Guidelines:

- This Request Submission Form should be completed by the organisation requesting technical assistance from the Climate Technology Centre & Network (CTCN) in collaboration with the National Designated Entity (NDE) of the country in question
- The Form must be signed by the NDE. Please see updated contact list of NDEs here: http://unfccc.int/ttclear/support/national-designated-entity.html
- The Form can be submitted as a Word file containing a digital signature or as a signed and scanned PDF file in combination with an un-signed Word file
- For requests submitted by multiple countries, all the NDEs of the respective countries shall sign identical Forms before official submission to the CTCN
- NDEs have the opportunity to submit CTCN requests in collaboration with National Designated Authorities (NDAs) for the Green Climate Fund (GCF) if targeting the GCF Readiness Programme.

Requesting country or countries:	Sierra Leone
Request title:	Climate-Smart Aquaculture Zoning in Sierra Leone: Development of a GIS-Based Decision-Support Tool to Enhance Resilience and Sustainable Fish Farming
NDE	Please add name of organisation, name of individual, position, email and address. Sierra Leone Meteorological Agency, Ministry of Transport and Aviation Mr. Ibrahim Sinneh Kamara Director General Email: sinneh71@gmail.com F18 Charlotte Street, Freetown, Sierra Leone
Request Applicant:	Ministry of Fisheries and Marine Resources Mr. Sheka Kargbo Email: shekakargbo2002@yahoo.com Please add name of organization, contact person, position, email and address of the organisation requesting assistance from the CTCN.

Climate objective:

- ☒ Adaptation to climate change
- ☐ Mitigation of climate change
- ☐ Combination of adaptation and mitigation of climate change

Geographical scope:

- ☐ Community level
- ☐ Sub-national
- ☒ National
- ☐ Multi-country

If the request is at a sub-national or multi-country level, please describe specific geographical areas (provinces, states, countries, regions, etc.).

Problem statement related to climate change (up to one page):

This section should answer the question "what is the problem?" Please summarize the problem related to climate change and/or the negative impacts of climate change in the country that the request aims to address.

Sierra Leone, a coastal West African nation, possesses significant potential for aquaculture development due to its abundant inland water bodies, extensive coastline, and favorable environmental conditions. However, the growth of this sector is increasingly threatened by the impacts of climate change, which compound existing challenges in environmental management, land use, and policy implementation. Climate-related disruptions—such as erratic rainfall patterns, sea level rise, and temperature fluctuations—are undermining the stability of aquatic ecosystems, and in turn, threatening aquaculture viability. These vulnerabilities are exacerbated by the country's underdeveloped spatial planning systems, including limited use of Geographic Information Systems (GIS) for aquaculture zoning and climate resilience.

Sierra Leone experiences a tropical climate marked by a distinct wet season (May to October) and dry season (November to April), with annual rainfall ranging from 2,000 mm in the interior to over 3,000 mm along the coast (World Bank, 2021). While this rainfall supports freshwater fish farming, increased climate variability has led to erratic precipitation, flooding, and longer dry spells—all of which affect water quality, fish breeding cycles, and the productivity of aquaculture ponds. Rising temperatures and changes in the timing of rainfall further disrupt the thermal balance and oxygen levels required for healthy fish growth. Coastal aquaculture is similarly under threat from sea level rise and saltwater intrusion, which degrade freshwater ecosystems and reduce the suitability of many traditional fish farming sites.

In terms of land use and soil characteristics, Sierra Leone's lowland and inland valley swamps are suitable for aquaculture due to their alluvial soils and relatively flat topography. However, poor land use planning, widespread deforestation, and unsustainable agricultural practices have led to soil erosion, sedimentation of water bodies, and land degradation—factors that reduce water retention and quality in potential aquaculture sites (FAO, 2020). Additionally, competing demands for land—such as mining, agriculture, and urban development—contribute to the absence of clear zoning regulations for aquaculture. These overlapping land uses often result in conflicts, limiting the identification and preservation of areas best suited for sustainable aquaculture development.

Despite recognition of aquaculture's potential, Sierra Leone has made limited progress in conducting systematic studies using GIS to guide aquaculture zoning. GIS technology is a powerful tool for integrating environmental, climatic, and socio-economic data to identify optimal aquaculture zones that are resilient to climate change. However, its use in Sierra Leone remains minimal, largely due to inadequate technical capacity, poor data availability, and limited institutional coordination. According to a 2024 UNDP-supported report, while the government has initiated policies under the "Feed Salone" strategy aimed at improving food security through aquaculture, there is still a critical gap in spatial planning and zoning supported by climate-smart data tools (UNDP Sierra Leone, 2024).

In conclusion, the major climate-related challenge facing Sierra Leone's aquaculture sector is the compounded impact of climate variability on aquatic ecosystems, worsened by poor land use practices and the lack of climate-informed spatial planning. Selection of sites for aquaculture at subsistence or commercial level hence suffers from synergistic effects of climate and non-climate induced impacts that erode the capital worth of aquaculture infrastructure such as ponds, water channels and business systems. Integrating climate and non-climate criteria under tools like GIS to determine viable aquaculture zones based on climate resilience and ecological suitability, will ensure sustainability of the sector in the long term. Thus, investments in dynamic multi-criteria analysis of environmental and socio-economic data, land use policy reform, and technical capacity building is needed to guide sustainable aquaculture development in a changing climate.

Sources:

World Bank (2021). Climate Risk Profile: Sierra Leone. https://climateknowledgeportal.worldbank.org

FAO (2020). Aquaculture Development in Sierra Leone – Status and Opportunities.

UNDP Sierra Leone (2024). Annual Results Report: Enhancing Food Systems and Coastal Resilience through the Feed Salone Strategy.

Ministry of Fisheries and Marine Resources, Sierra Leone (2024). Feed Salone Strategy for the Fisheries and Marine Resource Sector 2024–2035

Past and on-going efforts to address the problem (up to half a page):

This section should answer the question "what has been done or is currently being done to address the problem?" Please describe past and on-going processes, projects or initiatives implemented in the country or region to tackle the climate problem as described above.

Recognizing the growing threat of climate change to its food systems and aquatic ecosystems, Sierra Leone has taken several policy, institutional, and project-based steps to address these challenges, particularly in the context of sustainable aquaculture development. These initiatives driven by the government, supported by development partners, and aligned with national development goals,are gradually building resilience in the sector. While gaps remain, the following efforts reflect an evolving commitment to climate adaptation and aquaculture zoning.

1. **Feed Salone Strategy for the Fisheries and Marine Resource Sector (2024–2035)**

This ten-year national strategy represents Sierra Leone's most ambitious plan to transform its fisheries and aquaculture sectors. Implemented by the Ministry of Fisheries and Marine Resources with support from international partners, the strategy outlines actions to increase fish production, enhance food security, and build climate resilience through sustainable aquaculture. It calls for improved governance, research on inland and coastal ecosystems, and the development of zoning policies to manage aquaculture expansion. Though implementation is still in early stages, it signals a shift toward more structured planning and adaptation.

2. Feed the Future Sierra Leone Scaling Up Aquaculture Production (2021–2024)

This USAID-funded project aimed to enhance fish farming in Tonkolili District by providing smallholder farmers with inputs, training, and extension support. While not primarily climate-focused, the project introduced improved pond designs, water management techniques, and training in climate-smart practices. It helped improve yields and demonstrated how sustainable aquaculture can contribute to rural livelihoods under shifting climate conditions. The project emphasized the need for long-term **environmental monitoring and integration of GIS tools**, which remain underutilized.

3. *UNDP Coastal Resilience Programme (2023–2026)*

Led by the United Nations Development Programme and the Government of Sierra Leone, this initiative focuses on enhancing resilience to sea-level rise and coastal flooding, which directly affect aquaculture operations in coastal districts. The program includes mangrove restoration, community-based adaptation, and policy advocacy for climate-resilient coastal planning. It supports mapping of vulnerable areas and promotes ecosystem-based adaptation approaches that benefit both aquaculture and biodiversity.

4. *West Africa Coastal Areas (WACA) Management Program – Sierra Leone Chapter*

Under the broader WACA framework supported by the World Bank, Sierra Leone has joined efforts to improve coastal zone management through better policy, data collection, and infrastructure investment. Although primarily focused on erosion control and urban resilience, the WACA program supports environmental data systems and GIS mapping, which could be expanded to inform aquaculture zoning in climate-sensitive areas.

5. *National Adaptation Programme of Action (NAPA) and the Nationally Determined Contributions (NDCs)*
Sierra Leone's climate policy framework, including its 2015 NAPA and updated NDCs (2021), acknowledges the vulnerability of water resources and aquatic ecosystems to climate change. These documents propose actions such as promoting climate-resilient aquaculture and strengthening early warning systems. However, implementation has been slow, and integration with GIS-based planning remains weak. Still, they provide a foundation for future investments and institutional coordination in the sector.

6. *Smallholder Commercialization Programme and the Ministry of Agriculture's GIS Unit (Ongoing)*
The Ministry of Agriculture and Food Security has developed a GIS unit that supports land suitability mapping for various agricultural activities, including fish farming. While aquaculture-specific zoning using GIS is still at an early stage, this initiative lays the groundwork for more advanced spatial planning by providing geospatial data and capacity-building support to technical staff. While Sierra Leone's aquaculture sector continues to face serious climate-related challenges, these ongoing and past efforts reflect growing national awareness and commitment to addressing the problem. However, there is an urgent need to consolidate these efforts by mainstreaming climate adaptation into spatial planning, investing in aquaculture zoning using GIS, and fostering inter-agency collaboration to ensure sustainability.

Sources:

Ministry of Fisheries and Marine Resources, Sierra Leone (2024). Feed Salone Strategy 2024–2035.
USAID Sierra Leone (2023). Feed the Future Aquaculture Scaling Project Report.
UNDP (2024). Annual Results Report: Sierra Leone Coastal Resilience and Food Security.
World Bank (2023). WACA Platform: West Africa Coastal Areas Management Program – Country Profile: Sierra Leone.

UNFCCC (2021). Sierra Leone Updated NDC Submission. https://unfccc.int/NDC
FAO & Ministry of Agriculture and Food Security (2022). Agricultural Land Use and GIS Mapping in Sierra Leone.

Specific technology[1] barriers (up to one page):

This section should answer the questions "what are the technology barriers that hinder national efforts described above" and "how will the CTCN technical assistance complement these efforts?" Building upon the problem statement and taking into consideration the existing efforts described above, please describe the specific technology barriers encountered by the requesting applicant to identify, assess or deploy climate technology(ies) in an effort to address the problem statement. The described barriers should be within the scope of the requested CTCN technical assistance (described in the section below).

Despite Sierra Leone's growing policy momentum to develop climate-resilient aquaculture—most notably through the Feed Salone Strategy and donor-supported projects,significant technology-related barriers continue to hinder progress. One of the most critical challenges is the scarcity and fragmentation of environmental and climate data. Currently, hydrological, soil, land use, and climate datasets are either outdated, inaccessible, or inconsistently collected, with no centralized or regularly updated system. The absence of a functioning marine meteorological station further limits the ability to model and predict coastal flooding and salinity intrusion, which are vital for aquaculture site selection. In addition, **the GIS infrastructure within the Ministry of Fisheries and Marine Resources (MFMR) remains basic and**

[1] *"**any equipment, techniques, practical knowledge and skills** needed for reducing greenhouse gas emissions and adapting to climate change" (Special Report on Technology Transfer, IPCC, 2000)*

outdated, lacking modern tools to support spatial decision-making. Much of the spatial data management is still done manually, making it difficult to analyze or disseminate insights effectively.

A shortage of skilled professionals in geospatial analysis and climate risk assessment presents another major barrier. MFMR and other relevant ministries face significant capacity gaps, with limited training opportunities and minimal support for aquaculture extension services. This results in a situation where local farmers rarely receive guidance on suitable pond locations or climate-smart practices. The problem is compounded by limited digital infrastructure,poor internet connectivity, high costs, and frequent electricity outages,making it difficult to adopt cloud-based GIS platforms or access large datasets. Moreover, institutional and inter-agency coordination remains weak. There are no formal data-sharing agreements among ministries, and the absence of standardized metadata further reduces data usability across departments. Finally, the chronic underfunding of ICT maintenance and capacity-building efforts, amid Sierra Leone's high climate financing needs, means that any new technology often becomes obsolete or underutilized.

CTCN technical assistance directly addresses these barriers by **introducing a multi-criteria GIS-based dynamic mapping tool for aquaculture zoning that incorporates current and projected climate risks**. This tool will integrate layers such as hydrology, flood risk, soil quality, economic viability, and social factors to generate a suitability index for aquaculture site selection. By consolidating environmental and socio-economic data into a centralized, open-source platform, it fills current data gaps and fosters regular updates.

The **tool will include both web and offline mobile versions**, allowing extension agents to guide fish farmers even in areas with poor connectivity. Moreover, the technical assistance will build national capacity through targeted training of fisheries staff and local extension officers, equipping them with the skills to use and maintain the system long after the project ends. It will also formalize data-sharing frameworks between ministries and align with broader initiatives such as the West Africa Coastal Areas (WACA) Program and Sierra Leone's NDC implementation.

Overall, the tool complements national efforts by providing the technological foundation and practical workflows needed to transform policy intentions into field-level action. This will support climate-informed aquaculture investments, improve risk management, and enable more equitable access to land and water resources. In doing so, it acts as a catalyst for sustainable aquaculture growth while enhancing Sierra Leone's resilience to climate change.

Contribution to Programme of Work 2023-2027:

As per 3rd Programme of Work of the CTCN[2], please indicate the system transformation area, key enablers and cross-sectoral themes related to the request:

System transformation areas (mandatory)

☒ Water-Energy-Food Nexus
☐ Sustainable Mobility
☐ Energy Systems
☒ Buildings and Infrastructure
☒ Business and Industry

Key enablers (optional)

☐ National Systems of Innovation
☒ Digitalization

[2] https://www.ctc-n.org/resources/ctcn-third-programme-work-2023-2027

Cross-sectoral themes (optional)

☐ Gender ☐ Youth ☐ Indigenous Peoples

Sectors:

Please indicate the main sectors related to the request:

☐ Coastal zones	☐ Early Warning and Environmental Assessment	☐ Human Health	☐ Infrastructure and Urban planning
☒ Marine and Fisheries	☐ Water	☒ Agriculture	☐ Carbon fixation
☐ Energy Efficiency	☐ Forestry	☐ Industry	☐ Renewable energy
☐ Transport	☐ Waste management		

Please add other relevant sectors:

Technical assistance requested (up to one page):

Founded on the problem statement, past/on-going efforts and technology barriers, please describe the requested technical assistance. The technical assistance should clearly contribute to mitigation or adaptation to climate change as described in the problem statement and contribute to overcome the specific technology barriers. Please explore the CTCN website and WIPO Green Technology Database for more information on climate technology options.

Within a clearly defined scope, the description of technical assistance should be structured into the following:

- *Overall objective*
- *Anticipated groups of activities to be performed by the technical assistance*
- *Anticipated products to be delivered by the technical assistance.*

Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.

The **overall objective** of this technical assistance is to develop and deploy a climate-smart, multi-criteria GIS-based decision-support tool for aquaculture zoning in Sierra Leone that integrates environmental, climatic, and socio-economic data,including future climate projections,to identify suitable and non-suitable areas for fish farm development, strengthen institutional and technical capacity within relevant national agencies, and support local extension services in guiding sustainable, climate-resilient aquaculture investments.

Anticipated groups of activities to be performed by the technical assistance:

1. Development of a National Baseline Aquaculture Map

- Map existing aquaculture activities across Sierra Leone, categorized by investment level (extensive, semi-intensive, and intensive systems).

- Data collection will include geolocation (points or polygons) and classification by scale, technology used, and production type.
- Output will provide a spatial snapshot of aquaculture distribution to inform planning and identify trends, gaps, and pressures on ecosystems.

2. Generation of Key Environmental and Landscape Layers

- **2a. Terrain Analysis**: Create a Digital Elevation Model (DEM) to analyze slope and elevation, which influence water flow, drainage, and pond siting.
- **2b. Drainage and Hydrology**: Map rivers, streams, wetlands, and watersheds to evaluate water availability and flood risks.
- **2c. Climate Layers**: Compile relevant gridded (raster) climate data layers at monthly/seasonal scales, e.g. temperature, precipitation, and humidity averages relevant for fish species grown in Sierra Leone, and for site selection. Data maybe compiled from remote sensing and model sources.
- **2d. Land Use and Land Cover (LULC)**: Develop current LULC maps to identify suitable zones and assess potential land-use conflicts. Recently compiled national scale LULC maps with relevant land cover classes maybe used.

3. Integration of Climate Change Projections

- Incorporate Intergovernmental Panel on Climate Change (IPCC)-aligned future climate scenarios, including projected changes in temperature, rainfall, and extreme weather patterns.
- Include model outputs such as RCPs or SSPs relevant for aquaculture viability under medium- and long-term conditions.
- Assess how climate variables interact with hydrology, land degradation, and aquaculture suitability.

4. Geospatial Suitability Analysis for Aquaculture Siting

- Perform multi-criteria analysis (MCA) to evaluate and rank aquaculture suitability based on biophysical, climatic, and socio-economic criteria.
- Overlay current and projected development patterns, including infrastructure, agriculture expansion, and land degradation.
- Output a suitability index and zoning layers to inform government, investors, and communities on optimal and risk-prone areas.

5. Development of a Climate-Smart Aquaculture Zoning Tool

- Combine input layers and geospatial models into a dynamic, user-friendly GIS-based tool.
- Enable both static and dynamic queries for site selection, investment guidance, and planning based on current and future conditions.
- Facilitate tool usability by national agencies, especially the Ministry of Fisheries and Marine Resources (MFMR) and local extension officers, through training and preparation of relevant manuals on the use of the tool.

6. Creation of a Web-Based GIS Portal and Simulation Platform

- Design and launch an interactive web portal to host GIS layers, aquaculture suitability maps, and simulation tools.
- The platform will allow real-time exploration of different development and climate scenarios, including future aquaculture expansion.
- Ensure offline capabilities and mobile-access features for use in field settings by extension agents.

7. Capacity Building and Institutional Support

- Deliver training sessions for government staff, particularly from MFMR, EPA-SL, and related ministries, on the use, interpretation, and maintenance of the tool.
- Establish protocols for data sharing, tool updates, and long-term sustainability.
- Promote stakeholder engagement to ensure local ownership and effective integration into policy and planning frameworks.

Anticipated products to be delivered by the technical assistance

- National Baseline Aquaculture Map
- Environmental and Climate Data Layers
- Climate Projection Layers (IPCC-based)
- Multi-Criteria Suitability Index for Aquaculture Zoning
- Geospatial Analysis of Aquaculture vs. Land Use Change Drivers
- Interactive Web-based GIS Portal
- Climate-Smart Aquaculture Zoning Tool (Decision-Support System)
- Capacity Building Materials and Training Reports
- Data Sharing and Maintenance Protocols

Expected timeframe:

Please indicate the expected duration period for the requested technical assistance. Please note CTCN technical assistance usually has a duration of 15 months but can vary depending on the scope of activities.

This TA will be for a period of **15 months.**

Anticipated gender and other co-benefits from the technical assistance:

Please describe the activities with gender linkages as well as the anticipated gender and other co-benefits (e.g. biodiversity, economic, social, cultural, etc.) that are likely to be generated as a result of the technical assistance.

For more information you can find guidelines on the CTCN's website here:
https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development

Further reading on gender can be found on the CTCN website here:
https://www.ctc-n.org/technology-sectors/gender

The technical assistance is expected to generate important gender and social co-benefits alongside its primary climate and technological outcomes. By developing a decision-support tool that identifies suitable aquaculture zones based on environmental, economic, and social factors, the project can promote more inclusive access to land and water resources, particularly for women and youth who often face systemic barriers in agriculture and aquaculture. The mapping and zoning outputs will support targeted extension services that can prioritize marginalized and underrepresented groups, enabling them to engage in climate-resilient fish farming ventures. Moreover, the capacity-building activities—including GIS training and tool use—will actively encourage the participation of women professionals and extension officers, thereby contributing to gender balance in technical fields. The creation of mobile- and offline-accessible tools also ensures that remote or low-connectivity communities, where women often play a leading role in small-scale farming, can benefit from the technology. Overall, the technical assistance will help bridge digital and gender divides while fostering equitable participation in Sierra Leone's climate-resilient aquaculture economy.

Anticipated follow-up activities after this technical assistance are completed:

Please describe the expected future use of the outputs and deliveries produced by this technical assistance, after the CTCN implementation is completed. For example, what organizations or stakeholders will use the outputs of the technical assistance after it is completed, for what purpose, at what scale and scope the outputs and deliveries will be applied, when and what will be the next steps undertaken, what options exist to scale up the results, what funding could be leveraged, etc.

- Following the completion of this technical assistance, the tools, datasets, and knowledge products developed are expected to be actively used and scaled up by various government agencies, development partners, and private sector actors to guide sustainable aquaculture expansion and climate-resilient investment planning across Sierra Leone. The Ministry of Fisheries and Marine Resources (MFMR), as the lead national institution, will integrate the GIS-based aquaculture zoning tool into its long-term planning and extension services to inform the siting of new fish farms, particularly under the ongoing implementation of the *Feed Salone Strategy (2024–2035)*. Extension officers will use the mobile version of the tool to advise smallholder farmers and entrepreneurs on suitable pond locations, reducing the risk of investment failure and enhancing climate adaptation outcomes at the community level.

- In addition to MFMR, the Ministry of Agriculture and Food Security, the Environmental Protection Agency (EPA-SL), and the Ministry of Lands, Housing, and Country Planning are expected to use the spatial outputs to align land use and environmental permitting processes with aquaculture development, reducing cross-sector conflicts and promoting integrated natural resource management. Development partners such as FAO, UNDP, and the World Bank may also use the datasets and suitability index to guide donor-funded aquaculture or climate adaptation programs, particularly in high-priority areas like Tonkolili, Moyamba, and coastal regions vulnerable to sea-level rise.

- At a broader scale, the web-based GIS portal and simulation platform will serve as a national knowledge hub for aquaculture and climate information, accessible to policymakers, researchers, NGOs, and investors. The standardized datasets and zoning outputs will feed into regional platforms such as the West Africa Coastal Areas (WACA) Observatory, promoting cross-border data harmonization and enabling Sierra Leone to access regional adaptation financing and technical cooperation.

- Future steps may include integrating the tool with national climate monitoring systems, updating the suitability index as new data become available, and embedding the platform into national digital services through the e-Government strategy. There is strong potential for scaling the results through partnerships with regional research institutions and climate funds. For instance, funding for follow-up activities could be sourced from the Green Climate Fund (GCF), Adaptation Fund, or bilateral donors supporting Sierra Leone's NDC implementation. Additionally, the outputs could support the design of bankable aquaculture investment proposals for the private sector, fostering a resilient and inclusive blue economy.

Key stakeholders:

Please list the stakeholders who will be involved in the implementation of the requested CTCN technical assistance and describe their role during the implementation (for example, government agencies and ministries, academic institutions and universities, private sector, community organizations, civil society, etc.).

Stakeholders	Role to support the implementation of the technical assistance
National Designated Entity	Supervise TA implementation and support data collection
Ministry of Fisheries and Marine Resources (MFMR)	Provide access to existing aquaculture data, facilitate stakeholder engagement, and champion the integration of the GIS-based zoning tool into national aquaculture planning and extension services. The

	ministry will also lead dissemination efforts at district and community levels.
Environmental Protection Agency – Sierra Leone (EPA-SL)	Support the technical assistance by providing climate and environmental data, guiding the incorporation of climate projections, and ensuring alignment with national adaptation strategies and environmental policies. EPA-SL will also help validate suitability indicators related to climate hazards and land degradation.
Ministry of Agriculture and Food Security (MAFS)	Provide land use, soil, and agroecological data, and contribute to the GIS analysis. Its GIS unit will work closely with technical experts to ensure that the aquaculture zoning outputs align with national land suitability assessments and broader food system strategies.
Ministry of Lands, Housing and Country Planning (MLHCP)	MLHCP will contribute spatial planning data, cadastral maps, and zoning regulations. It will help ensure that the aquaculture zoning tool is consistent with broader land allocation and tenure policies, and support efforts to reduce land-use conflicts.
Statistics Sierra Leone (Stats SL)	Provide population, socio-economic, and infrastructure datasets to support the development of the suitability index.
Njala University and University of Sierra Leone (including Fourah Bay College)	Support data collection, and capacity building. They may co-host training sessions
Local Government Authorities and District Fisheries Officers	Support field mapping of aquaculture facilities, validate spatial data, and facilitate engagement with local farmers and aquaculture entrepreneurs. They will also be trained to use the tool and provide localized advisory services.
Private Sector (e.g., fish farm investors, hatcheries, feed suppliers)	Provide facility-level data and feedback on the usability of the zoning tool. Their input will help refine suitability criteria and enhance the tool's relevance for commercial decision-making.
Community-Based Organizations (CBOs) and Civil Society Organizations (CSOs)	Help ensure that the tool addresses equity and social inclusion. They will facilitate engagement with marginalized groups and assist in disseminating knowledge products at the community level.
Development Partners (e.g., FAO, UNDP, World Bank)	Provide technical input, align ongoing aquaculture and climate adaptation programs with the project, and potentially support follow-up investments or scale-up.

Alignment with national priorities (up to 2000 characters including spaces):

Please describe how the technical assistance is consistent with national climate priorities such as: Nationally Determined Contribution, national development plans, poverty reduction plans, technology needs assessments (incl. whether this request refers to any technologies prioritized within Technology Action Plans), Long-term Low Emission Development Strategies, National Adaptation Plans, GCF Country Programme, sectorial strategies and plans, etc.

Reference document (please include date of document)	**Extract** (please include chapter, page number, etc.).
Nationally Determined Contribution (NDC)	Direct alignment and contribution to NDC implementation is required for all CTCN technical assistances. Please include a direct reference to the INDC/NDC document (chapter, page number, etc.).

	The proposed CTCN technical assistance (TA) is directly aligned with and helps operationalise several priority adaptation commitments in Sierra Leone's Updated Nationally Determined Contribution (NDC, July 2021).
	
	• **Blue-Economy & Aquaculture Priority.** In the NDC's list of mitigation and adaptation priority sectors, the **Blue Economy (4.1.5)** explicitly incorporate **aquaculture systems** and calls for support to small-holder and commercial aquaculture experiments to boost food security and livelihoods. By delivering a GIS tool that pin-points climate-resilient pond sites and de-risks private investment, the TA turns this high-level pledge into an actionable pipeline of bankable aquaculture projects.
	• The NDC identifies **Coastal Zone Management (4.1.8)** including fisheries, coastal ecosystems etc as an adaptation priority. Table 9 of the adaptation strategy mandates:
	  ○ Develop and operationalise an **integrated coastal-zone management plan**,
	  ○ Promotion of monitoring, control and surveillance of fishing grounds and
	  ○ Improve the **quality of topographic data**, delineate hazard (flood and erosion-prone) areas along the coastline. The TA's multi-criteria maps (terrain, hydrology, IPCC climate projections) deliver these data improvements and provide the spatial backbone for the envisaged coastal-zone plan.
	• **Technology Transfer & Capacity-Building.** Section 7.2 of the NDC underscores persistent gaps in data generation, collection and analysis and calls for **technology transfer** to strengthen governance and coordination. The TA responds by:
	  ○ Establishing an **open-source** geodatabase,
	  ○ Training MFMR, EPA-SL and district officers in GIS analytics, and
	  ○ Embedding an offline mobile app for extension agents directly addressing the capacity deficits flagged in the NDC.
	• **Measurement, Reporting & Verification (MRV).** The NDC sets MRV indicators such as number of climate-change vulnerability analyses and maps of the coastal zone developed and improved topographic data for the coastal zone. The TA produces these very outputs, enabling Sierra Leone to report demonstrable progress under the Paris Agreement.

Technology Needs Assessment and Technology Action Plan	
National Adaptation Plans	
GCF Country Programme	
Long-term Low Emission Development Strategies	
Add others here as relevant	

Development of the request (up to 2000 characters including spaces):

Please describe how the request was developed at the national level and the process used by the NDE to approve the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles?) and describe any consultations or other meetings that took place to develop and select this request, etc.

Request was developed with consultations between the CTCN, Sierra Leone NDE and the Ministry of Fisheries and Marine Resources (MFMR) of Sierra Leone.

Background documents and other information relevant for the request:

- *Please list all relevant documents that will help the CTCN analyze the context of the request and national priorities. Please note that all documents listed/provided should be mentioned in this request in the relevant section(s), and that their linkages with the request should be clearly indicated. For each document, please provide web-links (if available) or attach to the submission form. Please add any other relevant information as required.*

OPTIONAL: Linkages to Green Climate Fund Readiness and Preparatory Support

The CTCN is collaborating with the GCF in order to facilitate access to environmentally sound technologies that address climate change and its effects, including through the provision of readiness and preparatory support delivered directly to countries through their GCF NDA. These actions are in line with the guidance of the GCF Board (Decision B.14/02) and the UNFCCC, particularly paragraphs 4 and 7 of 14/CP.22 and paragraph 4, 7 and 8 of 14/CP.24 that addresses Linkages between the Technology and the Financial Mechanisms[3].

The CTCN is therefore implementing some of its technical assistance using GCF readiness funds accessed via the country's NDA. Any application for GCF support, including the amount of support provided, is subject to the terms and conditions of the GCF and should be developed in conjunction with the NDA.

Please indicate whether this request has been identified as preliminarily eligible by the NDA to be considered for readiness support from the GCF.

☐ Initial engagement: The GCF NDA of the requesting country has been engaged in the design of this request and the NDA will be involved in the further process leading to an official agreement for accessing GCF readiness support.

☐ Advanced engagement (preferred): The GCF NDA of the requesting country has been directly involved in the design of this request and is a co-signer of this request, the signature indicating provisional agreement to use readiness national funds to support the implementation of the technical assistance.

NDA name:

Date:

Signature:

[3] Please see:
https://unfccc.int/files/meetings/marrakech_nov_2016/application/pdf/auv_cop22_i8b_tm_fm.pdf

UN environment programme | CTCN UN Climate Technology Centre & Network

CTCN Technical Assistance
Request Submission Form
Version: 05/2025

NDA name: Ibrahim S. Kamara
Date: 16/07/2025
Signature: I Kamara

Monitoring and impact of the assistance:

By signing this request, I affirm that processes are in place in the country to monitor and evaluate the technical assistance provided by the CTCN. I understand that these processes will be explicitly identified in the CTCN Response Plan and that they will be used in the country to monitor the implementation of the technical assistance following standard CTCN procedures. This includes the active engagement as NDE together with the key project proponent / beneficiary in regular project steering meetings.

I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country. This includes the completion of NDE feedback and post-implementation forms.

Signature: I Kamara
NDE name: Sierra Leone Meteorological Agency
Date: 16/07/2025
Signature: I Kamara

THE SIERRA LEONE METEOROLOGICAL AGENCY
DIRECTOR GENERAL
SIGN _____
DATE _____
F 18 CHARLOTTE ST. FREETOWN

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

The CTCN is available to answer all questions and provide guidance on the application process.