e.g., cement, beverage)	Labour force surveys, company records	Annual	Ministry of Industry, MoE, Private Sector
	% of children removed from hazardous waste-picking/scavenging activities in dumpsites	Child protection case management data, NGO/CSO reports	Annual	Ministry of Health, MoSW, MoGCA, Local Councils
	Number of GESI-sensitive workplace safety or training programs in IPPU enterprises	HR/training records, company reports	Annual	Ministry of Industry, MoE, Private Sector
	% of IPPU projects that apply GESI principles in technology adoption or process design	Project documentation, audit reports	Annual	Ministry of Industry, MoE, Private Sector
	Number of occupational health/safety monitoring systems that include child labour prevention in industrial supply chains	Labour force surveys, company audits, MoLSS records	Biennial	Ministry of Industry, Ministry of Labour, CSOs
Cross-sectoral	% of sector MRV systems collecting sex-, age-, and disability-disaggregated data	MRV reports, national statistics, project M&E	Annual	MoE, Statistics SL, All Relevant Ministries
	% of projects across sectors with stakeholder consultations including women, youth, PWDs, and marginalised groups	Project reports, consultation records	Annual	MoE, Sectoral Ministries
	% of climate finance or NDC budget allocated to GESI-focused initiatives	Budget/expenditure reports	Annual	MoE, Ministry of Finance
	% reduction in gender gap in access to NDC-supported services/benefits (baseline vs. current)	Surveys, project impact evaluations	Biennial	MoE, Relevant Sector Ministries, CSOs
	% of NDC adaptation and mitigation projects with explicit child protection safeguards (safe spaces, GBV prevention, continuity of education/health services)	Project reports, monitoring data, GOSL/CSO records	Annual	MoE, MoSW, MoGCA,

8.5 Communication strategy

Effective communication is central to the success of Sierra Leone's NDC 3.0. This strategy builds sustained understanding, buy-in, and accountability across government, private sector, civil society, and citizens. Its goal is to ensure that the objectives of the eight NDC work packages are not only disseminated but also internalised and regularly reinforced. The strategy also aligns with the Government's commitment to transparency, inclusion, and evidence-based policymaking.

8.5.1 Core Objectives

- Awareness Raising: Ensure a broad understanding of Sierra Leone's climate commitments.
- Behavioural Change: Influence sustainable practices in households, businesses, and institutions.
- Ownership and Legitimacy: Strengthen national pride and local buy-in by involving stakeholders.
- Transparency and Accountability: Communicate results, progress, and lessons learned.
- Capacity Building: Strengthen communication competencies within MDAs, local councils, and CSOs.

8.5.2 Audience Analysis

Table 38: Audience Analysis

Audience	Role/Needs
Government/MDAs (Environment, Transport and Aviation Industry, Finance Ministry, Local Government, Information and Civic Education Ministry, Youth Affairs Ministry, Gender Ministry, Standards Bureau, Ministry of Trade and Industry, FCC)	Evidence-based communication for policymaking, financing, and sectoral alignment.
Civil Society (Women's Network for Environmental Sustainability (WONES), Women's Ministry/Movement on Environment and Climate Change (WOMECC), Civil Peace Network)	Amplify messages, watchdog role, ensure inclusion.
Academia (Njala University, USL)	Provide technical evidence, mainstream NDC into curricula.
Media (Radio, Television, Print and Digital)	Mass outreach, simplify technical content, foster debate.
Youth Groups (Youth Initiative for Climate Action – Sierra Leone (YICA), Youth Climate Council)	Mobilise peers, intergenerational ownership, grassroots solutions.
Private Sector (NEEV, Serengeti)	Partner in investment, innovation, and low-carbon practices.
Communities/Traditional Leaders	Gatekeepers for cultural acceptance and behaviour change.

8.5.3 Key Messages

- NDC 3.0 is a roadmap for resilience, green jobs, and inclusive growth.
- Specific co-benefits: renewable energy, clean cooking, food security, transport modernisation, waste management.
- Opportunities for local enterprises, women, and youth in climate-smart sectors.
- Commitment to the Paris Agreement and global solidarity.
- Transparent reporting: 'Your taxes, your future, your climate resilience.'

8.5.4 Communication Channels & Tactics

Audience	Channels	Examples of Tactics
MDAs, Academia, CSOs	Roundtables, forums, webinars	Policy briefs, sectoral retreats
Private Sector	Investor roundtables, newsletters	Climate-finance roadshows, partnership MoUs
Youth & Communities	Radio, social media, town-halls	Theatre, TikTok campaigns, and climate clubs
National Public	Media campaigns, exhibitions	Talk shows, press briefings, infographics
International Audience	Press releases, UNFCCC events	Donor roundtables, newsletters

8.5.5 Implementation Arrangements

- Lead Coordination: EPA-SL Communication Focal Point with MoECC Communications Directorate.
- Partnerships: Civil society, journalist networks, private PR firms.
- Monitoring: Media tracking, stakeholder surveys, bi-annual audits integrated into MRV reporting.

8.5.6 Work Plan & Timeline

- Phase I (Months 1–3): Message development, branding, training communication focal points.
- Phase II (Months 4–12): Nationwide rollout through media campaigns, community engagement, and consultations.
- Phase III (Annual): Feedback loops, refresher campaigns, and communication of results.

8.5.7 Budget Matrix (Indicative, USD per year)

Table 39: Communication activities budget matrix

Activity	Channel/Tool	Estimated Cost (USD)
Media Production & Airtime	Radio, TV, digital media	150,000
Capacity Building	Workshops, training sessions	50,000
Outreach Events	Town-halls, climate weeks	75,000
Monitoring & Evaluation	Surveys, audits, reports	30,000

8.5.8 Expected Outcomes by 2030

- 80% of the population is aware of NDC commitments and benefits.
- Increased participation of women and youth in climate action.
- Improved trust in government climate initiatives.
- Enhanced visibility of Sierra Leone's international climate leadership.

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10. Annexes

Annex A: Gap Analysis

As mandated by the Paris Agreement, the core principle for revising Nationally Determined Contributions (NDCs) is to deepen commitment, ambition and progression.

As NDC 3.0 builds upon Sierra Leone's Updated NDC (2021), this section critically assesses the latter, highlighting its well-defined commitments and scope for further details, quantification, or institutional strengthening in NDC 3.0.

This serves as a base toward Sierra Leone's strengthened ability to fulfil its international obligations under the Paris Agreement, while supporting national development and resilience.

9.1.1 Mitigation Sectoral Analysis

Energy

The energy sector remains highly dependent on traditional biomass and fossil fuels. While there are ambitions to scale renewable energy, increase efficiency, and expand clean cooking solutions, significant gaps remain.

The Updated NDC (2021) envisioned scaling up renewables (on/off-grid), energy efficiency, and clean cooking, implementing RE policy and a strong role for IPPs/PPPs. Targets included increased grid and off-grid electricity access, with progress to be supported by donor-backed projects and national electrification planning.

While the Updated NDC (2021) had clear targets, NDC 3.0's targets are additionally translated into the RE project pipeline, supported with quantified sectoral key performance indicators, and binding sub-targets linked to the 2030, 2035 goals. The affordability of clean cooking devices and fuels, the logistics of liquefied petroleum gas, and financing mechanisms for households are better specified to enhance the potential for rapid adoption.

Additionally, as compared to the Updated NDC (2021), in NDC 3.0, grid integration efforts will be complemented with detailed provisions for storage, forecasting, and code upgrades. Sierra Leone must establish measurable sectoral targets for renewable energy capacity, household access to clean cooking, and grid loss reduction.

A national Energy MRV protocol is of the essence, and all independent power producers must be required to submit data. The financing challenge should be addressed through the operationalisation of the National Climate Financing Facility and the NDC Investment Plan. Also, there must be a provision to ensure energy transition strategies protect health and well-being/safety by reducing indoor air pollution from traditional fuels, expanding safe household lighting, and providing reliable energy to schools and health facilities.

Transport

The transport sector is dominated by road transport, which has been identified as a major source of emissions. The fleet is characterised by old and inefficient vehicles, with no binding age or emissions standards for imports. The absence of a systematic inspection and maintenance regime further exacerbates the problem. Infrastructure capacity remains limited: only ~8% of roads are paved, although plans like the Freetown-estuary bridge are under development.

Going beyond the Updated NDC (2021) and pilot projects, progress during the NDC 3.0 must be based on phased, large-scale plans, ascertained by monitoring of key indicators such as vehicle kilometres travelled, fuel consumption by class, and emissions intensity per passenger-kilometre.

To close these gaps, NDC 3.0 adopts fuel efficiency, including vehicle import conditions and emissions standards, implementation of inspection systems, e-mobility, paving the way to (but not including) a future comprehensive Freetown Urban Mobility Plan around bus rapid transit corridors and infrastructure for depots and charging systems. A Transport MRV module is to be established within the BUR framework to systematically capture and verify transport-related data, along with integrating sensitive transport measures that guarantee safe and affordable access to education, health, and protection services.

Waste

The waste sector faces infrastructure and financial constraints that undermine effective waste management. Methane emissions from waste sites remain a key challenge, with the need for systematic monitoring through weighbridges, gas meters, or runtime logs. Furthermore, extended producer responsibility and cost recovery mechanisms for plastics are to be established.

Sierra Leone Historical Integrated National Waste Management Strategic Plan (2012–2016) outlines inclusive goals—including private-sector participation, recycling targets (e.g., 50% MSW recycling), local governance, and capacity building.

The country works with UNEP to align with global instruments like Basel, Rotterdam, Stockholm, and Minamata; efforts include a national chemicals and waste profile, stakeholder trainings, and action planning.

To strengthen the sector, Sierra Leone NDC 3.0 considers contributing towards a national municipal waste standard that includes segregation and performance indicators. NDC 3.0 includes implementing a methane MRV system and establishing public-private partnerships with performance-based financing to align national waste management with the NDC commitments cycle, thereby mobilising climate finance.

Industrial Processes and Product Use (IPPU)

The IPPU sector, though relatively small, is experiencing a rise in hydrofluorocarbon consumption due to increasing demand for cooling. There is currently no refrigerant registry, no licensing and compliance system aligned with the Kigali Amendment, and no minimum energy performance standards or labelling regimes in place, with limited mitigation strategies. Emissions are expected to grow to 311 Gg CO_2eq by 2030.

Addressing these gaps requires adopting a Kigali compliance plan, establishing a national refrigerant registry linked with customs authorities, and implementing minimum energy performance standards alongside energy efficiency labelling systems. The NDC 3.0 aims at these reforms being integrated into the MRV framework to ensure transparency and accountability, with further backing by data, a rising number of sectoral policies and incentives, strengthened industrial standards and enforcement, e.g., green cement or HFC alternatives.

Agriculture, Forestry and Other Land Use (AFOLU)

Agriculture, forestry, and land use are central to both mitigation and adaptation. However, critical challenges remain in Sierra Leone. Forest reference levels are incomplete, carbon rights and benefit-sharing frameworks are not yet established, and data on agricultural emissions from rice cultivation and livestock are patchy.

The country operates protected areas like Gola Rainforest (UNESCO World Heritage) and Western Area Peninsula National Park to safeguard ecosystems and enhance sequestration. Foundational laws include the 2022 EPA Act for environmental governance and the National Protected Area Authority Act (2012).

To move forward, legislation on carbon rights and benefit-sharing, scaling up REDD+ and mangrove restoration projects must be approved. Climate-smart agriculture data must be integrated into the

national inventory. Improved fire control, strengthened enforcement against illegal logging, and community-based resource management are equally essential to safeguarding forest resources.

MRV and tenure systems need improvement to measure carbon sequestration, and securing land rights is critical for REDD+. In these lines, NDC 3.0 promotes climate-smart agriculture and community forestry that strengthen food security and ensure that livelihoods are protected by benefit-sharing and land rights frameworks.

Risks and Mitigation Measures

The energy sector faces risks related to foreign exchange and capital costs, which the NDC 3.0 seeks to partly mitigate through blended finance and results-based funding.

The transport sector faces political risks associated with vehicle import restrictions, which NDC 3.0 envisions to manage through phased implementation and affordability measures.

The waste sector faces revenue risks that NDC 3.0 aims to address by designing minimum-payment structures in public-private partnerships indexed to performance.

In agriculture and forestry, risks related to land tenure and conflict can be mitigated by enacting benefit-sharing laws, establishing grievance mechanisms, and strengthening monitoring to reduce MRV leakage risks.

The table below recalls the updated NDC (2021) gaps in mitigation, which NDC 3.0 aims at addressing, thereby deepening commitment, ambition and progression.

Table 40: Gap analysis - Mitigation

Gap Identified	Why It Is a Gap (Justification)
Targets (5% by 2025, 10% by 2030, 25% by 2050) are based on a 'no-policy baseline' with partial methodology; AFOLU not fully integrated; no sector-specific pathways (Table 3, p. 23).	The Paris Agreement requires clarity and transparency in baselines and targets. Without detailed methodology and sector pathways, reductions cannot be compared, tracked, or verified.
Sierra Leone claims its targets are "fair and ambitious," but provides no external benchmark (e.g., Climate Action Tracker, global equity frameworks).	Article 4.3 requires "highest possible ambition." Without references, ambition cannot be objectively evaluated.
The Updated NDC (2021) uses a "no-policy baseline" from 2015–2030, but does not fully explain the assumptions, gases, or models used. AFOLU (agriculture, forestry, land use) is not fully integrated.	The Paris Agreement requires transparency and clarity so that other Parties and stakeholders can track ambition. Without a clear baseline, emission reductions cannot be compared or verified.
Conditional actions (REDD+, subsidy removal, e-mobility) are listed but without costing or linked emission outcomes (p. 22).	UNFCCC guidance requires Parties to distinguish unconditional vs conditional contributions with clarity. Without costing and outcomes, feasibility and finance needs cannot be assessed.
Updated NDC (2021) claims to be 'fair and ambitious' but provides no external benchmark (Table 3, p. 23).	Article 4.3 of the Paris Agreement requires 'highest possible ambition.' Without benchmarks, ambition cannot be evaluated objectively.
Child protection risks not considered in mitigation measures (e.g., child labour in waste and agriculture, unsafe energy practices, GBV risks linked to relocation and transport).	Mitigation measures may inadvertently increase vulnerabilities for children if safeguards are not built in. The Paris Agreement requires equity and protection of vulnerable groups. Without child-sensitive safeguards, monitoring, and grievance mechanisms, children's rights are at risk, undermining both social and environmental outcomes.

9.1.2 Adaptation Gaps

Adaptation measures remain underdeveloped despite being critical to reducing vulnerability. Climate budget tagging has not been mainstreamed across government systems, health facilities lack standardised resilience measures, and hydrometeorological and early warning coverage is incomplete.

To improve resilience, institutionalising climate budget tagging across ministries and agencies is a must, as is expanding early warning and hydromet systems with sustainable financing. Climate-health standards must be defined and enforced, such as heat and vector-borne disease alerts, solar cold chain standards, and water, sanitation, and hygiene compliance in health facilities.

Coastal and Blue Economy

Sierra Leone national coastal zones are highly vulnerable to erosion, flooding, and sand mining. Updated NDC (2021) identified mangrove restoration and blue-carbon projects as priorities, and NDC 3.0 takes it to unlock implementation through a shoreline management plan and linked MRV protocols for blue carbon ecosystems, that is a 'blue-carbon MRV' system with safeguards, and pilot credit-ready projects in key estuaries. Formalising these steps in the NDC 3.0 will help to reduce risks to coastal communities while opening pathways to climate finance through carbon markets.

The table below recalls the Updated NDC (2021) gaps in adaptation, which NDC 3.0 aims at addressing, thereby deepening commitment, ambition and progression.

Table 41: Gap analysis - Adaptation

Gap Identified	Why It Is a Gap (Justification)
Adaptation vision: reduce vulnerability by 50% by 2030, but no measurable indicators were provided (p. 32).	Paris Agreement Global Goal on Adaptation requires measurable, assessable progress. Without indicators, success cannot be evaluated.
Sectoral adaptation plans exist (Table 9, p. 35–38) but lack quantified financing needs and gender-disaggregated data.	Finance and equity are core adaptation requirements. Without costing, funding gaps cannot be closed. Without gender data, vulnerable groups may be excluded.
Updated NDC (2021) aligns with MTNDP and iNAP (p. 18), but lacks legal enforcement at the local government level.	Adaptation actions remain aspirational without legal or institutional mainstreaming, weakening implementation.
Child protection is not systematically integrated into adaptation vision, sectoral plans, or financing frameworks.	Children are among the most climate-vulnerable groups. Without child-sensitive indicators, costing, and legal provisions, adaptation plans risk excluding critical protection measures (e.g., safe shelters, psychosocial support, continuity of education, GBV prevention). This undermines the Paris Agreement's Global Goal on Adaptation, which requires measurable, equitable, and inclusive progress.

9.1.3 Governance, MRV, and Financing

A major barrier to the effective implementation of the Updated NDC (2021) has been the absence of sectoral targets within the broader economy-wide framework. The 10% reduction goal for 2030 must be translated into clear sectoral carbon budgets, embedding them in ministerial performance compacts.

To ensure consistency, the NDC 3.0 seeks to establish and coordinate across ministries a single national MRV guideline, in order to harmonise methods, templates, quality assurance, and verification schedules, and to include mandatory operator-level data submission from utilities, fleets, and landfills.

On financing, the nation must operationalise the Climate Finance Unit and the National Climate Financing Facility, underpinned by an NDC Investment Plan, to generate a portfolio of bankable projects.

At present, climate finance is heavily reliant on external sources. Under the principle of "shared but differentiated responsibility for climate change", domestic mechanisms may target being more performant (with only ~12% mobilised from private actors today) towards increased unconditional commitment, but a robust project pipeline in NDC 3.0 must be designed to also attract more resources from multilateral development banks, the Green Climate Fund, private investors, etc.

Finally, persistent gaps in baseline data, sectoral statistics, and monitoring systems continue to undermine effective tracking of NDC progress and are at the core of NDC 3.0, based on gap analysis in the table below.

Table 42: Gap analysis- Governance, MRV, and Financing

Gap Identified	Why It Is a Gap (Justification)
EPA-SL is the lead agency (Table 16, p. 54), but budget authority and coordination mechanisms are unclear.	Effective NDC implementation requires whole-of-government coordination. Weak coordination leads to fragmented delivery.
Consultations were held during preparation (p. 2), but no permanent stakeholder engagement mechanism exists.	The Paris Agreement requires inclusive and participatory processes. Without permanent mechanisms, legitimacy and buy-in are weak.

9.1.4 Implementation Gaps

NDC 3.0 envisions a phased approach. Between **2025 and 2027**, the nation will focus on laying the foundations for NDC implementation. Priorities include establishing sectoral targets, publishing MRV protocols for energy, transport, and waste, mainstreaming climate budget tagging, finalising a shoreline management plan, and operationalising REDD+ and blue-carbon MRV systems. From **2028 to 2032**, the emphasis will shift to scaling up. This phase would expand city waste partnerships, roll out mass transit systems, add 100–150 megawatts of renewable energy, distribute one million clean cooking devices, and launch large-scale coastal restoration efforts. Finally, between **2033 and 2035**, the consolidation phase will sustain performance through robust operation and maintenance systems, prepare the country for participation in international carbon markets under Article 6, and conduct comprehensive sectoral reviews to inform the next NDC cycle as per the table below.

Table 43: Justification - Implementation Gaps

Gap Identified	Why It Is a Gap (Justification)
Total cost USD 2.764 billion identified, but no mapping of actions to financing sources (Table 10, p. 44).	The Paris Agreement requires clarity on support needs. Donors cannot allocate funds without action-specific costings.
Technology transfer needs are listed (Table 12, p. 46), but no roadmap, sequencing, or institutional roles.	Article 10 highlights the role of technology frameworks. Without a roadmap, needs remain abstract and non-actionable.
MRV indicators are listed (Table 15, p. 51), but no institutionalised framework, roles, or timelines.	Article 13 requires enhanced transparency and robust MRV. Without institutional MRV, Sierra Leone cannot track or report progress.

9.1.5 Summary of takeaways for NDC 3.0 from the analysis of the Updated NDC (2021)

The main takeaways for NDC 3.0 to deepen the national NDC cycle process, in priority order, are:

1. Define transparent baselines and sectoral emission pathways.
2. Link conditional mitigation to finance and quantified outcomes.
3. Create measurable adaptation indicators and costed sectoral plans
4. Map actions to climate finance sources (GCF, donors, carbon markets).
5. Develop a technology transfer roadmap with sequencing.
6. Institutionalise MRV with clear roles and timelines
7. Strengthen inter-ministerial coordination with the budgetary authority.
8. Establish permanent multi-stakeholder engagement platforms.
9. Mainstream Child Protection into mitigation and adaptation pathways, with safeguards, indicators, and finance mechanisms that protect children's rights and well-being.

Addressing these gaps will improve Sierra Leone's NDC alignment with the Paris Agreement, enhance transparency and ambition, and unlock greater access to climate finance.

Annexe B: Sectoral Consultations on Climate Vulnerability and Adaptation

Table 44: Summary of Sectoral Consultations on Climate Vulnerability and Adaptation

Consultation	Location	Date	Description	Insights
District-Level Stakeholder Consultation on the Nationally Determined Contribution NDC 3.0 Development by EPA-SL	District-level Consultations were held in Mongor, Falaba District, Kabala, Koinadugu District; Magbukara; Tonkolili District, Makeni, Bombali District, Kamakwei, Karene District, Port Loko town, Kambia town, Mattru Jong, Bonthe District; Kailahun Town, Kenema City, Pujehun town, Bo City, Moyamba town, and Koidu City, Kono District.	Start Date: 18 June 2025 End Date: 27 August 2025	District level Consultations brought together Paramount Chiefs, District Council Chairpersons, Chiefdom Administrators, staff of local councils, pupils from school nature clubs, teachers, representatives from market women, drivers unions, traders unions, senior officials from government MDAs, representatives from Civil Society Organizations, Security Sector, people with disability, youth groups, women groups, private sector players and the media.	The Sierra Leone NDC 3.0 district-level consultations, conducted from June to August 2025 across all 12 district headquarters, sought to establish more ambitious and inclusive climate targets aligned with the Paris Agreement and the country's Medium-Term National Development Plan. The consultations brought together Paramount Chiefs, local councils, government officials, farmers, traders, women's groups, youth, and persons with disabilities—ensuring gender balance and accessibility. Through these inclusive discussions, technical working groups on Adaptation, Mitigation, Finance, Gender, Youth, and Cross-Cutting issues were formed, integrating insights from ministries, civil society, the private sector, and the media to guide a coordinated and science-based climate response. These consultations strengthened ownership and transparency in the NDC 3.0 process by fostering trust and collaboration among diverse stakeholders. Participants contributed valuable local knowledge, indigenous solutions, and innovative project ideas that informed capacity-building, institutional strengthening, and resource-mobilisation strategies. The process emphasised the integration of marginalised voices, supported the development of community-level climate policies, and identified technology needs such as early-warning systems, renewable energy, biogas, and climate-smart agriculture. Communication and awareness initiatives—including community media, WhatsApp channels, and town hall meetings—were discussed.
Vulnerability and Adaptation Consultation (Waste)	Kenema	27/08/2025	Interview with Juliana Bah at Kenama	The conversation revolved around assessing the infrastructure in terms of vulnerability and adaptation. The ESO pointed out that the infrastructure plays a critical role in waste management for the community, including recycling and composting activities. Furthermore, it was discussed that the condition of the infrastructure has improved over time, but still requires upgrades for better resilience.
Vulnerability and Adaptation Consultation (Energy)	Kenema	27/08/2025	Interview with Engineer Donald Giba at Kenama	The engineer clarified that their responsibility lies in distribution rather than generation. He highlighted that the infrastructure is newly built and equipped

				with lightning arrestors to protect against thunder and lightning. He further reiterated that during the dry season, the facility relies on solar power for energy generation, which is vulnerable to temperature changes. He highlighted challenges faced in the energy infrastructure, such as outdated substations and technical and Financial Losses.
Vulnerability and Adaptation Consultation (Transport)	Transport	27/08/2025	Interview with Ansumana Sawi at the Ministry of Transport	The discussion centred around vehicle registration and licences, infrastructure exposure to climate hazards, especially when there is extreme rainfall, which leads to flooding. The critical nature of the infrastructure was discussed on how essential it is in relation to connectivity, basic services and economic development.
Vulnerability and Adaptation Consultation (Waste)	Bo	28/08/2025	Meeting with the Environment and Social Officer Mohamed Ediatimah Ngevao at Bo	He lamented that the city currently has a dumpsite and its dilapidated. There's just one sorting house at the dump site. The roads and bridges leading to the dumpsite needs total rehabilitation as it becomes very difficult to use during the rainy season. The rapid population growth urbanization is also leading to the increase in the volume of waste in the city thereby becoming very difficult to collect due to the lack of the required amount of waste collection trucks and PPEs for the workers. Ongoing PSSYN project which is aimed at Tree planning in the city.
Vulnerability and Adaptation Consultation (Energy)	Makeni	29/08/2025	Interview with Mr. Mohamed Seya at Makeni	A thermal generating plant is used during the dry season providing up to one megawatt while electricity throughout the year comes from the Bumbuna hydroelectric plant. Infrastructure is capital intensive with challenges such as heavy rains causing outages and windstorms affecting power distribution. Most of the infrastructure was installed between 2012 and 2015 with plans for upgrades to meet the increasing demand. The lack of a smart grid system poses challenges for efficient operations. Climate impacts like extreme sunlight can affect voltage levels and lead to load shedding to manage energy distribution.
Vulnerability and Adaptation Consultation (Waste)	Makeni	01/09/2025	Interview with Marylyn Davies at Makeni	The consultation centred on adaptation measures and social risks within the waste management sector. Currently in Makeni, the waste management relies heavily on the informal sector dominated youth. These individuals face severe occupational

				health hazards, lack formal recognition, and receive no social protection.
Vulnerability and Adaptation Consultation (Energy)	Portloko	02/09/2025	Portloko with Eng. Alhassan Kamara at Portloko	Stressed that they are off takers which means they don't deal with electricity generation. The discussion further focused on leveraging grid extension, mini-grids, clean cooking to address local climate vulnerabilities, socio-economic disparities and conflict risks specific to the Port Loko District.
Vulnerability and Adaptation Consultation (Waste)	Portloko	02/09/2025	Interview with Sheku H. Sankoh at Portloko	The discussion focused on transforming Port Loko's waste management system to align with climate goals while addressing critical local social issues. The ESO further discussed that mostly women and youth handle waste collection and recycling. They lack basic safety gears leading to increasing health risks.
Vulnerability and Adaptation Consultation (Waste)	Kono	03/09/2025	Meeting with Ibrahim Bockarie at Kono	The discussion focused on developing a climate resilient and socially equitable waste management strategy for the city and the district. He added that mining has resulted in massive land degradation, open pits, and water pollution. So the improper waste disposal adds to this environmental chaos, making communities near mined-out areas highly vulnerable to disease, air pollution (from open burning), and flash floods (as waste clogs remaining natural drains).
Vulnerability and Adaptation Consultation (Energy)	Kono	04/09/2025		The discussion aimed to leverage energy infrastructure expansion (grid extension, renewables) in Kono to address climate targets.
Sierra Leone NDC 3.0 Mitigation Measures	EPA-SL Head Office Freetown	17th September, 2025	EPA-SL Sheku Kanneh, Chief Director and TWG's	Need for Climate Change Knowledge Management System; MRV framework, Road map and proposed most important technology to be addressed with the use of LEAP modelling. Request for high level training for Focal Points on the use of the NDC Plan
Sierra Leone NDC 3.0 Adaptation Measures	EPA-SL Head Office Freetown	18th September, 2025	EPA-SL Sheku Kanneh, Chief Director and TWG's	Updating of the adaptation measures were discussed by sectors. It was agreed that maintenance and upgrade should not be separated. Other sectors were recommended for adaptation measures.
Sierra Leone NDC 3.0 data processing and validation workshop	Family Kingdom, Freetown	8-9 September 2025	The two-day event engaged government, civil society, private sector, and partners in hands-on exercises and validation circles, resulting in	The workshop strengthened national capacity in using LEAP 3.0 to validate datasets, develop baseline and BAU scenarios, and draft a Data Quality Report. Validated and transparent data underpins the credibility of Sierra Leone's NDC 3.0, enabling the country to set realistic unconditional and conditional targets, track progress, and demonstrate results in line with the Paris Agreement and national priorities. Reliable datasets enhance access to climate finance and ensure

			improved data quality, stronger collaboration, and a clear Action Matrix to guide NDC 3.0 finalisation.	effective monitoring. Key recommendations include extending the LEAP 3.0 training duration and providing the software to participants in advance, establishing a centralised data hub within EPA-SL with a dedicated data management office, and assigning trained focal persons in each sector equipped with licensed software. Additional suggestions emphasised inviting official data focal points, organising regular refresher training.
NDC 3.0 Mitigation Validation Workshop	Family Kingdom, Freetown	7th October 2025	The workshop was chaired by Tamba E. Nyaka, director of climate change at the Environmental Protection Agency (EPA-SI).	The NDC 3.0 update mitigation validation workshop marks a significant step in Sierra Leone's climate action plan, aligning with the objectives of the Paris Agreement and responding to global and national climate challenges. The mitigation components set ambitious targets and strategic measures to ensure sustainable development and climate resilience. The validation process follows extensive consultations with pertinent stakeholders, sectoral presentations and technical assessments. The workshop's objective was to validate sectoral policies and measures and conclude on the sectoral commitments necessary for implementation Recommendations included: Finalisation of the mitigation measures in the NDC 3.0 final draft, Integration of sectoral inputs into NDC 3.0 final draft, Planning for capacity building and resource mobilisation
NDC 3.0 Financial Road Map presentation	EPA-SL Head Office Freetown	17th October 2025	EPA-SL Sheku Kanneh, Chief Director and TWG's	The technical working group and representatives from the Ministry of Finance and the Bank of Sierra Leone discussed the various governmental (unconditional) financial commitments by sectors. Deliberations were done on the proposed figures.
NDC Scorecard Pilot	National	Start Date: 09 July 2025 End Date: 17 October,2025	The NDC Scorecard Pilot, led by Trócaire and CliCNet with the EPA, is a participatory pilot tool.	The NDC Scorecard Pilot, led by Trócaire and CliCNet with the EPA, is a participatory pilot tool that brings communities and civil society perspectives into national climate decision-making. It assesses how communities experience and contributes to climate action across sectors like energy, agriculture, forests, and water, linking these insights to future NDC planning. Through surveys and consultations, communities' adaptation and mitigation efforts were rated on a three-level scale to reveal key patterns in local climate resilience and action. The preliminary draft results from the

				Pilot Scorecard show that while communities clearly understand climate change and are eager to act, they feel under-supported, especially on adaptation. Overall, people are motivated to protect the environment, but without water access, funding, training, or green job opportunities, climate action risks relying on unpaid community effort rather than becoming a sustainable, livelihood-based transition.

Annex C: Updated National Circumstances & Risk Assessment

Sectoral vulnerability

The identification of sectoral vulnerability is a critical step in understanding Sierra Leone's exposure to climate risks and in designing targeted responses under NDC 3.0. Vulnerabilities represent geographic areas, systems, or sectors where climate change impacts intersect with socio-economic vulnerabilities, creating heightened risks for livelihoods, infrastructure, ecosystems, and national development.

This analysis systematically maps vulnerabilities across **energy, transport, waste and IPPU**. For each sector, vulnerabilities were assessed in terms of the underlying risks they face—such as flooding, erosion, deforestation, biodiversity loss, urban congestion, or methane emissions—and the implications these risks hold for achieving Sierra Leone's climate commitments.

By explicitly linking risks to NDC 3.0 mitigation and adaptation objectives, the vulnerability analysis ensures that investments are prioritised where they will deliver the greatest impact. For example, energy vulnerabilities underscore the urgency of diversifying supply and expanding clean cooking solutions, while forestry and land use vulnerabilities emphasise reforestation, mangrove restoration, and sustainable land management. Likewise, urban waste vulnerabilities highlight the dual challenge of methane emissions and flood vulnerability, pointing toward integrated waste-to-energy and resilience solutions.

The sectoral vulnerability framework, therefore, serves three main purposes:

1. **Targeting**: guiding climate action and resource allocation to the areas of greatest need and potential impact.
2. **Integration**: ensuring that sectoral planning and national development priorities are aligned with resilience and low-carbon objectives.
3. **Transparency**: providing a clear evidence base to track risks, responses, and progress under the MRV system.

Through this approach, the vulnerability analysis **strengthens Sierra Leone's ability** to anticipate climate risks, reduce losses, and harness co-benefits across sectors, while reinforcing alignment with the National Adaptation Plan (NAP 2023), the NBSAP, the REDD+ Strategy, the Blue Economy Policy, and international frameworks such as the Sendai Framework and the SDGs.

The Sectoral Vulnerability Framework serves as a strategic tool that enhances the precision, coherence, and accountability of Sierra Leone's climate response.

First, it **supports targeting** by identifying the geographic and sectoral areas most exposed to climate risks—such as drought-prone agricultural zones, flood-vulnerable urban settlements, or coastal erosion sites—thereby enabling government and partners to prioritise interventions and resources where they can deliver the greatest resilience and impact.

Second, it **facilitates integration**, aligning sectoral and sub-national planning processes with national resilience and low-carbon development objectives outlined in the Medium-Term National Development Plan (MTNDP 2024–2030) and the NDC 3.0. This ensures that climate considerations are embedded into mainstream policies, budgets, and infrastructure programs rather than treated as standalone projects.

Third, it **promotes transparency** by establishing a data-driven, evidence-based platform for tracking risks, adaptive responses, and progress across sectors within the national MRV system. This strengthens institutional accountability and supports reporting under the Enhanced Transparency Framework (ETF) of the Paris Agreement, reinforcing Sierra Leone's credibility and capacity to attract climate finance.

However, this chapter wants to show that there is a vital opportunity to move beyond portraying Sierra Leone merely as a climate-vulnerable nation and instead to highlight its growing leadership, progress, and ambition in driving climate-resilient development. While past assessments have emphasised exposure to climate risks such as flooding, coastal erosion, and agricultural stress, we want to show a country that is actively responding with vision and momentum. Our strengthening institutional coordination through the Environmental Protection Agency (EPA-SL) and the Climate Change Secretariat (CCS), advancing renewable energy and sustainable agriculture under the Medium-Term National Development Plan (2024–2030), and expanding data systems to underpin transparent, evidence-based policy.

These advances reflect national ownership and a clear policy direction, demonstrating that we want not just to adapt to climate change but to position ourselves as proactive leaders in low-carbon, climate-smart growth. The NDC 3.0 thus transforms the narrative from vulnerability to opportunity, showcasing how national reforms, innovation, and partnerships are shaping a resilient and sustainable future.

Energy Sector

Over the past decade, the country has expanded rural electrification through mini-grids and solar home systems, diversified its energy mix with small hydropower and renewables, and strengthened policy coherence under the National Energy Policy and Energy Transition and Green Growth Plan.
These advances show that the energy sector is evolving from chronic energy insecurity toward a pathway of reliability, sustainability, and inclusiveness. Yet, significant gaps remain—particularly in generation capacity, grid stability, and access for rural populations. The NDC 3.0 builds on these achievements by serving as both an investment signal and a coordination framework: it links national energy priorities to international finance opportunities, guides private and public investment toward low-carbon technologies, and fosters cross-ministerial alignment between the Ministry of Energy, EPA-SL, and the Ministry of Finance.
The table below outlines the major vulnerabilities within Sierra Leone's energy sector. It highlights how dependence on hydropower and limited rural electrification create systemic risks under changing climatic conditions. These risks have direct implications for the NDC 3.0, particularly in relation to energy diversification, renewable expansion, and climate-resilient infrastructure. The table links each vulnerability to its associated risks and then draws out the policy and investment implications that need to be prioritised to ensure reliable, low-carbon energy for the population.

Table 45: Vulnerabilities, Risks, and Policy Implications for Energy Resilience

Vulnerabilities	Risks	Implication for NDC3.0
Hydropower Dependence and Climate Variability (Bumbuna Dam, Northern Transmission and distribution networks are susceptible to disruption. Blackouts from storm damage to transmission lines and flooding of small hydro systems; Lack of a smart grid system poses challenges for efficient operations; Extreme	Heavy reliance on rainfall; droughts and erratic precipitation significantly reduce output during the dry season, leading to frequent power outages and increased use of costly polluting thermal generation.	Urgent need to diversify the energy mix, invest in climate-resilient infrastructure and expand decentralised renewables (solar).

sunlight(heat) often affects voltage levels, which leads to load shedding to manage energy distribution. Unavailability of funding or investment constraints restrict the need for an upgrade of the infrastructure that would enhance system resilience and renewable energy alternatives in/Eastern Region.		
Urban and Rural Electrification Gaps (Rural regions, urban slums in Freetown)	Limited grid expansion leaves millions without reliable electricity, increasing dependence on biomass and diesel generators, which are environmentally damaging and detrimental to public health.	Targeted interventions for rural mini-grids, off-grid solar and clean cooking solutions to reduce reliance on polluting fuels.

Transport

Sierra Leone's transport sector is evolving from one constrained by limited infrastructure and high emissions intensity toward a driver of sustainable growth and connectivity. Over recent years, the Government has taken significant steps to modernise the sector—rehabilitating key road corridors, improving port logistics, and expanding public and non-motorised transport systems—while laying the groundwork for cleaner and more efficient mobility solutions.

The establishment of policies promoting fuel efficiency, electric mobility, and resilient transport infrastructure demonstrates increasing national leadership in aligning transport planning with climate and development goals.

Nonetheless, major gaps persist in fleet efficiency, data systems, and urban transport management, limiting the sector's contribution to low-carbon growth. The table below presents key vulnerabilities in Sierra Leone's transport sector. It emphasises the risks associated with flood- and erosion-prone road corridors, as well as urban congestion in Freetown. These vulnerabilities undermine connectivity, increase emissions, and expose critical infrastructure to damage. By pairing the risks with specific NDC 3.0 implications, the table shows how climate-proofing, improved drainage, and integrated urban planning can build both resilience and sustainability into transport development.

Table 46: Vulnerabilities, Risks, and Policy Implications for Transport

Vulnerability	Risks	Implication for NDC3.0
Flood and erosion-prone road corridors (Coastal areas, river crossings in Eastern/Southern Provinces)	Flooding, landslides, and erosion frequently damage critical transport infrastructure, thereby isolating communities and severely disrupting supply chains, especially during the rainy season.	Climate proofing key road corridors, upgrading/maintenance of drainage systems, bridges and improving emergency transport planning.
Urban congestion and infrastructure deficits (Greater Freetown Metropolitan Area)	Rapid unplanned urbanisation and inadequate road networks lead to chronic congestion, air pollution, and high transport-related emissions.	Promoting urban planning that prioritises climate resilience and low-carbon mobility.

Waste

In the waste sector, the Government—through the Environmental Protection Agency (EPA-SL), local councils, and private operators—has expanded waste collection coverage, launched pilot waste-to-energy and biogas initiatives, and strengthened regulatory frameworks for solid and hazardous waste management.

These actions reflect an important shift from reactive disposal toward integrated and circular approaches that link waste management with climate mitigation, energy generation, and job creation. Despite this progress, significant gaps persist in infrastructure, data systems, and institutional coordination, particularly at municipal levels, where waste volumes continue to outpace management capacity.

The NDC 3.0 helps bridge these gaps by positioning the waste sector as both an environmental priority and an investment opportunity—attracting climate finance for recycling, composting, and energy recovery, while improving inter-agency coordination among the EPA-SL, Ministry of Local Government, and Ministry of Energy.

The following Table highlights the critical vulnerabilities within Sierra Leone's waste sector. Poorly managed dumpsites in urban centres, such as Kissy and Kingtom in Freetown and designated sites in Bo, Kenema, Makeni, and Kono, create significant risks by blocking drainage systems, intensifying urban flooding, and spreading waterborne diseases. These conditions also contribute to methane emissions, further exacerbating climate change. The table outlines how targeted interventions—such as formalising waste collection, investing in engineered landfills, expanding composting and recycling, and deploying methane capture technologies—are essential for both adaptation and mitigation. By framing risks alongside the implications for NDC 3.0, the table demonstrates how transforming the waste sector can simultaneously strengthen resilience, safeguard public health, and generate measurable emission reductions.

A majority of HCFs in Sierra Leone do not have functional incinerators; as a result, they practice open burning as the main means of medical waste management, which contributes to constituent air pollution and emission of GHS.

Table 47: Vulnerabilities, Risks, and Policy Implications for Waste

Vulnerability	Risks	Implication for NDC3
Uncontrolled Dumpsites and Flood Risk (Kissy, Kingtom in Freetown; designated sites in Bo, Kenema, Makeni and Kono)	Poorly managed waste blocks urban drainage, causing severe urban flooding, water contamination and disease outbreaks.	Formalising waste collection, investing in modern landfill management, promoting composting and recycling and developing methane capture facilities.
Open pit burning in almost all district hospitals and PHUs due to a lack adequate medical waste management system.	Respiratory infection, heat stress, heat stroke, cardiovascular diseases, pre-natal labour among pregnant women, lung cancer, asthmatic attack, blood pressure, and cognitive decline	Proper medical waste management system plan through an investment case to mitigate the carbon emission rate in HCFs

IPPU

Historically, industrial emissions in Sierra Leone were modest but poorly monitored due to limited data, outdated technologies, and the small scale of formal industry. However, the sector is gradually transforming through the modernisation of cement production, increased investment in manufacturing, and early adoption of energy efficiency measures and green industrial standards.

These shifts signal emerging national leadership in aligning industrial development with low-carbon growth. Remaining gaps persist in emission reporting systems, process efficiency, and access to clean

technologies, underscoring the need for stronger coordination between the EPA-SL, Ministry of Trade and Industry, and Ministry of Energy.

The NDC 3.0 provides a framework to bridge these gaps by helping attract climate-smart investment, foster technology transfer, and guide the decarbonization of key industrial value chains.

The Table below identifies climate and environmental risks in Sierra Leone's industrial processes and product use (IPPU) sector. The table focuses on emission-intensive industries such as cement and beverage production, alongside small-scale and informal industries. These subsectors face dual challenges of process emissions and vulnerability to climate stressors such as power outages and heat. The implications for NDC 3.0 highlight the need for cleaner technologies, energy efficiency, and sector formalisation, ensuring that industrial growth is aligned with national climate resilience and low-carbon development objectives.

Table 48: Vulnerabilities, Risks, and Policy Implications for IPPU

Vulnerability	Risks	Implication for NDC3
Cement and Beverage Production Facilities (Western Area and manufacturing clusters)	Process emissions (CO_2), energy inefficiency and vulnerability to power outages and heat stress disrupt operations.	Incentivising energy-efficient technologies, promoting cleaner production processes and encouraging fuel switching to lower carbon alternatives.
Small-Scale and Informal Industries (Urban peripheries and informal zones)	Lack of environmental controls, high exposure to climate shocks and limited adherence to occupational health and safety standards.	Support formalisation, capacity-building and facilitating access to finance for both climate adaptation and cleaner technologies.

Gender & social

Sierra Leone is situated on the west coast of Africa, bordered by Guinea and Liberia and has a population of approximately 8.4 million. In recent years, there has been a growing commitment to gender equality and social inclusion, demonstrated by the adoption of the National Gender Policy (2020), the Gender Equality and Women's Empowerment Act (2022), and constitutional guarantees of equal rights.

The government's National Gender Policy (2020), the Gender Equality and Women's Empowerment Act (2022), and Sierra Leone's National Climate Change Policy explicitly call for gender mainstreaming in climate adaptation and mitigation efforts. Climate projects often include gender components such as women's participation, capacity building, and targeted livelihood support. Gender is formally recognised as a critical factor in climate plans and projects, reflecting growing awareness of the differentiated impacts of climate change on women, men, and marginalised groups. This critical component has already helped in:

Policy Integration: Where gender considerations are increasingly embedded in national climate frameworks and sectoral strategies

Data Collection: Several climate initiatives have enhanced the collection of sex-disaggregated data for beneficiaries and participants, improving the ability to monitor gender-specific impacts.

Women's Participation: There has been a notable increase in women's involvement in stakeholder consultations and project implementation, particularly in areas such as renewable energy access and climate-smart agriculture.

Capacity Building: Various programs have effectively delivered training and resources to women and youth, strengthening their adaptive capacities and promoting economic empowerment.

Climate Finance: A growing number of climate finance projects now incorporate gender-responsive budgeting and targeted interventions.

Although there are progress has been made in gender and social inclusion, a few gaps still exist. Gaps such as:

Transformative Change: Many interventions focus primarily on participation and access but do not sufficiently address deeper issues such as entrenched gender norms, power imbalances, and structural inequalities.

Intersectionality: Vulnerable groups, including persons with disabilities and youths, are not consistently integrated into gender strategies, limiting inclusivity.

Institutional Coordination: Fragmented roles and responsibilities across ministries and agencies result in gaps in implementation and accountability.

Gender-Based Violence (GBV): Climate-related projects frequently lack adequate measures to prevent and respond to GBV risks associated with environmental stresses and displacement

To ensure Measurable Indicators for Social and Gender Inclusion (GESI) in Climate Projects, the table below presents key measures.

Table 49: Roles, data needs, and 2030 targets for vulnerable groups in Climate Action

Social Group	Key Measurable Indicators	Context in Climate Projects
Women and Vulnerable Groups	Number of women in leadership roles spearheading the implementation of the NDC	**Metric:** Number of women holding decision-making roles in project management units, Local Council DRR committees, or management boards.
	At least 30% of programs are allocated to women's empowerment.	Metric: Percentage of the project budget explicitly allocated to women's groups for investment in climate-resilient assets (e.g., clean cookstoves, solar equipment, micro-loans).
	Reduction in time poverty due to the project intervention.	**Metric:** Average hours per week saved by women due to access to project-supported resources (e.g., closer water points, efficient clean energy).
Youth/Students	At least 30% of youth involvement/engagement in smart agricultural practices.	**Metric:** Number of youths employed, trained, or benefiting from climate-smart agricultural value chains and capacity building programs [1].
	Increase the number of generational experts on climate change issues at different levels [1].	**Metric:** Number of youths completing advanced technical training (e.g., LEAP modelling, renewable energy maintenance) and securing relevant employment.
Persons with Disabilities (PWDs)	At least 30% involvement of PWDs in NDC implementation.	**Metric:** Percentage of PWDs included in project consultations, training workshops, and employment opportunities (compared to baseline).
	30% of funding supports climate change activities dealing with PWDs.	**Metric:** Percentage of the project budget dedicated to PWD-specific activities, such as accessible training materials, accessible climate infrastructure, or PWD-led climate adaptation initiatives.

Inclusion and equity are central to the development and implementation of Sierra Leone's NDC 3.0. Youth, women, persons with disabilities and other vulnerable groups (including the elderly, indigenous populations, mining-affected communities, and low-income households) play a critical role in driving innovation, advocacy, and grassroots solutions. To ensure that climate actions are inclusive, responsive and equitable, the NDC 3.0 process will integrate sex, age and disability-disaggregated data into all stages of planning, implementation, monitoring, and reporting.

This approach will foster target interventions, evidence-based policy-making and effective tracking of climate resilience outcomes across different population groups.

Conflict-sensitive climate risks

Sierra Leone's post-conflict challenges make it vital to ensure that climate action under NDC 3.0 is conflict sensitive. Climate change, by exacerbating livelihood insecurity, resource competition and migration, can act as a threat multiplier in fragile contexts, heightening the risk of social unrest or renewed conflict, especially for youth and marginalised populations.

The Table below identifies the key stakeholder groups that play a role in implementing Sierra Leone's NDC 3.0 commitments. It outlines each group's contribution to climate action, the types of disaggregated data required to strengthen their participation, and the outcomes expected by 2030. By linking stakeholder roles with measurable targets, the table ensures that equity, inclusivity, and accountability are embedded in the country's climate governance. This approach also highlights the importance of gender-sensitive, youth-inclusive, and community-driven data in shaping both mitigation and adaptation outcomes, reinforcing the government's commitment to leaving no one behind.

Table 50: Conflict-Sensitive Climate Risks and NDC 3.0 Intervention Priorities

Conflict-Sensitive Risk Category	Specific Climate-Amplified Risk	Rationale: How the Risk is Driven	NDC 3.0 Intervention Focus (Conflict-Mitigation)
Resource Competition & Conflict	Pastoralist/Farmer Land Conflicts	Increased droughts and erratic rainfall push herders outside traditional grazing areas, thereby encroaching on farmlands and triggering violent disputes over shrinking resources.	Integrated Land-Use Planning: Formalise land rights and migration corridors. Establish local-level conflict mediation platforms involving traditional leaders, youth and women.
	Water Scarcity Disputes	Reduced river flow and groundwater recharge intensify competition over access to reliable water sources, escalating tensions between communities and different resource users (e.g., agriculture vs. domestic use).	Climate-Resilient Water Governance: Invest in shared climate-proof water infrastructure (e.g., shared boreholes, small-scale dams) managed by multi-stakeholder water user committees.
	Environmental Crime	Declining resource productivity drives desperate survival strategies, hence leading to illegal logging, illicit mining, or unsustainable fishing practices, which are often controlled by influential groups or criminal networks.	Community-Led Monitoring: Empower and train local youth and women's groups for participatory monitoring of forests and coasts to enhance surveillance, transparency, and local ownership.
Economic Shock & Youth Marginalisation	Mass Youth Unemployment	Climate shocks (floods, prolonged dry spells) collapse the agricultural and fisheries sectors, which are the main employers of rural youth, creating a large, disaffected pool vulnerable to radicalisation.	Climate-Smart Jobs Program: Implement a targeted 'Green Public Works' initiative (e.g. the NACSA reforestation projects at the local councils, coastal protection) to provide verifiable temporary income,

			skills training, and purpose to unemployed youth.
	Urban Crime and Unrest	Rural climate migrants, particularly youth, overcrowd urban informal settlements, thereby intensifying competition for scarce jobs and services, leading to increased social tensions, crime and potential civil unrest.	Resilient Urban Livelihoods: Invest in labour-intensive, localised climate-resilient infrastructure (waste management, drainage) in informal settlements, ensuring equitable local employment guided by GESI principles.
	Perceived Injustice and Exclusion	Inequitable distribution of climate project benefits or lack of transparency regarding climate funding fuels perceptions that elites or specific groups are benefiting, deepening resentment and societal division.	Transparent Benefit Sharing: Integrate a conflict-sensitive MRV component to explicitly track and report the equitable, disaggregated distribution of benefits (by age, sex, and location) from all NDC projects.
Displacement and Migration Stress	Internal Displacement	Extreme weather events (coastal erosion, flash floods) force the unplanned, large-scale displacement of entire communities, straining the resources of already fragile host communities.	Safe, Planned Relocation Strategies: Develop conflict-sensitive land acquisition and resettlement frameworks for high-risk zones, including transparent compensation and livelihood transfer support to mitigate host-migrant tensions.
	Strain on Host Communities	Rapid unmanaged influxes of migrants overwhelm local social services (health, education) and employment markets in receiving areas, leading to resource competition and the breakdown of social cohesion.	Multi-Stakeholder Dialogue Platforms: Establish and fund permanent inclusive dialogue platforms on migration vulnerabilities to enable migrants, host communities and local authorities to jointly plan and coordinate resource and service sharing.

Link to forthcoming Long-Term Low-Emission Development Strategy (LT-LEDS);

Sierra Leone's forthcoming **Long-Term Low-Emission Development Strategy (LT-LEDS)** will translate the nation's climate-resilient, low-emission vision into a concrete roadmap for achieving net-zero emissions by 2050. Building on the **Long-Term Climate Vision (2021–2050)**, it will define decarbonization pathways, investment priorities, and sectoral transitions across energy, land use, forestry, waste, transport, and industry. The LT-LEDS will provide detailed modelling to identify cost-effective mitigation options and resilience priorities, showing how sustainable land management, renewable energy, and industrial transformation can drive green growth. In doing so, it will align Sierra Leone's long-term development with global frameworks such as the **Paris Agreement**, **Agenda 2063**, and the **Sustainable Development Goals (SDGs)**—ensuring that climate ambition is fully embedded within the national growth trajectory.

Within this framework, **NDC 3.0 (2025–2035)** serves as the medium-term instrument for operationalising the LT-LEDS and turning the national vision into tangible results. While the LT-LEDS

outlines the strategic direction, NDC 3.0 defines the immediate policies, targets, and investments needed to move toward that direction. Its commitments on **renewable energy expansion, clean cooking, e-mobility, climate-smart agriculture, forestry restoration, and waste management** will directly shape the LT-LEDS baselines and scenarios. NDC 3.0 thus ensures that Sierra Leone's climate action remains realistic, data-driven, and consistent with sectoral priorities under the **Medium-Term National Development Plan (MTNDP 2024–2030)** and **Feed Salone Strategy**. By embedding institutional responsibilities, financing frameworks, and monitoring systems, NDC 3.0 also strengthens the enabling environment needed for scaling up long-term climate investments.

Together, Sierra Leone's **Vision, LT-LEDS, and NDC 3.0** form a coherent, tiered architecture for climate action—linking short-term implementation (2025–2030), medium-term scaling (2030–2040), and long-term transformation (2050). This alignment avoids fragmentation and ensures that each planning cycle builds momentum toward a resilient, low-emission economy. By defining clear, costed, and government-owned measures, NDC 3.0 enhances national credibility and readiness to attract international finance and partnerships. Ultimately, this integrated framework demonstrates Sierra Leone's strong institutional commitment and strategic foresight, positioning the country as a model for **climate-aligned, inclusive, and sustainable development in West Africa**.

Just-transition principles & local-content priorities;

Sierra Leone's transition to a low-carbon and climate-resilient economy will be guided by a set of values that place people, equity, and sustainability at the centre of national development. These principles are intended to ensure that climate action does not operate in isolation from the country's socioeconomic realities, but rather becomes a driver of inclusion, resilience, and long-term prosperity.

A central commitment is to ensure **equity and inclusivity** in all aspects of the transition. This means that the benefits of climate policies and investments must reach those who are most often excluded from development gains, including women, young people, informal workers, smallholder farmers, fishing communities, and populations in mining-affected regions. Special interventions will be designed to support these groups, such as providing access to renewable energy technologies, climate-smart agricultural practices, and tailored financial services. In doing so, the transition becomes not only a pathway to lower emissions but also a tool for addressing historical inequalities and strengthening social cohesion.

Equally important is the generation of **decent work and the development of new skills**. Climate action is expected to transform Sierra Leone's economy, creating employment opportunities in renewable energy, sustainable agriculture, forestry, waste management, and climate-smart transport. These jobs must be dignified, safe, and fairly compensated. To prepare the workforce for this structural shift, the Government will invest in vocational training, apprenticeships, and re-skilling programs that reflect the needs of emerging green industries. Building the capacity of women and youth to participate fully in these opportunities will be prioritised, ensuring that human capital development goes hand in hand with climate ambition.

The Government also recognises that economic restructuring can expose vulnerable households to short-term risks, especially where communities depend on carbon-intensive activities such as charcoal production, artisanal mining, or fossil-fuel consumption. For this reason, the principle of **social protection** will be embedded in all transition measures. Safety nets—including targeted subsidies, transitional cash transfers, and access to insurance—will be deployed to shield workers and households from loss of income or food insecurity. At the same time, alternative livelihood programs will support affected groups to move into sustainable activities without falling deeper into poverty.

The process of change must also be grounded in **participatory governance**. The Government will ensure that local councils, traditional authorities, civil society, and the private sector are directly engaged in shaping transition policies and in monitoring their implementation. Mechanisms such as national dialogues, regional consultations, and community forums will provide space for citizen voices to influence decision-making. Transparency and accountability will be reinforced through public reporting and participatory monitoring, strengthening trust and legitimacy in the transition process.

The principle of **intergenerational justice** further underpins the transition, recognising that the choices made today must not compromise the prospects of future generations. Sierra Leone's forests, mangroves, fisheries, soils, and biodiversity are critical national assets that must be preserved and restored to secure long-term resilience. Integrating sustainability into education and awareness programs will prepare young people to act as stewards of the environment and to carry forward the gains of the transition. In this way, present resource use will be managed responsibly to safeguard ecological systems for the future.

Finally, Sierra Leone's just-transition framework will remain fully **aligned with national and global development goals**. The principles outlined here are embedded in the country's **Medium-Term National Development Plan (2024–2030)**, and they contribute directly to the achievement of the **Sustainable Development Goals** and the African Union's **Agenda 2063**. By ensuring coherence across climate, energy, and food policies, the Government underscores that its Nationally Determined Contribution is not an isolated commitment but an integral component of the broader national vision for inclusive, resilient, and sustainable growth.

Sierra Leone's low-carbon and climate-resilient transition will be anchored in domestic capacity-building and local ownership, ensuring that national strategies such as the **Energy Transition and Green Growth Plan (ETGGP)** and the **Feed Salone Strategy** deliver not only environmental outcomes but also inclusive and sustained economic growth. By aligning climate action with these flagship programs, the transition becomes a pathway to build national expertise, foster innovation, and ensure that Sierra Leoneans themselves are the main beneficiaries of new green industries.

The cornerstone of this effort will be **domestic workforce development**. Under the ETGGP, Sierra Leone will establish training and employment targets in renewable energy technologies, e-mobility, forestry and mangrove restoration and climate data systems, while also developing national expertise in monitoring, reporting, and verification (MRV). Similarly, Feed Salone will invest in building the capacity of smallholder farmers, cooperatives, and agro-processors in climate-smart practices such as precision irrigation, sustainable soil management, and low-emission value chains. Together, these measures will create a skilled workforce capable of driving both the energy and agricultural transitions, reducing dependence on foreign expertise and ensuring that job creation directly benefits Sierra Leoneans.

The principle of **technology transfer and innovation** will also be operationalised through these strategies. International partnerships under the ETGGP will go beyond the importation of clean technologies, prioritising knowledge transfer and local adaptation. For example, projects will support domestic assembly and maintenance of solar home systems and mini-grids, while also training engineers and technicians in e-mobility and grid integration. Similarly, clean cooking programs will emphasise local production and adaptation of improved cookstoves, while ecosystem restoration projects will build domestic expertise in mangrove rehabilitation and sustainable forestry practices. Feed Salone will similarly promote local innovation by strengthening research institutions and farmer cooperatives to develop climate-smart seed systems, improved storage, and agro-processing technologies. This dual emphasis on energy and food system innovation will foster a culture of resilience and technological self-reliance across the economy.

The transition will also promote local enterprises and micro-, small-, and medium-sized enterprises (MSMEs) as key drivers of green growth. Domestic companies will be supported to expand their role in manufacturing, agro-processing, and service provision in areas such as mini-grid deployment, waste-to-value initiatives, and sustainable construction. The ETGGP creates opportunities for domestic companies to participate in mini-grid deployment, energy efficiency services, and e-mobility ventures, while Feed Salone prioritises local businesses in agro-processing, storage, and distribution networks. By deliberately integrating MSMEs into energy and agriculture value chains, both strategies ensure that Sierra Leonean entrepreneurs capture the financial and employment benefits of climate investments.

To institutionalise local ownership, **procurement frameworks** will integrate clear local-content clauses. Government and donor-financed projects will be required to source a defined percentage of labour, services, and materials from Sierra Leonean providers. This will strengthen local supply chains, reduce dependence on imports, and ensure that climate finance investments directly stimulate the domestic economy.

The Government will further facilitate **finance and ownership structures** that empower Sierra Leonean actors to play a central role in the transition. Access to concessional loans, blended finance instruments, and credit facilities will be expanded for local businesses, cooperatives, and community-based organisations engaged in climate-smart sectors. These financing mechanisms will encourage greater participation of women- and youth-led enterprises, enabling them to become central players in renewable energy, sustainable agriculture, and ecological restoration.

Finally, the transition will embed **community benefit mechanisms** to ensure that citizens directly experience the gains of climate action. Forestry and mangrove carbon projects will include benefit-sharing schemes that allocate a fair portion of revenues to participating communities. In addition, Article 6 carbon-market transactions will be designed with transparency and equity in mind, channelling resources toward local development priorities such as education, healthcare, and climate-resilient infrastructure. By making communities active beneficiaries, Sierra Leone reinforces the principle that the transition is not only about emissions reduction but also about improving lives and livelihoods at the local level.

Table 51: Local Content & Ownership Alignment

Principle	Energy Transition & Green Growth Plan (ETGGP)	Feed Salone Strategy
Domestic Workforce Development	Set training and employment targets in renewable energy, e-mobility, climate data systems, and MRV; build national expertise for energy transition projects.	Train farmers, cooperatives, and agro-processors in climate-smart practices (soil management, irrigation, low-emission value chains).
Technology Transfer & Innovation	Partnerships to enable local assembly and maintenance of solar panels and mini-grids; training engineers and technicians in e-mobility and grid integration.	Strengthen local research and cooperatives to adapt climate-smart seed systems, storage, and agro-processing technologies.
Local Enterprises & MSMEs	Support Sierra Leonean companies to participate in mini-grid deployment, energy efficiency services, and e-mobility ventures.	Promote MSME participation in agro-processing, storage, and distribution networks tied to climate-smart agriculture.
Procurement Rules	Introduce procurement rules mandating local labour, services, and inputs in renewable energy and infrastructure projects.	Embed local-content requirements in procurement for food security projects, ensuring domestic cooperatives and suppliers are prioritised.

Finance & Ownership	Expand concessional loans and credit for local firms investing in clean energy, sustainable transport, and efficiency services.	Design credit schemes and financing packages for farmer cooperatives, youth-led agribusinesses, and women-owned enterprises.
Community Benefits	Include benefit-sharing mechanisms in forestry and mangrove carbon projects, ensuring communities receive carbon revenue proceeds.	Reinvest agricultural carbon revenues and efficiency gains into education, healthcare, and rural infrastructure for communities.

Reference to the National Adaptation Plan

Sierra Leone's NDC 3.0 aligns closely with national climate and environmental frameworks. These include the **National Adaptation Plan (NAP 2023)**, the **National Biodiversity Strategy and Action Plan (NBSAP 2017)**, the **REDD+ Strategy (2019)**, and the **Blue Economy Policy (2021)**. Together, they create a solid foundation for linking climate action with national development.

Many NDC 3.0 adaptation measures strengthen the **NAP's** priorities. Key examples are **climate-proofing roads and bridges**, **improving early-warning systems**, and **building the capacity of the National Disaster Management Agency (NDMA)**. These actions reduce vulnerability in infrastructure, disaster risk management, and water sectors. Industrial resilience and transport measures also help integrate climate risk into national and sectoral planning.

Actions such as **reforestation**, **assisted natural regeneration (ANR)**, **community forestry**, and **mangrove restoration** reflect the **NBSAP's** goals. They promote biodiversity protection and ecosystem restoration while capturing carbon. The use of criteria such as biodiversity value, carbon density, and community readiness ensures alignment with the NBSAP's objectives.

Mitigation actions, such as **avoided deforestation**, **reforestation**, and **mangrove rehabilitation**, support the **REDD+ Strategy**. They aim to cut emissions, increase carbon stocks, and apply safeguards like **MRV**, **benefit-sharing**, and **FPIC** to protect environmental and social integrity.

Coastal and mangrove restoration, together with sustainable fisheries, align with the **Blue Economy Policy**. These actions enhance "blue carbon" storage, limit erosion, protect coastal communities, and sustain livelihoods. Initiatives such as **wetland protection**, **sustainable woodfuel management**, and **resilient coastal infrastructure** support balanced and sustainable economic growth.

In summary, the **NDC 3.0** puts these policies into practice. It advances the **NAP's** resilience goals, the **NBSAP's** biodiversity targets, the **REDD+ Strategy's** carbon objectives, and the **Blue Economy Policy's** sustainable coastal agenda. This coherence strengthens national ownership, improves access to climate finance, and supports transparent reporting under both the **UNFCCC** and the **Convention on Biological Diversity**.

Annex D: Adaptation & mitigation co-benefits narrative

Sierra Leone's NDC 3.0 identifies a portfolio of measures that address both climate mitigation and adaptation, ensuring that climate action simultaneously reduces greenhouse gas (GHG) emissions while strengthening resilience to climate shocks. The cross-cutting nature of these measures delivers synergies that support sustainable development, agri-food systems for improved food and nutrition security, energy access, child protection, education and public health.

In what follows, we develop an analysis of the adaptation co-benefits of several mitigation measures.

Energy Sector
Deployment of mini-grids, commercial/industrial solar PV, and solar home systems directly reduce reliance on diesel and kerosene, cutting emissions while expanding access to reliable and clean electricity. The adaptation co-benefits are significant: decentralised renewable energy systems provide resilient backup during grid outages, ensure continuity of essential services such as health clinics and schools, and reduce exposure to volatile fossil fuel prices. In parallel, adaptation measures in the energy sector, such as infrastructure resilience upgrades for hydropower, transmission lines, and coastal thermal plants, further enhance system reliability under extreme weather conditions. Together, these interventions safeguard energy security, reduce air pollution, and build a more climate-resilient economy.

Cooking Transition
The transition to improved cookstoves (ICS), LPG, and biogas contributes major GHG reductions by lowering reliance on non-renewable biomass, reducing deforestation pressure, and cutting black carbon emissions. At the same time, adaptation co-benefits include reduced vulnerability of households to fuelwood scarcity, time savings for women and girls, and significant health gains from reduced exposure to indoor air pollution. These measures align closely with the Feed Salone strategy by promoting sustainable biomass use and strengthening household resilience to climate-related fuel shortages.

Transport Sector
E-buses, e-kekeh, and improved fuel efficiency standards deliver mitigation benefits by displacing fossil fuel use and reducing transport sector emissions. The adaptation co-benefits include reduced dependency on imported fuels, improved urban air quality, and more resilient, diversified mobility systems. Complementary adaptation policies such as integrated planning, resilient transport infrastructure, and risk-informed relocation of transport corridors ensure that transport systems remain operational during floods and extreme weather.

Agriculture, Forestry, and Land Use
Climate-smart nutrition-sensitive agriculture (CSA), agroforestry, and community forestry measures reduce emissions from land-use change while enhancing soil carbon storage and protecting biodiversity. At the same time, these measures increase food system resilience by improving yields of diverse, safe, affordable and sustainable foods under variable rainfall, diversifying farmer incomes, empowering youth and women, improving food processing and production capacity sustainably, and reducing post-harvest losses through innovative climate-smart sustainable technologies and processes. Mangrove restoration, watershed management, and wetland protection provide both carbon sequestration and strong adaptation co-benefits by reducing coastal erosion, mitigating flood risk, and preserving fisheries-based livelihoods.

Waste and IPPU Sectors
Mitigation actions in waste management, such as landfill methane capture and organics diversion, reduce methane emissions, one of the most potent GHGs. The adaptation co-benefits include reduced urban flooding from blocked drainage, improved public health, and safer urban environments. In the

IPPU sector, institutional capacity building supports both mitigation (through emissions monitoring and low-carbon technology adoption) and adaptation (through strengthened regulatory frameworks and climate risk integration in industrial planning).

Cross-Cutting Systems

The establishment of MRV systems and climate data platforms not only ensures transparent accounting of GHG reductions (mitigation) but also strengthens the monitoring of adaptation outcomes, such as resilience indicators in energy, transport, and agriculture. Similarly, mobilisation of climate finance through project pipelines provides dual benefits, channelling resources into both low-carbon technologies and resilience-building infrastructure.

Conclusion

The integration of mitigation and adaptation co-benefits within Sierra Leone's NDC 3.0 ensures that climate action is not treated in isolation but embedded in national development priorities. Renewable energy systems reduce emissions while making communities more resilient to outages. Clean cooking solutions protect forests while improving health. Climate-smart agriculture sequesters carbon while securing food production. Waste and industrial reforms reduce GHGs while strengthening urban resilience. By deliberately designing measures with dual benefits, Sierra Leone maximises the impact of limited financial resources, builds national ownership, and positions itself to leverage international climate finance for transformative outcomes.

Annex E: South-South & triangular cooperation

South–South and triangular cooperation will play a decisive role in accelerating Sierra Leone's energy transition, green growth, and food security transformation under the FEED SALONE Strategy. The Government could actively engage with peer developing countries, regional organisations, and multilateral partners to unlock shared expertise, transfer proven technologies, and mobilise co-financing for priority mitigation and adaptation measures. The lead coordination entity would be the MoECC via EPA, which will establish an annual cooperation forum under ECOWAS or MRU.

In the energy sector, Sierra Leone could expand cooperation with ECOWAS, the Mano River Union, and bilateral partners such as Ghana, Rwanda, Kenya, Morocco, and Côte d'Ivoire to exchange regulatory frameworks, grid-integration models, and resilience design standards. By 2030, at least six Memoranda of Understanding could be concluded with partner utilities and regulators, and by 2035, these exchanges could support the commissioning of between 25 MW and 50 MW of decentralised renewable energy systems, alongside the upgrading of more than 80 percent of critical energy infrastructure to climate-resilient standards. The lead coordination in this process is the MoECC via EPA, which will also establish an annual cooperation forum under ECOWAS or MRU.

On the other side, the relevance of such MOUs (with institutions such as Ghana's Environmental Protection Agency, Rwanda's Environment Management Authority, and Morocco's MASEN) resides in the fact that they will help to translate commitments into tangible cooperation frameworks, facilitating technology exchange, capacity-building, and joint implementation of climate and renewable energy initiatives.

Under the umbrella of these MOUs, it is recommended to develop a South–South Cooperation Tracker within the existing NDC Tracker framework to systematically monitor the implementation and ensure accountability, knowledge exchange, and measurable impacts from regional and international partnerships.

In the area of clean cooking, Sierra Leone could join regional stove testing and verification networks and partner with countries such as Ghana, Morocco, Kenya, and India to strengthen LPG cylinder recirculation and small-scale biogas programs. By 2030, these partnerships will help deliver 600,000 improved cookstoves, expand LPG access to 60,000 households, and deploy at least 35,000 household and community biogas digesters, with a cumulative reach of nearly 900,000 households by 2035

On monitoring, reporting and verification (MRV) and Article 6 readiness, Sierra Leone could pursue academic and institutional exchanges with African and Asian universities to develop a regional "MRV Academy." By 2030, at least 40 national analysts and data engineers should be certified, rising to 70 by 2035, with retention rates above 80 percent. These South–South academic partnerships will be supported by triangular cooperation with multilateral organisations and donor governments, which will provide technical assistance and finance facilities to scale registries and Article 6 transactions.

The agriculture sector adaptation measures will also benefit directly from South–South agricultural cooperation. Through joint ventures with Nigeria, Ghana, Benin, and Côte d'Ivoire, Sierra Leone could harmonise seed certification protocols, build shared aflatoxin testing capacity, and establish pooled procurement systems for solar irrigation technologies. By 2035, these partnerships are expected to bring 45,000 hectares under supplemental irrigation, increase the supply of certified climate-resilient seeds to meet at least 70 percent of national demand, and reduce post-harvest losses by 30 percent.

Institutional cooperation should further extend to local governance and inclusion, with exchanges of budgeting and procurement tools that will enable all district councils to integrate climate and gender-

responsive expenditure tagging by 2030. By 2035, annual refresher audits on gender and inclusion metrics will be institutionalised in every local authority

Through these concrete cooperation targets, Sierra Leone's NDC 3.0 embeds South–South and triangular partnerships not as abstract commitments but as measurable actions. By 2035, the country will have delivered multi-megawatt renewable capacity, expanded modern cooking access to nearly one million households, built a domestic MRV cadre of seventy certified experts, irrigated tens of thousands of hectares of farmland, and institutionalised inclusive governance practices. These outcomes demonstrate how collaboration within the Global South, supported by triangular financing arrangements, can accelerate Sierra Leone's transition to a low-carbon, climate-resilient, and food-secure future.

Table 52: South–South & Triangular Cooperation Targets (2025–2035)

Sector / Area	Baseline (2025)	2030 Target	2035 Target	Indicators
Decentralised Renewable Energy & Resilient Infrastructure	Limited bilateral exchanges; <5 MW decentralized RE; <10% assets climate-resilient	At least 6 MoUs with peer utilities/regulators; 25 MW decentralised RE commissioned; ≥50% of new infrastructure climate-resilient	50 MW decentralised RE; >80% of critical energy infrastructure climate-resilient	# of MoUs; MW commissioned; % assets upgraded; outage reduction
Clean Cooking (ICS, LPG, Biogas)	<100,000 HH with access to modern cooking; no regional stove lab cooperation	600,000 HH using ICS; 60,000 LPG households connected; 35,000 digesters deployed; participation in at least 3 regional stove/testing networks	~900,000 HH with clean cooking; LPG safety incident rate ≤1/10,000; 90,000 digesters operational	HH access; verified stoves in use; LPG safety records; # digesters
MRV & Article 6 Readiness	Fragmented MRV capacity; <10 trained staff; no Article 6 registry	Regional MRV Academy operational; 40 national analysts certified; functioning action & EF registries; 2 Article 6 pilots authorized	70 certified analysts with ≥80% retention; full registry integration into BTR; ≥5 Article 6 transactions registered	# analysts certified; % retention; registry entries; # Article 6 pilots
Agriculture & FEED SALONE (Seeds, Irrigation, Storage)	10,000 ha irrigated; low regional cooperation on seed certification	30,000 ha irrigated; regional seed QA protocols in place; at least 2 joint aflatoxin labs established; 40% of seed demand met locally	45,000 ha irrigated; 70% seed demand met; 30% reduction in post-harvest losses; regional storage/processing alliance functional	Hectares irrigated; tonnes certified seed; # labs; % losses reduced
Local Governance, Gender & Inclusion	Climate budgeting and GESI audits are ad hoc in pilot councils	All district councils adopt climate/GESI budget tagging; training wave completed	Annual GESI refresher audits are institutionalised in all councils; ≥70% citizen satisfaction in climate services	# councils trained; % budgets tagged; # audits; satisfaction survey


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