Project title: Enhancing the resilience of vulnerable coastal communities in Sinoe County of Liberia		
Country: Liberia	**Implementing Partner (GEF Executing Entity):** Environmental Protection Agency (EPA)	**Execution Modality**: National Implementation Modality (Full NIM)
Contributing Outcome: UNDAF: Outcome 2/ UNDP Outcome 1 — By 2024, Liberia has diversified and inclusive economic growth underpinned by investments in sustainable and environmentally friendly agriculture, food security, job creation and improved resilience to climate change and natural disasters.		
UNDP Social and Environmental Screening Category: High	**UNDP Gender Marker:** GEN 2	
Atlas Award ID: 00146390	**Atlas Project/Output ID:** 00133455	
UNDP-GEF PIMS ID number: 6470	**GEF Project ID number:** 10376	
LPAC meeting date: 2 May 2022		
Last possible date to submit to GEF: 3 December 2021		
Latest possible CEO endorsement date: 27 May 2022		
Project duration in months: 72		
Planned start date: November 27, 2022	**Planned end date:** November 26, 2028	
Expected date of Mid-Term Review: November 27, 2025	**Expected date of Terminal evaluation**: August 26, 2028	
Brief project description: Coastal communities of Liberia are threatened by damaging floods and erosion, both of which are increasing as a result of sea level rise as well as other impacts of climate change such as increasingly intense rainfall events. There is currently limited financial and technical capacity at the national and county levels to address these threats. The proposed project aims to build on existing projects to strengthen the resilience of vulnerable coastal communities and their livelihoods to the impacts of climate change, focusing on women and youth. Specifically, project interventions include: i) strengthening institutional capacity for climate change adaptation planning; ii) supporting innovative technologies for climate information and communication management; iii) introducing hybrid adaptation solutions; and iv) supporting resilient livelihood diversification through training and improved access to finance. The majority of the above interventions will target all coastal counties in Liberia, while hybrid adaptation interventions will be implemented specifically in Sinoe County, one of the country's most vulnerable counties.		
FINANCING PLAN		
GEF Trust Fund grant: LDCF	USD 8,932,420	
Confirmed cash co-financing to be administered by UNDP	USD200,000	

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(1) Total Budget administered by UNDP	USD9,132,420	
(2) Total confirmed co-financing	USD11,273,510	
(3) Grand-Total Project Financing (1)+(2)	USD20,405,930	
Signatures:		
Signature: print name below SAMUEL D. TWEAH, JR	Agreed by Government Development Coordination Authority[1]	**Date/Month/Year:** *within 6 months of GEF CEO endorsement* 30 Sept. 2022
Signature: print name below WILSON TARPEH	Agreed by Implementing Partner[2] EPA	**Date/Month/Year:** *within 6 months of GEF CEO endorsement* 30 Sept. 2022
Signature: print name below STEPHEN RODRIQUES	Agreed by UNDP[3]	**Date/Month/Year:** *within 6 months of GEF CEO endorsement*

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I. TABLE OF CONTENTS

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Acronyms

AfDB	African Development Bank
AfT	Agenda for Transformation
BRAC	Building Resources Across Communities
CAPs	Community Action Plans
CBOs	Community-based organisations
CCA	climate change adaptation
CI	Conservation International
CO	Country Office
CRP	County Resilience Plan
CSEBs	compressed stabilised earth block
DRM	disaster risk management
EKMS	Environmental Knowledge Management System
EPA	Environmental Protection Agency
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
EVD	Ebola Virus Disease
EWS	early warning system
FDA	Forest Development Authority
FPIC	Free, Prior and Informed Consent
GAP	Gender Action Plan
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	global information system
GoL	Government of Liberia
GRM	Grievance redress mechanism

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GVL	Golden Veroleum Liberia
HDI	Human Development Index
IDPs	internally displaced persons
IFS	integrated farming systems
INC	Initial National Communications
INDC	Intended Nationally Determined Contribution
IPs	impact pathways
ICZM	integrated coastal zone management
LACE	Liberia Agency for Community Empowerment
LDCF	Least Developed Country Fund
LHS	Liberia Hydrological Service
LIFSCAA	Liberia Private Sector Climate Action Alliance
LMCPAs	locally managed coastal protected areas
LMS	Liberia Meteorological Service
M&E	monitoring and evaluation
Masl	metres above sea level
MEBA	Micro-finance for Ecosystem-Based Adaptation
MFDP	Ministry of Finance and Development Planning
MFIs	Microfinance finance institutions
MME	Ministry of Mines and Energy
MMCRP	Monrovia Metropolitan Climate Resilience Project
MoA	Ministry of Agriculture
MoCI	Ministry of Commerce and Industry
MoPW	Ministry of Public Works
MoT	Ministry of Transport
MoU	Memorandum of Understanding
MSME	Micro, Small and Medium Enterprises
MTR	Mid-term Review
NAFAA	National Fisheries and Aquaculture Authority
NAPA	National Adaptation Plan of Action
NAPs	National Adaptation Plan
NBSAP	National Biodiversity Strategy and Action Plan
NCCS	National Climate Change Secretariat
NDC	Nationally Determined Contribution
NDMA	National Disaster Management Agency
NDP	National Development Plans
NEP	National Environmental Policy
NGO	Non-governmental organisation
NPRSCC	National Policy and Response Strategy on Climate Change
NTFPs	non-timber forest products
PAPD	Pro-Poor Agenda for Prosperity and Development
PIR	Project Implementation Report
PMU	Project Management Unit
PPP	public-private partnerships
SCNL	The Society for Conservation of Nature

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SESP	Social and Environmental Screening Procedure
SLR	Sea level rise
SRDIMP	Sea and River Defence Investment Management Plans
SRDRM	sea and river defence and risk management
SRDRMPs	Sea and River Defence and Risk Management Plans
TE	Terminal Evaluation
TNA	Technology Needs Assessment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organisation
VHF	very high frequencies
WASH	water, sanitation and hygiene

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II. DEVELOPMENT CHALLENGE

II.1. Country context

II.1.1. Geographic and Environmental Context

Liberia is a West African coastal country located in the equatorial region, on the borders of Sierra Leone to the northwest, Guinea to the northeast, Côte d'Ivoire to the east and the North Atlantic Ocean to the south[4]. The country covers a total land area of 111,369 km^2 and has four distinct elevation zones, namely the coastal belt (0–60 metres above sea level [masl] and ~40 km wide), rolling hills (60–150 masl), plateaus (150–500 masl) and northern highlands (>500 masl, peaking at 1,380 masl). These elevation zones are shown in Figure 1 below[5].

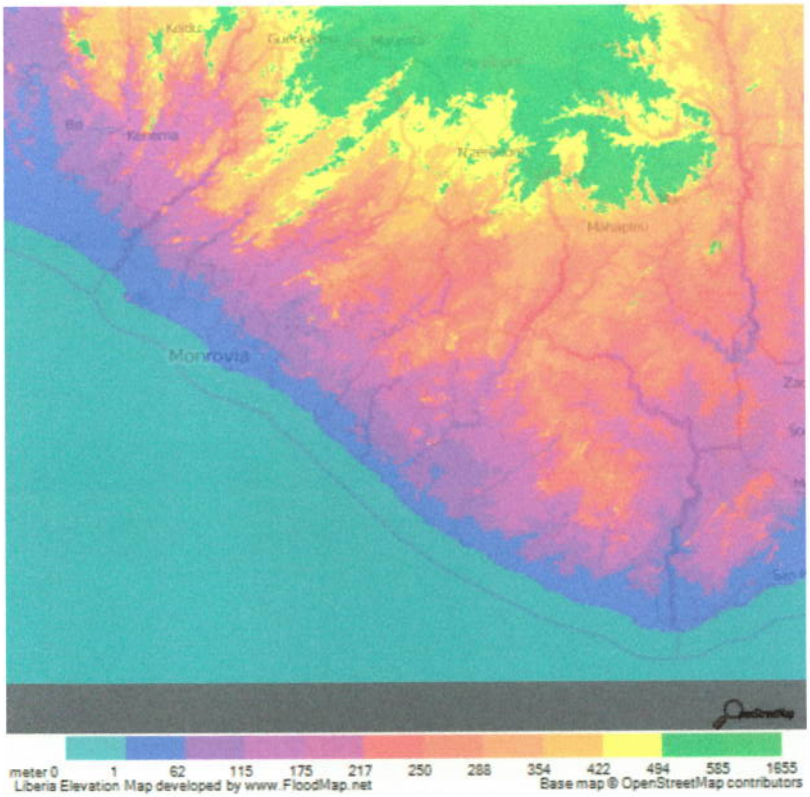

Figure 1. Elevation profile of Liberia. There are four distinct elevation zones: coastal belt (dark purple), rolling hills (light purple), plateaus (red to yellow) and northern highlands (yellow to green)[6].

Liberia's ecosystems are dispersed across the four main elevation zones and the country's ecoregions (Figure 1 and Figure 2, respectively)[7]. The coastal belt, which extends up to 65 km inland, includes coastal and marine ecosystems, open savannas and degraded forests (Coastal Plains in Figure 2). Open savanna occurring in this region is characterised by seasonal waterlogging during the wet season. Within the rolling hills, tropical evergreen forests

[4] Stanturf J, Goodrick S, Warren M, Stegall C & Williams M. 2013. Liberia: Climate Change Assessment. [online]. Available at: https://www.researchgate.net/publication/237102310_LIBERIA_CLIMATE_CHANGE_ASSESSMENT

[5] Nations Encyclopedia. 2021. *Liberia — Topography*. Available at: https://www.nationsencyclopedia.com/Africa/Liberia-TOPOGRAPHY.html

[6] FloodMap. 2021. *Liberia Elevation Map*. Available at: https://www.floodmap.net/Elevation/CountryElevationMap/?ct=LR

[7] These have been identified in the National Biodiversity Strategy and Action Plan II (2017–2025).

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are found in the southeast, semi-deciduous forests in the northwest and degraded forests in the centre (Tropical Forest Zone [TFZ], Interior Plateau [IP] and Degraded Forest [DFL], respectively in Figure 2). The plateau region includes degraded forests, semi-deciduous forests, and the Bong Interior Plateau (DFL, Wooded Plateau [WPt] and Bong Interior Plateau [BIP], respectively in Figure 2) where most of Liberia's arable land is concentrated. Finally, the northern highlands include semi-deciduous forests, savanna woodlands and 11 mountain ranges, particularly along the Guinean border (Montane Forest Zone [MFZ] and WPt, respectively in Figure 2)[8,9]. Liberian savanna woodlands are composed of a mosaic of small, forested stands interspersed across grasslands (WPt, Figure 2)[10]. Project sites which will be targeted for on-the-ground coastal resilience and livelihood interventions under Components 3 and 4, respectively — including Downtown-Mississippi (Greenville), Sebeh, Nanakru, Tournata, Bafu Bay and Pungbor — are all located along the coastal belt within Sinoe County and are characterised by mangrove and coconut forests (Figure 5). The following paragraphs provide additional detail on the ecosystems within the project area, focussing on aquatic ecosystems, mangroves and forests.

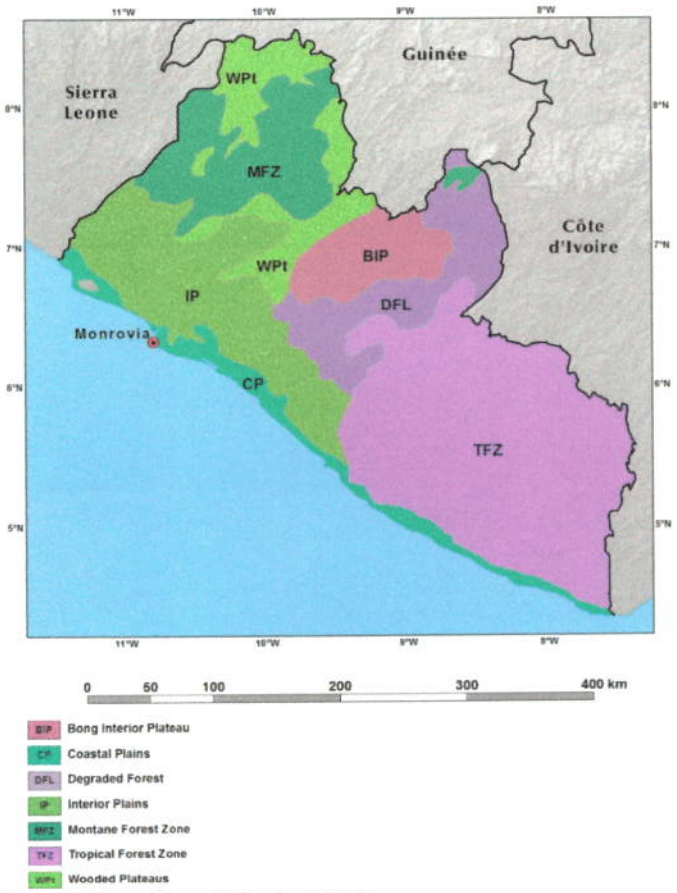

Figure 2. Ecoregions of Liberia, 2015[11].

Liberian aquatic ecosystems primarily comprise two sub-types, namely coastal and marine, and freshwater. Coastal and marine ecosystems extend across a 579 km long coastline, predominantly consisting of sand interspersed with lagoons, estuaries and swamp-related vegetation such as mangrove forests (detailed in the following paragraphs)[12].

[8] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[9] CILSS. 2016. Ecoregions and Topography of Liberia. Available at: https://eros.usgs.gov/westafrica/ecoregions-and-topography/ecoregions-and-topography-liberia
[10] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[11] Permanent Interstate Committee for Drought Control in the Sahel (CILSS). 2016. *Landscapes of West Africa — A Window on a Changing World*. Garretson (SD), U.S. Geological Survey EROS.
[12] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.

Liberia's freshwater ecosystems cover ~14% of the country's total land area and include surface water such as wetlands, lagoons, lakes and six principal rivers, which collectively provide ample water resources for the country[13]. These aquatic ecosystems have a considerable economic contribution to Liberia's Gross Domestic Product (GDP), particularly aquaculture and marine fisheries. Specifically, Liberia's fisheries sector accounts for 3% of real GDP[14], and approximately 60% of employees in this industry are women[15]. Many rural communities rely on these ecosystems for provisioning ecosystem services including: i) freshwater for irrigation, drinking, and household uses; ii) habitat for, *inter alia*, fish, reptiles, mollusks and amphibians; and iii) flood regulation; and iv) nutrient cycling. Inland wetlands are also important sites for rice cultivation[16]. In addition, freshwater ecosystems play an important role in hydroelectric energy generation, accounting for ~70% (88MW) of Liberia's total energy generation[17].

Mangrove forests occur in fragmented sites along Liberia's coastal region and are estimated to cover 0.5% of the country's total surface area, although data on the extent of mangroves are outdated[18]. These ecosystems provide a myriad of important services, including: i) habitat provision for, *inter alia*, birds, crocodiles and turtles; ii) spawning grounds for various fish species; iii) water filtration, which enhances water quality through filtering and trapping runoff and sediment; iv) coastal protection and erosion control, by acting as a physical buffer against storm surges from intense coastal storms; v) flood control and regulation; vi) the provision of energy through fuelwood and of non-timber forest products (NTFPs) for food and medicinal use; and vii) carbon sequestration in the form of 'blue carbon'[19,20].

Liberia's forests are subdivided into evergreen and moist semi-deciduous forests occurring in the southeast and northwest regions of the country, respectively (Figure 2). Both forest types receive relatively high levels of rainfall throughout the year, compared with other areas of Liberia, with higher rainfall levels recorded in evergreen forests (Figure 3)[21]. These forest ecosystems contribute significantly to Liberia's economy, with the forestry sector accounting for between 8 and 11% of real GDP over the 2012–2017 period[22]. However, activities such as logging and agro-industrial crop plantations for palm oil and rubber have led to extensive deforestation, with a total decline in forest cover in Liberia from ~90% of total land area (1959) to ~32% (2009). There are currently three protected forested areas[23] covering ~9% of the total forested area and 11 partially protected forests. The National Forest Reform Law (2006) has set the target of designating 30% of national forest cover to conservation, and two more protected areas are planned, which will raise the coverage of protected areas to ~26% of total forested areas[24,25].

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[13] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[14] 'Real GDP' measures GDP — the total value of all goods and services produced within the borders of a country in one year — adjusted for inflation. From: Ganti, A. 2021. Real GDP. Available at: https://www.investopedia.com/terms/r/realgdp.asp
[15] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[16] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[17] The remaining 38MW of electricity is generated from diesel and heavy fuel oil. From: USAID. N.d. Liberia: Power Africa Fact Sheet. Available at: https://www.usaid.gov/powerafrica/liberia
[18] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.
[19] Ibid.
[20] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[21] Ibid.
[22] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[23] These are the Sapo National Park I (southeast region), the Nimba Nature Reserve (northern region) and the Gola Peace Park (northwestern region). From: Republic of Liberia (RoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[24] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[25] EPA. 2016. Strategic Environmental and Social Assessment for the REDD-Readiness Preparation Activities of the Liberian Environmental Protection Agency: Final Environmental and Social Management Framework.

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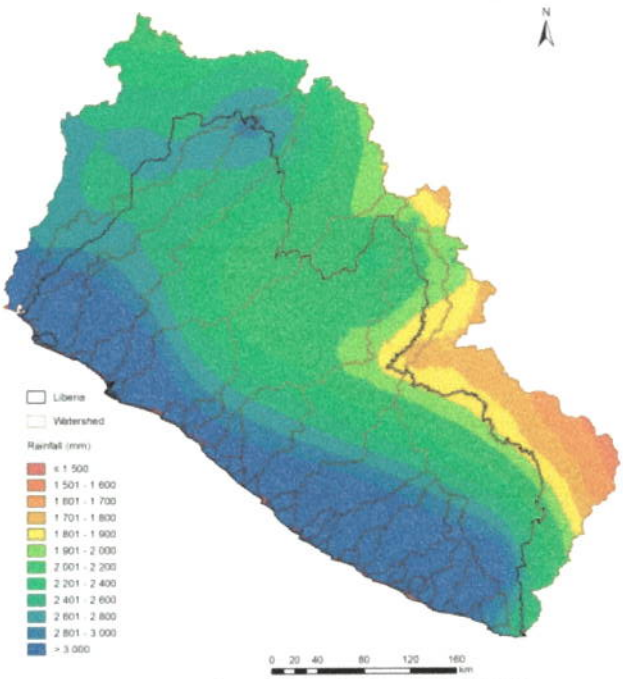

Figure 3. Average annual rainfall in Liberia, 1950–2000[26].

II.1.2. Social and demographic context

Liberia's total population is approximately 5.2 million people, of which ~51% are women[27,28]. The majority (~70%) of Liberians are under the age of 35, with ~45% being under the age of 15 as measured in 2016 (Figure 4 below). This age demographic results in an average age dependency ratio of 90%, indicating that a working adult in Liberia generally supports themselves and a child and/or elderly dependent[29]. This ratio is unevenly distributed geographically and is considerably higher (~103%) in rural areas compared with urban areas (~78%)[30].

[26] Government of Liberia (GoL). 2016. Rural Energy Strategy and Master Plan Annex VI: Hydro Resource Map of Liberia: Assumptions, Analysis and Outputs. Available at: https://liberiaruralenergy.gestoenergy.com/sites/default/files/B%20-%20Technical%20Report/6.%20ANNEX%20VI%20Hydro%20resource%20map%20of%20Liberia.pdf

[27] CIA World Factbook. 2021. Liberia: People and Society. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#people-and-society

[28] Government of Liberia (GoL). Liberia Pro-poor Agenda for Prosperity and Development.

[29] An age dependency ratio is a reflection of the proportion of total dependents in a population — classified as those under the age of 14 and those over the age of 65 — compared with the working age population, or those between the age of 15–64. This ratio is used as an indication of the economic burden of the workforce necessary to support their dependents. A high age dependency ratio is a reflection of a greater proportion of dependents in a population compared with those of working age. From: Hayes A. 2021. Dependency Ratio. Available at: https://www.investopedia.com/terms/d/dependencyratio.asp

[30] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.

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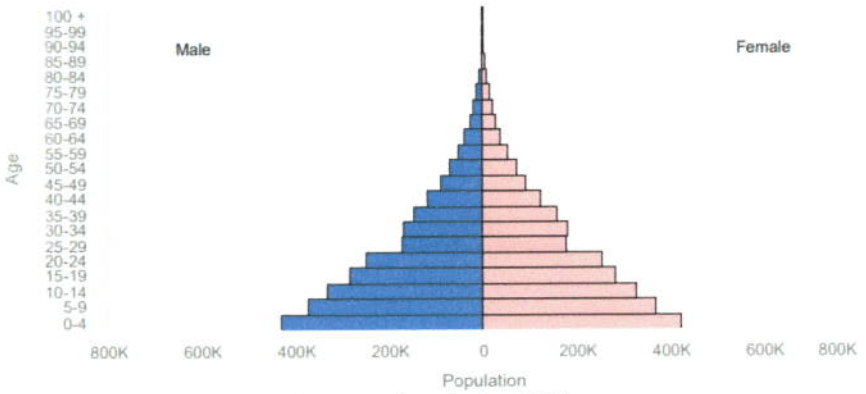

Figure 4. Liberia's population by age and gender in 2021[31].

More than half of Liberia's population lives in urban areas, and this trend has placed increasing pressure on urban infrastructure to meet the needs of its growing population. Affordable housing and improved sanitation systems are particularly limited, which has driven the increasing expansion of informal settlements in urban peripheral areas (the environmental impact of this expansion is detailed in Section II.2.4)[32]. The annual urbanisation rate was ~3% *per annum* from 2015 to 2020, and as a result, the country's urban population growth rate has consistently exceeded the national population growth rate[33]. The urban population is most concentrated around Monrovia as a result of displacement during the country's civil wars period (1989 to 2003), which was characterised by two civil wars (from 1989 to 1996 and 1999 to 2003). These wars resulted in considerable development challenges, including: i) economic stagnation; ii) rising unemployment and poverty rates; iii) the internal displacement of Liberian civilians and the creation of an international diaspora population[34]; and iv) the destruction of public infrastructure and the undermining of government institutions and service provision (further elaborated on in Section II.2.6)[35,36].

The development challenges outlined above have partially contributed to Liberia's relatively low Human Development Index (HDI)[37] scores over the last 20 years, consistently in the low human development category. HDI partially recovered from the civil war impacts, increasing by ~10% between 2000 and 2019 to 0.480 (currently ranked 175 out of 189 countries)[38]. Access to education is also low, with only ~38% of the population enrolled in secondary education in 2014[39]. There is a considerable disparity between expected and mean years of schooling

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[31] CIA World Factbook. 2021. Population Pyramid. Available at: https://www.cia.gov/the-world-factbook/static/adb35867130efbb4633b17f669232cba/LI_popgrowth2021.pdf

[32] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.

[33] CIA World Factbook. 2021. Liberia: People and Society. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#people-and-society

[34] 'Diaspora' refers to 'migrants or descendants of migrants, whose identity and sense of belonging have been shaped by their migration experience and background'. From: Migration Data Portal. 2020. Diasporas. Available at: https://migrationdataportal.org/themes/diasporas#:~:text=IOM%20defines%20diasporas%20as%20%E2%80%9Cmigrants,%2C%20%22diasporas%22%20is%20now%20generally

[35] CIA World Factbook. 2021. Liberia: People and Society. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#people-and-society

[36] Government of Liberia (GoL). Liberia Pro-poor Agenda for Prosperity and Development.

[37] The HDI was initially developed as an alternative to the use of GDP as a reflection of developed and measures health, education and standard of living to determine the level of development of a particular population. There are four criteria, which are: i) life expectancy at birth (health); ii) expected years of schooling (education); iii) mean years of schooling (education); and iv) GNI *per capita* (standard of living). From: UNDP. 2020. Liberia Human Development Report. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/LBR.pdf

[38] This increase in HDI can be attributed to numerous factors including, *inter alia,* reconstruction and development efforts initiated after the end of the civil war period in 2003. From: Cook, N. 2018. Liberia: Political Transition and US Relations. *Congressional Research Service,* R45195.

[39] Our World in Data. N.d. Gross enrollment ratio in secondary education, 1970 to 2014. Available at:

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(9.6 and 4.8 years, respectively)[40,41]. Nearly half (~48%) of Liberian adults are literate; however, there is a considerable gender disparity, with 63% of men classified as literate in 2017 compared with 34% of women[42]. Gender inequality is also apparent in the differential average years of schooling accessed by men and women (6.2 and 3.5 years, respectively). In addition, ~40% of men have access to at least some secondary education, compared with ~19% of women[43]. The impact of these developmental factors will be elaborated on in Section II.2.

II.1.3. Institutional context

Liberia is a unitary constitutional republic[44] with a multi-party republican democracy. The country's first constitution was written the year it gained independence (1847), and following a *coup d'état* in 1980, it was rewritten in 1986. Liberia's government structure is designed to maintain a separation of power between the legislative, executive and judicial branches. The legislature includes the Senate and the House of Representatives, which are responsible for, *inter alia,* the design and enactment of legislation. The central executive government is composed of the President — who is the leader of the executive and serves as the head of State — and the Cabinet, which are responsible for the daily operations of government. These cabinet members are selected by the President, based on the advice and approval of the Senate. Liberia is subdivided into 15 administrative divisions (counties), which comprise the local government (Figure 5). Counties are headed by superintendents — as appointed by the President[45] — and are further subdivided into districts, headed by commissioners. Cities within districts are additionally run by mayors.

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https://ourworldindata.org/grapher/gross-enrolment-ratio-in-secondary-education?tab=chart&country=~LBR

[40] 'Expected years of schooling' refers to the 'number of years that a child of school entrance age can expect to receive if prevailing patterns of age-specific enrolment rates persist throughout the child's life'. This figure often differs from the average or mean years of schooling, which is defined as the 'average number of years of education received by people ages 25 and older in their lifetime'. Differences between expected and average years of schooling can result from numerous factors which may arise throughout a child's life and cause that child to either continue their studies beyond the expected years of schooling, or end their studies prematurely. From: UNDP. N.d. Expected years of schooling (of children) (years). Available at: http://hdr.undp.org/en/content/expected-years-schooling-children-years
From: OPHI. 2011. Training material for producing national human development reports. Available at: http://www.ophi.org.uk/wp-content/uploads/OPHI-RP-29a.pdf-2011.pdf

[41] UNDP. 2020. Liberia Human Development Report. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/LBR.pdf

[42] CIA World Factbook. 2021. Population Pyramid. Available at: https://www.cia.gov/the-world-factbook/static/adb35867130efbb4633b17f669232cba/LI_popgrowth2021.pdf

[43] UNDP. 2020. Liberia Human Development Report. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/LBR.pdf

[44] A 'unitary state' is a system of government in which the governing authority and decision-making power is concentrated to the national government level and delegated to the sub-national and local levels accordingly. The powers and authority of this national government are determined by the constitution, which is the highest authority in the land, and may be subject to interpretation by constitutional courts. From: Law Corner. 2020. What Are The Unitary And Federal Constitution? Difference Between Them. Available at: https://lawcorner.in/what-are-the-unitary-and-federal-constitution-difference-between-them/

[45] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.

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Figure 5. Administrative (county level) division of Liberia[46].

II.1.4. Economic context

Liberia is a low-income country with a total GDP of USD3.07 billion and one of the lowest GDP *per capita* scores globally (ranked 222 out of 228 countries in 2019 at USD1,498/annum)[47,48]. The country's services sector has the largest contribution to GDP (~52%), followed by agriculture (~34%) and industry (~19%). Major exports include rubber, timber, iron, diamonds, cocoa and coffee[49]. Despite agriculture's relatively lower contribution to economic development, ~70% of Liberians are economically active in the sector, followed by 22% in services and 8% in industry[50]. However, accurate estimates of employment distribution are limited, as ~80% of the working-age population are estimated to be employed in the informal sector[51]. Across Liberian coastal counties, household production of the major crop cassava ranges from 3 – 39% (Sanquin District #2 County) to 86–96% (Dugbe River County, Figure 6 below).

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[46] UNEP. 2004. *Desk Study on the Environment in Liberia.* United Nations Environment Programme, Genève.
[47] World Bank Data. N.d. GDP (current USD) – Liberia. Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=LR
[48] CIA World Factbook. 2021. Liberia: Economy. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#economy
[49] CIA World Factbook. N.d. Country Comparisons — Real GDP per capita. Available at: https://www.cia.gov/the-world-factbook/field/real-gdp-per-capita/country-comparison
[50] CIA World Factbook. 2021. Liberia: Economy. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#economy.
[51] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.

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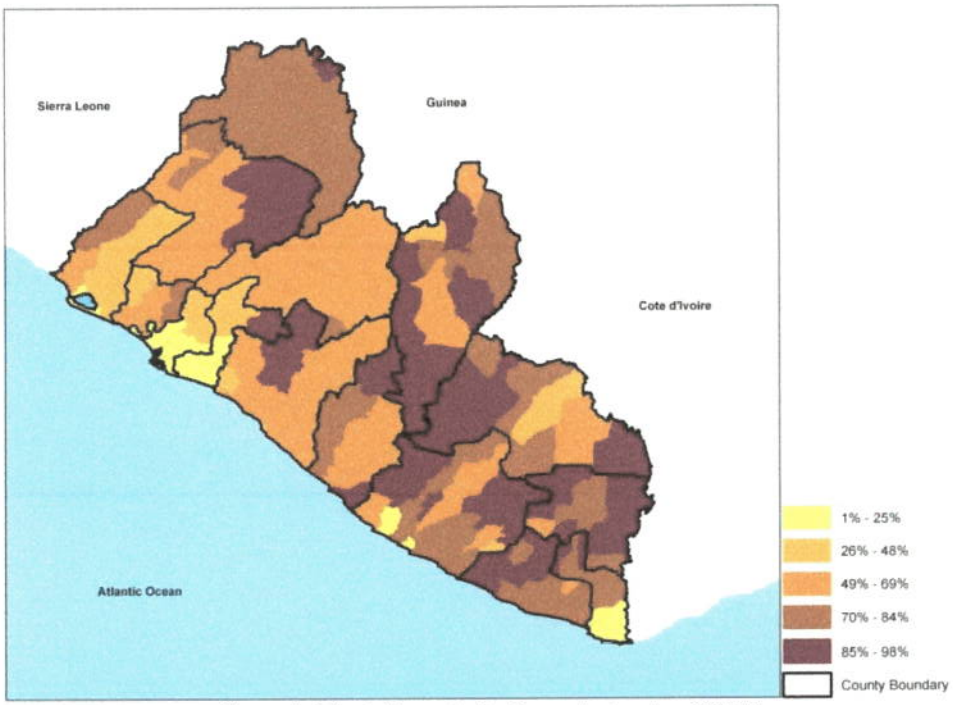

Figure 6. Percentage of households within each district producing rice, 2008[52].

Approximately 80% of Sinoe County residents cultivate cassava as an agricultural livelihood strategy, which is often processed into *gari*, *fufu*, *dipa* and cassava powder for bread and starch. The majority (~80%) of this production is subsistence based, and most (~88%) cassava farmers do not have agricultural equipment and rely exclusively on manual labour. Fifteen percent of the population in Sinoe also work in marine fisheries, resulting in overlap between people employed in the fisheries sector and those who also cultivate crops for livelihood and subsistence purposes.

Between 1989 to 1995, the economic growth of Liberia — measured in GDP — declined by ~90%, one of the largest global declines in history. This decline was primarily attributable to the civil war from 1989 to 1996 [53]. The civil wars also resulted in a sizeable Liberian diaspora of ~500,000, who have an important economic contribution via remittances, which accounted for ~27% of national GDP in 2017[54]. Although the economy has begun to recover from these conflicts, recovery has been slowed by the 2007–2008 global financial crisis and an Ebola outbreak in 2014. As a result, the GDP growth has fluctuated considerably over the last two decades (Figure 7)[55]. The current Covid-19 pandemic, in a similar way to the Ebola outbreak, is projected to have considerable negative impacts on Liberia's economy by reducing demand for the country's exports and disrupting investment in the mining, agriculture and forestry sectors[56]. GDP in 2020 declined by ~2.9%, largely as a result of the Covid-19 pandemic[57].

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[52] Stanturf *et al*. 2013. Liberia: Climate Change Assessment.
[53] Government of Liberia (GoL). 2013. INC to the UNFCCC.
[54] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[55] World Food Programme. N.d. Liberia. Available at: https://www.wfp.org/countries/liberia#:~:text=Poverty%20and%20food%20insecurity%20are,than%20US%241.25%20a%20day.
[56] The World Bank Group. 2020. Liberia Economic Update, First edition. The Covid-19 Crisis in Liberia: Projected impact and policy options for a robust recovery.
[57] The World Bank Group. 2021. GDP growth (Annual %) - Liberia. [online] Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=LR
https://www.worldbank.org/en/country/liberia/overview

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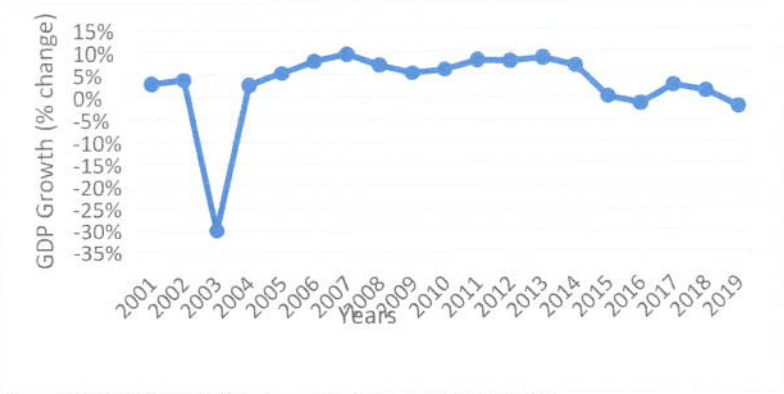

Figure 7. GDP Growth (% change) in Liberia, 2000–2018[58].

Electricity generation capacity was also negatively affected by the abovementioned civil wars, with two hydropower plants both destroyed during this period[59]. The current generation capacity is insufficient to meet the population's needs, and only 12% of Liberians had access to electricity in 2019[60]. Prior to the restoration of the 88MW Mount Coffee hydropower plant in 2016, Liberia's energy tariffs were among the highest in the world (USD0.52/kWh in 2012) and have since decreased to between USD0.39/kWh and USD0.45/kWh (2017). However, limited access to electricity results in a considerably higher cost of self-generated electricity using diesel-powered generators (USD0.75/kWh)[61]. Given the low levels of access to formal electricity caused by these barriers, a large portion of the population (95% in 2009[62]) relies on inefficient biomass resources, such as fuelwood, to meet their energy needs. This has negative implications for Liberia's forest ecosystems and is linked to heightened rates of deforestation (Section II.2.5)[63]. Liberia's National Energy Policy (2009) highlighted limited access to electricity as a significant obstacle to economic development, which undermines the viability of numerous livelihoods in the country[64]. Moreover, Liberia's transport network is underdeveloped, with only ~5% of the roads paved, which results in the majority of the country's roads being unusable during the wet season[65]. This is a considerable constraint to economic growth and development as it inhibits the flow of goods and services, particularly in more isolated counties such as Sinoe[66].

Liberia's development is further impeded by the inability of the country's currently fragile economy to provide adequate employment opportunities to most of the population. Although the national unemployment rate is relatively low (2.8%), youth unemployment[67] is significantly higher at 27%. Youth unemployment has been identified as a considerable obstacle to medium- and long-term economic growth as ~64% of Liberia's population is under the age of 24[68,69]. Despite low unemployment levels, in 2016 over half (~51%) of Liberians lived below the

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[58] Knoema. N.d. Liberia – Gross domestic product in current prices growth rate. [online] Available: https://knoema.com/atlas/Liberia/topics/Economy/National-Accounts-Gross-Domestic-Product/GDP-growth?action=export&gadget=indicator-preview-host

[59] Government of Liberia (GoL). 2013. INC to the UNFCCC.

[60] CIA World Factbook. 2021. Liberia: Energy. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#energy

[61] Energypedia. N.d. Liberia Energy Situation. Available at: https://energypedia.info/wiki/Liberia_Energy_Situation#:~:text=Due%20largely%20to%20expensive%20diesel,less%20than%20US%20%240.75%2FkWh.

[62] Government of Liberia (GoL). 2009. *National Energy Policy*.

[63] Clement, A. 2019. Community Forest in Liberia: The Interface between Sustainable Charcoal Production and Deforestation. *Capstone Collection,* 3197.

[64] Government of Liberia (GoL). 2009. *National Energy Policy*.

[65] International Monetary Fund (IMF). 2019. Liberia: 2019 Article IV Consultation—Press Release; Staff Report; and Statement by the Executive Director for Liberia. *IMF Country Report 19/169.*

[66] Government of Liberia (GoL). 2018. Pro-Poor Agenda for Prosperity and Development 2019–2023.

[67] 'Youth unemployment' refers to a category of working-age adults between the ages of 15–34.

[68] CIA World Factbook. 2021. Liberia: People and Society. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/#people-and-society

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national poverty line[70], and in 2015 ~12% of Liberian families were estimated to be food insecure[71]. These poverty rates are unevenly distributed geographically and range from ~20% (Montserrado County) to 84% (Maryland County). In Sinoe County, ~46% of the population live in absolute poverty, ~19% experience food poverty and ~8% experience extreme poverty[72]. These factors constrain the adaptive capacity of Liberians and considerably increase the population's vulnerability to climate change.

II.2. Root causes of vulnerability and baseline drivers of degradation

The socioeconomic challenges described above have contributed to numerous non-climatic impacts that have, in turn, driven the increasing degradation of Liberia's coastal, riparian and forest ecosystems. These drivers — which are described in detail below — include sand mining, overfishing, pollution of water resources, encroachment into the coastal zone, as well as the impacts of the 1989 to 1996 and 1999 to 2003 civil wars on the country.

II.2.1. Sand mining

Although officially governed under Liberia's Environmental Protection Agency Act (2003)[73], sand mining along the Liberian coastline is often poorly regulated and at times entirely illegally practiced. In recent years, both regulated and illegal sand mining have increased in intensity because of the greater demand for construction sand linked to population growth in coastal settlements (Figure 8 below). In 2008, for example, an estimated 125,000 m^3 of sand was removed from coastal areas for construction purposes[74], while beach losses of 3 m/yr have been observed in extreme cases[75].

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[69] Adolescent Girls Initiative. 2014. Can skills training increase employment for young women? The Case of Liberia. Available at: http://documents1.worldbank.org/curated/en/588971468048858262/pdf/900690BRI0P11000Box385299B00PUBLIC0.pdf

[70] World Bank Data. N.d. Poverty headcount ratio at national poverty lines (% of population) – Liberia. Available at: https://data.worldbank.org/indicator/SI.POV.NAHC?locations=LR

[71] World Food Programme. N.d. Liberia.

[72] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.

[73] This Act establishes the Environmental Protection Agency to coordinate and monitor all activities which may impact Liberia's natural environment and includes the mandatory completion of an Environmental Impact Assessment and Environmental Impacts Statements to obtain permission prior to beginning activities. However, the enforcement of these regulations is inadequate and inconsistent. From: Wilson STK, Wang H, Kabenge M & Qi X. 2017. The mining sector of Liberia: current practices and environmental challenges. *Environmental Science and Pollution Research*, 24:18711–18720.

[74] Kalinski V. 2019. Climate hazard, vulnerability and risk assessment for the coastal zone of Liberia. From: Project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

[75] Stanturf J, Goodrick S, Warren M, Stegall C & Williams M. 2013. Liberia: Climate Change Assessment. Available at: https://www.researchgate.net/publication/237102310_LIBERIA_CLIMATE_CHANGE_ASSESSMENT.

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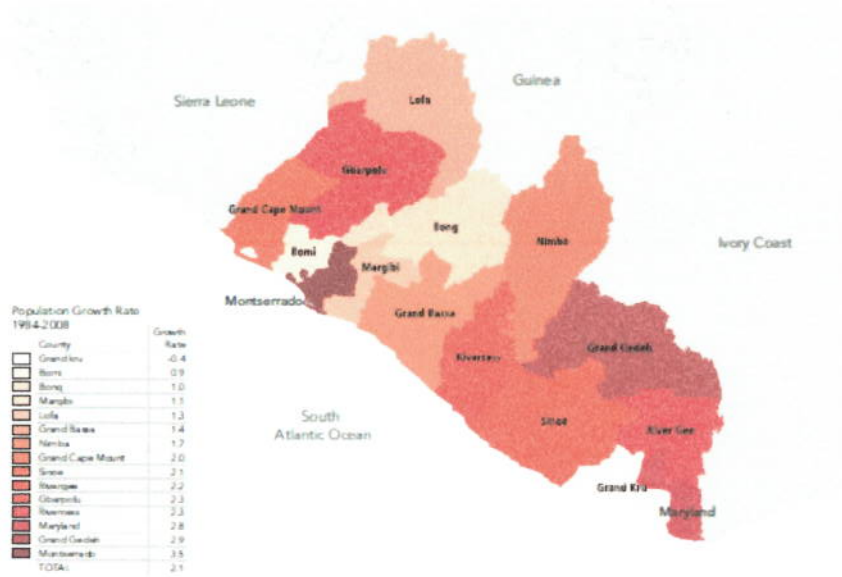

Figure 8. Population Growth Rate in Liberia by County, 1984–2008[76].

Sand mining has resulted in widespread negative environmental and socioeconomic impacts in Liberia. For example, the removal of natural coastal barriers, such as dunes, has led to increased beach degradation in the form of erosion as well as flooding in coastal areas. These impacts have, in turn, resulted in damage to houses and other critical infrastructure while also undermining the future potential for tourism in affected natural areas. Consequently, the vulnerability of residents in coastal settlements to climate hazards has increased — for example, extensive sand mining reduces the ability of coastal ecosystems to provide a buffer against storm surge for nearby settlements, leaving residents increasingly exposed to climate hazards. Such extensive sand mining, and the associated reduction in buffering capacity provided by coastal ecosystems, was found to be a driving factor behind the destruction of 100 homes in Buchanan (Grand Bassa County) caused by storm surge in 2007. In addition to the negative impacts of sand mining on vulnerable coastal communities, the disruption of coastal and underwater sand also results in increased water turbidity, which negatively impacts marine flora such as seagrasses, further undermining the productivity of coastal fisheries and livelihoods.

II.2.2. Overfishing

Fish protein is a major contributor to Liberia's food security — comprising ~65% of the population's animal protein intake — largely because it is a more affordable alternative to poultry and livestock protein. Consequently, the demand for fish is high, and there remains a considerable supply shortfall, with the majority (~66%) of fish being imported into the country[77]. Granular data on existing fish stocks in Liberia is not readily available because of limited research facilities, with no comprehensive assessment undertaken in the last 20 years[78].

Given the data constraints, it is extremely difficult to provide accurate estimates of the extent of fish stock overexploitation in Liberia. However, the Bureau of National Fisheries has stated that overfishing and poaching are "rampant" in the country. For example, more than 250 illegal fishing vessels are estimated to be active in Liberian waters, and in 2008, the illicit fishery trade was valued at an estimated USD10–12 million[79]. A 2020 bio-economic analysis of fisheries found that demersal fish species[80] in shallow waters reserved for the Kru and Fanti fleet were

[76] Government of Liberia (GoL). 2008. *Population and Housing Census*.
[77] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[78] Stanturf *et al*. 2013. Liberia: Climate Change Assessment.
[79] Ibid.
[80] Demersal fish 'live on, or near to the bottom of lakes or seas', in an area known as the Demersal Zone, and include cassava fish, butternose, solefsh, snappers and grunters. From: Jueseah AS, Kristofersson DM, Tomasson T & Knutsson O. 2020. A Bio-

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overexploited, while deep water demersal and crustacean stocks were underexploited. The under-exploitation of these stocks is mostly attributable to the limited technology available to effectively capture these species[81]. Along with overfishing, unsustainable fishing practices have also been identified as a driving factor in the degradation of Liberia's fish stocks. These practices include the use of explosives in 'dynamite fishing' and the utilisation of toxic herbs into streams during the dry season, which cause fish to suffocate and rise to the surface for oxygen, where they are subsequently captured[82,83,84].

The use of unsustainable fishing practices, as elaborated above, causes declines in the available breeding population for affected fish species. If unmanaged, this could result in the depletion of the breeding population beyond a point of recovery, ultimately leading to extinction and substantially impacting the Liberian fishery industry. These baseline activities will increase the vulnerability of Liberian fisherfolk to climate change impacts such as increased sea surface temperatures and a greater frequency of extreme storm events (further details on the additional impacts of climate change on the fisheries sector are presented in Section II.3 below)[85]. Moreover, these impacts are projected to exacerbate the decline in available fish stocks and undermine both food security and economic wellbeing[86].

II.2.3. Pollution of water resources

Water quality in Liberia is affected by several factors — most notably inadequate water, sanitation and hygiene (WASH) facilities. Only ~17% of the total population has access to improved sanitation facilities which has led many communities to resort to basic pit latrines and open defecation — practised by ~19% and ~60% of urban and rural residents, respectively[87]. At ~6%, access to basic sanitation by residents in rural areas is considerably lower than those in urban areas[88]. Moreover, in 2019, ~24% of healthcare facilities in the country did not provide any sanitation services[89].

Liberia's existing sanitation system has been poorly maintained since the end of the civil war in 2003, resulting in its inability to sufficiently meet the current needs of the country's population[90]. These systems are prone to frequent clogging during high-intensity rainfall events, contributing to increased flooding when stormwater drains overflow — particularly in urban areas[91,92]. Consequently, Liberia's inadequate WASH systems result in increased water contamination during flooding events, presenting a considerable health risk to affected residents[93]. Climate change hazards, particularly an increased incidence of high-intensity rainfall events and associated flooding, is projected to considerably exacerbate this health risk (Section II.3.2).

Economic Analysis of the Liberian Coastal Fisheries. *Sustainability*, 12, pp. 9848.

[81] Jueseah AS, Kristofersson DM, Tomasson T & Knutsson O. 2020. A Bio-Economic Analysis of the Liberian Coastal Fisheries. *Sustainability*, 12, pp. 9848.

[82] Stanturf *et al*. 2013. Liberia: Climate Change Assessment.

[83] ESIA Report completed for a project owned by the LIBERIA FOREST PRODUCT INC. (LFPI)

[84] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.

[85] Sumaila UR & Tai T. C. 2020. End Overfishing and Increase the Resilience of the Ocean to Climate Change. *Frontiers of Marine Science*, 7(523).

[86] Stanturf *et al*. 2013. Liberia: Climate Change Assessment

[87] Joint Monitoring Programme for Water Supply and Sanitation (JMP). N.d. Rural and urban sanitation service levels (2000 and 2017). Available at: https://washdata.org/data/household#!/dashboard/new

[88] JMP. N.d. Rural and urban sanitation service levels (2000 and 2017).

[89] World Health Organisation (WHO). 2020. *State of the Worlds Sanitation: An urgent call to transform sanitation for better health*. New York: United Nations Children's Fund and WHO.

[90] Government of Liberia (GoL). 2013. INC to the UNFCCC.

[91] USAID. 2012. Climate Change Adaptation in Liberia.

[92] Kalinski V. 2019. Climate hazard, vulnerability and risk assessment for the coastal zone of Liberia. From: Project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

[93] USAID. 2012. Climate Change Adaptation in Liberia.

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II.2.4. Encroachment into coastal zones for food, land and natural resources

Approximately 60% of the Liberian population live within ~64 km of the coast and are consequently exposed to climate hazards such as flooding, sea level rise (SLR), severe storms and associated storm surges[94,95]. The growth of Liberia's coastal population is largely attributed to displacement from interior regions during the 1999–2003 civil war, with many of these internally displaced persons (IDPs) living in informal settlements[96].

The expansion of coastal settlements has increased human development requirements in these areas, placing greater pressure on natural resources[97] by: i) converting natural areas into housing, infrastructure and agricultural land; and ii) unsustainably utilising natural resources, which includes excessive sand mining as well as overharvesting of mangroves for wood fuel and other uses. The urban expansion also causes increased pollution of water resources as a result of inadequate systems for the disposal of liquid waste (Section II.2.3). This pollution drives habitat loss, coastal erosion and ecosystem degradation in the country[98]. For example, the destruction of mangroves has been observed to: i) increase coastal erosion and flooding because of reduced buffer capacity against storms; ii) cause a decline in productivity of marine fisheries as a result of habitat loss; and iii) reduce access to other non-timber forest products (NTFPs) including medicine and fuelwood, on which local communities rely. In addition to these non-climate drivers, climate change will exacerbate mangrove degradation through increased SLR, inundating coastal forests, which, in turn, will be unable to shift inland because of human settlement pressures[99].

II.2.5. Deforestation

Total forest cover in Liberia has declined considerably from ~90% of total land area in 1959 to ~32% in 2009[100], and the current rate of deforestation is ~0.5% *per annum*. The primary drivers of deforestation include logging, mining, charcoal production, inadequate enforcement of relevant legislation and the expansion of agro-industrial crop plantations[101,102]. Regarding timber — while the logging industry is regulated by licensing through the Government of Liberia's (GoL) Forestry Development Authority (FDA), the FDA lacks the technical and financial capacity to consistently ensure compliance with these regulations[103,104]. Consequently, timber production is poorly regulated and has therefore been identified as a considerable threat to forest ecosystems in the country[105]. In addition to

[94] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.
[95] USAID. 2017. Climate Change Risk Profile: Liberia.
[96] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.
[97] Natural resources are harvested from mangroves and include non-timber forest products.
[98] Kalinski V. 2019. Climate hazard, vulnerability and risk assessment for the coastal zone of Liberia. From: Project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".
[99] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.
[100] Government of Liberia (GoL). 2017. National Biodiversity Strategy and Action Plan-II 2017–2025.
[101] Agro-industrial crop plantations are a form of large-scale commercial agriculture, which in Liberia typically includes the cultivation of tree crops such as rubber, palm oil, coffee and cocoa. Coffee and cocoa are usually cultivated using intercropping methods, while rubber and palm oil are typically grown on large, monocrop plantations. The conversion of natural forests to agro-industrial crop plantations has been a major driver of historical forest loss in the country. From: USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.
[102] World Bank. 2019. Liberia Forestry Development Authority: An institutional Capacity Assessment. Available at: https://documents1.worldbank.org/curated/ar/760091581453197159/pdf/Liberia-Forestry-Development-Authority-An-Institutional-Capacity-Assessment-Pillar-II.pdf
[103] Enforcement and compliance of appropriate legislation is regulated by the Liberian Forest Sector Compliance and Enforcement Handbook (2017), which identifies the Conservation and Commercial Forestry Departments, as well as the Law Enforcement Division as the departments responsible for ensuring compliance with appropriate regulations. From: Government of Liberia (GoL). 2017. *Liberian Forest Sector Compliance and Enforcement Handbook*.
[104] World Bank. 2019. Liberia Forestry Development Authority: An institutional Capacity Assessment. Available at: https://documents1.worldbank.org/curated/ar/760091581453197159/pdf/Liberia-Forestry-Development-Authority-An-Institutional-Capacity-Assessment-Pillar-II.pdf
[105] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.

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timber production, approximately 629,000 ha in Liberia are dedicated to palm oil cultivation — constituting ~6% of its total land area. The expansion of agro-industrial crop plantations was a significant contributor to deforestation in the country prior to the civil war period, and the current national economic contribution of the forestry sector[106], which includes the cultivation of tree crops such as rubber and palm oil, may increase the potential for further future expansion of the sector which will result in additional deforestation[107]. Another considerable contributor to deforestation in the country is Liberia's mining industry. Despite its mining sector being relatively underdeveloped, Liberia has a wealth of mineral resources, including iron ore, diamonds, gold and barite, as well as prospects for platinum, palladium, nickel, manganese and uranium[108]. This mining potential has driven considerable growth in the past, and between 2005 to 2013, the industry expanded by over ~70% and created ~15,000 jobs[109,110]. Consequently, supporting growth in this sector has been earmarked by the Pro-Poor Agenda for Prosperity and Development (2018) as a potential priority for achieving socioeconomic development goals in the country[111]. Future expansion of mining activities into forested areas will have considerable and long-term negative impacts on forest ecosystems, given that many forested areas in Liberia overlap geographically with rich underground mineral deposits. Notable impacts of such expansion will include extensive deforestation, habitat fragmentation, surface and groundwater pollution, and siltation of dams and rivers[112].

One of the primary impacts of deforestation at the community level is the loss of forest ecosystem services, including provisioning services such as fuelwood, bushmeat and plant medicine[113,114]. Communities located within 2.5 km of forests in Liberia reported relying on the sale of forest products for ~35% of total household income, and for meeting subsistence needs, including food, energy and shelter. The top forest resources harvested by respondents included fuelwood, poles, bushmeat, rattan and fronds. Fuelwood was found to be particularly important, as 98% of Liberian households harvested this resource from forests rather than purchasing it. Forest products also are important for the construction and maintenance of dwellings and for medicinal uses. Despite having a preference for modern medicine (reported by ~75% of households), many households relied on medicinal plants as a substitute given the limited access to modern medical treatment[115]. By reducing the availability of the aforementioned forest resources, deforestation will further increase the vulnerability of communities to climate change by undermining the incomes, food security and other needs of households, consequently reducing their adaptive capacity.

II.2.6. Civil war

Liberia has recently emerged from an extended period of civil war between the periods 1989–1996 and 1999–2003[116]. These events resulted in extensive loss of infrastructure and environmental degradation, both of which resulted in the displacement of civilians and are described in more detail below.

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[106] The forestry sector accounted for ~11% of real GDP in 2017. From: Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[107] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.
[108] Ibid.
[109] It must be noted that a considerable portion of the jobs created were lost during the 2007/08 global financial crisis. From: Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[110] Government of Liberia (GoL). 2018. Liberia Pro-poor Agenda for Prosperity and Development.
[111] Ibid.
[112] USAID. 2008. *Liberia Environmental Threats and Opportunities Assessment*. USAID Liberia, Monrovia.
[113] World Bank. 2020. *People and Forest Interface: Contribution of Liberia's Forests to Household Incomes, Subsistence and Resilience.* World Bank, Washington D.C.
[114] Butler RA. 2019. Consequences of Deforestation. [online] Available: https://rainforests.mongabay.com/09-consequences-of-deforestation.html
[115] World Bank. 2020. *People and Forest Interface: Contribution of Liberia's Forests to Household Incomes, Subsistence and Resilience.* World Bank, Washington D.C.
[116] Government of Liberia (GoL). 2013. INC to the UNFCCC.

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Infrastructure loss

In 2010, the multi-stakeholder Africa Infrastructure Country Diagnostic estimated that financing Liberia's infrastructure needs until 2020 would require USD3.7 billion — equivalent to 382% of Liberia's 2010 GDP[117]. Civil war has been consistently identified as a major cause of the country's infrastructure deficit, with affected infrastructure including WASH systems (discussed in Section II.2.3 above) as well as research and development facilities. During the civil war periods, many research facilities — such as meteorological stations — were destroyed, resulting in the loss of associated baseline data and the inhibition of effective assessment of Liberia's natural resources and climate. Consequently, access to adequate data remains a barrier to effective environmental monitoring in the country while also undermining environmental restoration and climate change mitigation and adaptation efforts[118]. Up-to-date climate data is essential to inform climate change adaptation interventions, and the loss of these research facilities and their climate data has considerably increased vulnerability to climate change.

Environmental impact

Liberia's civil war resulted in a large number of IDPs within the country as many people travelled from rural to urban areas — particularly Monrovia, which resulted in its population increase from 250,000 to over 1 million between 1980–1991[119]. The resultant housing shortage led to the expansion of informal settlements into wetlands on the periphery of the city, which in turn resulted in increased pressure on these wetlands as well as the functionality of critical ecosystem services. Resultant pressures included overharvesting of wetlands for construction materials, food, fuelwood and water[120].

Although immediate relief was provided to IDPs through food aid, construction materials and agricultural inputs, the urgency of humanitarian needs undermined the focus on maintaining environmental integrity. For example, smallholder farmers did not receive training on ecologically sustainable agricultural methods, resulting in the over-application of fertiliser and pesticides, which in turn led to increased agricultural runoff and eutrophication in nearby wetlands. Simultaneously, a lack of infrastructure resulted in portions of the wetlands being used as waste disposal sites and landfills, leading to increased water pollution and the reduced viability of fisheries in affected areas[121,122]. The resultant degradation of the wetlands has increased the vulnerability of surrounding communities to climate change by reducing access to the ecosystem services provided by these wetlands, thereby reducing their food and livelihood security.

II.2.7. The intersection of pandemics and climate change

The social, economic and fiscal impacts of pandemics can increase the vulnerability of affected communities to climate change. For example, the Ebola Virus Disease (EVD) outbreak in 2014 resulted in the loss of ~USD113 million in fiscal revenues for Liberia, which equated to ~5% of GDP[123]. These revenue shortfalls often require

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[117] IMF. 2010. Liberia: 2010 Article IV Consultation and Fifth Review Under the Three-Year Arrangement Under the Extended Credit Facility—Staff Report; Public Information Notice and Press Release on the Executive Board Discussion; and Statement by the Executive Director for Liberia. *IMF Country Report 10/373*.

[118] Government of Liberia (GoL). 2013. INC to the UNFCCC.

[119] Habitat for Humanity International. 2016. Liberia Country Programme — Appendix 1 Community Hazards, Risk and Vulnerability Assessment Report. Available at: https://www.citiesalliance.org/sites/default/files/Appendix%201%20Hazards%20and%20Risk%20Assessment%20Final%20Report.pdf

[120] Environmental Protection Agency. 2006. Impacts of Liberian Civil Crisis on Wetlands. Available at: https://www.ramsar.org/sites/default/files/documents/pdf/swiss/sga_liberia_postconflict_rpt.pdf

[121] Environmental Protection Agency. 2006. Impacts of Liberian Civil Crisis on Wetlands. Available at: https://www.ramsar.org/sites/default/files/documents/pdf/swiss/sga_liberia_postconflict_rpt.pdf

[122] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.

[123] World Bank Group. 2014. *The Economic Impact of the 2014 Ebola Epidemic: Short- and Medium-Term Estimates for West*

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governments to readjust their budgets and may potentially impact long-term development spending in favour of more immediate priorities[124,125]. The resulting loss of incomes and livelihoods drive rising climate change vulnerability, as the adaptive capacity of affected workers and communities is undermined. Vulnerable population groups, such as women, are commonly the worst affected. For example, during the 2014 EVD pandemic in Liberia, women were more likely to contract EVD as a result of, *inter alia,* cultural practices including their roles as caregivers in the home. Female business owners experienced reduced access to credit as the financial capital of women's savings and loans groups was constrained by people who could not pay back their loans. Indirect health impacts also arose, as people avoided seeking treatment at health facilities for fear of contracting EVD. For example, the proportion of women who gave birth in the presence of a qualified health professional declined from 52% (2013) to 38% (2014) as a result of this fear[126].

Similar trends have been observed during the Covid-19 pandemic. The lockdown restrictions implemented throughout 2020 and 2021, albeit successful in containing the spread of Covid-19, have resulted in several negative socioeconomic impacts. A World Bank survey undertaken in August 2020 found that ~75% of households experienced job losses while ~68% noted reduced incomes. These factors have caused increases in food insecurity and ~66% of households are in a "dire food situation"[127]. In contrast to pre-Covid estimates projecting decreases in national poverty levels during 2020, the proportion of the population living in extreme poverty was estimated to increase to ~46% (2020) from ~44% (2019)[128]. These increases are greater in urban areas, where more of the population are employed in industries most affected by lockdown measures, including services and manufacturing, and those in the self-employed sector. Poverty rates have also been projected to increase disproportionately in female-headed households[129].

As evident by Liberia's poverty levels, the pandemic has also deepened underlying structural challenges, including food and nutritional insecurity. Approximately 20% of Liberian households were reported to experience food insecurity prior to the pandemic, and a survey in 2020 found that ~75% of households reported missing at least some meals as a coping mechanism given limited access to food. Factors that have driven increases in the number of households experiencing food security include: i) a dependence on imports of important food commodities such as rice[130], combined with rising food prices caused by a reduction in international trade; ii) the disruption to national food supply chains caused by, *inter alia*, restrictions on movement, which has impacted food availability; and iii) rising unemployment and declining incomes, which has affected the ability of households to purchase food[131]. Ultimately, the social and economic impacts caused by pandemics, as discussed above, result in, *inter alia,* rising poverty and unemployment and increases in food insecurity, which combined lead to increased climate vulnerability of affected communities by reducing their adaptive capacity.

Africa. World Bank, Washington, D.C.

[124] Mercy Corps. 2019. Chapter 4: How does Ebola affect the economy? Available at: https://www.mercycorps.org/blog/ebola-outbreaks-africa-guide/chapter-4

[125] Ibid.

[126] UN Development Group. 2015. Socio-Economic Impact of Ebola Virus Disease in West African Countries.

[127] Food and Agriculture Organization (FAO). 2021. *Liberia | Agricultural livelihoods and food security in the context of COVID-19: Monitoring Report — January 2021*. Rome. Available at: https://doi.org/10.4060/cb3618en

[128] 'Extreme poverty' includes all individuals who live on less than USD1.90 per day. From: UN Liberia. 2020. Rapid Assessment of COVID-19 Impact and Roadmap for Recovery in Liberia. Available at: https://datapopalliance.org/publications/rapid-assessment-of-covid-19-impact-and-roadmap-for-recovery-in-liberia/

[129] UN Liberia. 2020. Rapid Assessment of COVID-19 Impact and Roadmap for Recovery in Liberia. Available at: https://datapopalliance.org/publications/rapid-assessment-of-covid-19-impact-and-roadmap-for-recovery-in-liberia/

[130] Approximately 60% of all food consumed in Liberia is imported. From: UN Liberia. 2020. Rapid Assessment of COVID-19 Impact and Roadmap for Recovery in Liberia. Available at: https://datapopalliance.org/publications/rapid-assessment-of-covid-19-impact-and-roadmap-for-recovery-in-liberia/

[131] UN Liberia. 2020. Rapid Assessment of COVID-19 Impact and Roadmap for Recovery in Liberia. Available at: https://datapopalliance.org/publications/rapid-assessment-of-covid-19-impact-and-roadmap-for-recovery-in-liberia/

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II.3. Climate change and hazards

II.3.1. Baseline climate conditions

Liberia has a predominantly tropical climate, with localised climatic variations resulting largely from differences in altitude. Rainfall in Liberia is highest along the coastal belt (4,770 mm/yr average) and decreases toward the interior plateaus and mountains, where the average annual precipitation is 2,030 mm/yr[132]. Most of Liberia experiences two seasons: a wet season ('summer') between May and November, when temperatures average 25°C; and a dry season ('winter') between December and April, when the dry and dusty Harmattan winds[133] blow off the Sahara Desert and temperatures fluctuate between 24–27°C. However, rainfall and temperatures are relatively uniform throughout Liberia's coastal zone, including Sinoe County[134].

Temperature

Temperature in Liberia is influenced by the country's close proximity to the equator, which leads to little seasonal variation in temperature across the country. This uniformity is particularly prevalent in the coastal zone where temperatures average ~25°C year-round. The minor seasonal temperature differences that do occur are largely a result of differential cloud cover between the wet and dry seasons[135]. The monthly average, minimum and maximum temperatures for Greenville, the largest population centre in Sinoe County, are illustrated in Figure 9 below.

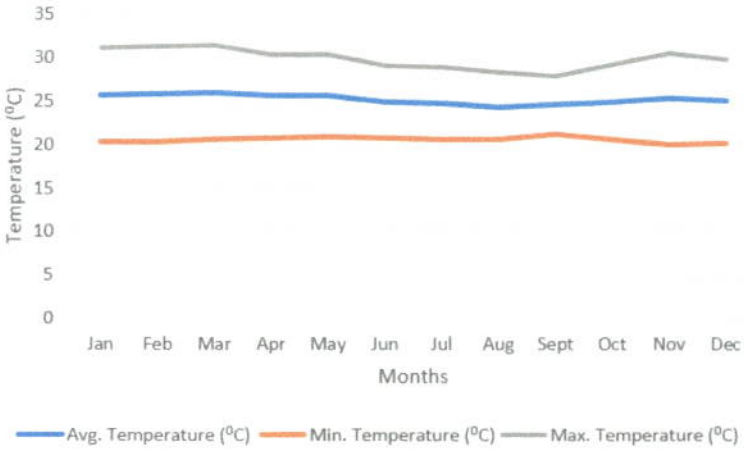

Figure 9. Average, minimum and maximum monthly temperatures in Greenville, Sinoe County. Averages are based on weather data collected between 1982–2012[136].

As depicted in Figure 9, temperatures during Liberia's wet season (June–September) are relatively lower because of near-complete cloud cover during this period, and diurnal temperature variation is minimal. Compared with the

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[132] USAID. 2017. *Climate Change Risk Profile: Liberia.* Available at: https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Risk%20Profile_Liberia.pdf

[133] The Harmattan is a cold, dry, and dusty north-easterly trade wind that extends over the lower part of West Africa from the Saharan Desert to the coast during the December–February months.

[134] USAID. 2017. Climate Change Risk Profile: Liberia.

[135] UNDP. 2020. Monrovia Metropolitan Climate Resilience Project: Feasibility Study.

[136] Climate-Data.org. n.d. Greenville climate. Available at: https://en.climate-data.org/africa/liberia/sinoe-county/greenville-765496/

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rainy season, temperatures during the dry season (January–February) are marginally higher, with a greater diurnal range as a result of cloud cover during this period being lower than in the monsoon months.

Rainfall

Liberia experiences above-average annual rainfall levels compared with other countries in the West African region, with a high relative humidity averaging between 70–90% along the coast[137] [138]. Average annual precipitation is particularly high in Liberia's coastal zone, where it exceeds 4,000 mm along the whole coastal belt, including in Sinoe County[139]. In Greenville, for example, the average total annual rainfall is 4,058 mm. Average rainfall levels decrease towards the further inland regions of Liberia, reaching a minimum at the central plateaus of ~1,800 mm/yr[140].

Compared with temperature, rainfall patterns in Liberia follow a more distinct seasonality, though even in the dry season (January–February), precipitation is still relatively high in the coastal counties. For example, in Greenville, the lowest average monthly precipitation is 129 mm, in January. In a typical year, rainfall in Sinoe County begins increasing in May and peaks in June. The county then experiences a period of reduced rainfall called the 'middle dries' before heavy rains return in September[141] (Figure 10). The months of heaviest rainfall differ across different parts of Liberia, but in Sinoe County these months are May, June, September and October (Figure 10).

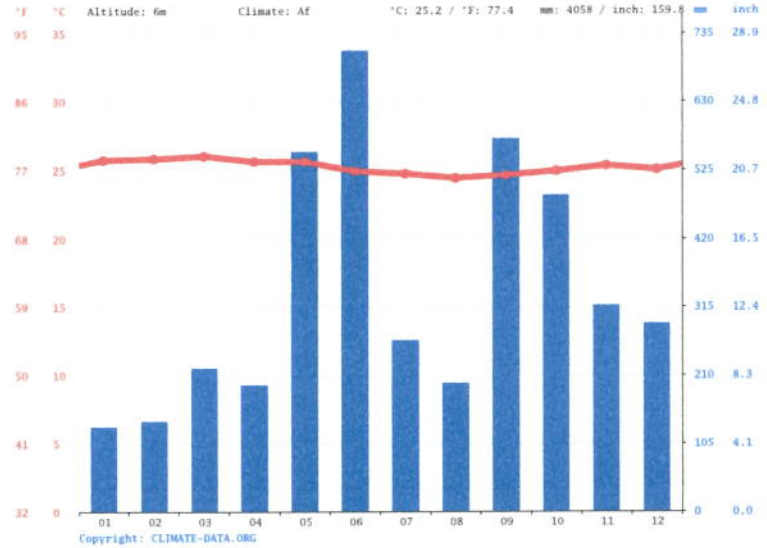

Figure 10. Average monthly rainfall levels (blue) for Greenville, Sinoe County for the period 1982–2012. Temperature (red) is also included to illustrate the relative difference between temperature and rainfall seasonality[142].

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[137] UNDP. 2020. Monrovia Metropolitan Climate Resilience Project: Feasibility Study.

[138] Liberia's average annual rainfall is in excess of 2,500 mm *per annum*, with rainfall along the coastline exceeding 4,000 mm *per annum*. In contrast, average annual rainfall in the Sudano-Guinean zone of West Africa, in which Liberia falls, ranges between 900–1,500 mm *per annum*. From: Ta S. *et al.* 2016. West Africa Extreme Rainfall Events and Large-Scale Ocean Surface and Atmospheric Conditions in the Tropical Atlantic. *Advances in Meteorology,* 2016.

[139] United Nations Development Program (UNDP) and Environmental Protection Agency (EPA) of Liberia. 2006. *State of the Environment Report for Liberia 2006,* Monrovia.

[140] Petterson DR, Holsoe SE & Jones AB. 2020. Liberia. *Encyclopaedia Britannica*. Available at: https://www.britannica.com/place/Liberia

[141] UNDP. 2020. Monrovia Metropolitan Climate Resilience Project: Feasibility Study.

[142] Climate Data. N.d. Greenville climate (Liberia). Available at: https://en.climate-data.org/africa/liberia/sinoe-county/greenville-765496/

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II.3.2. Observed and projected climate change and associated hazards

General trends of projected temperature and precipitation changes for coastal Liberia over the 21st century indicate a warmer and wetter climate. While temperature projections are more certain, rainfall uncertainty will increase along with rainfall variability in terms of both rainfall seasonality and the intensity of rainfall events. The principal climate hazards resulting from these climate changes, many of which are currently affecting communities and ecosystems in Sinoe County, are: i) extreme temperatures, with potential increases in drought in the future; ii) flooding caused by heavy rainfall events; and iii) sea level rise (SLR), and its resultant coastal erosion and inundation of coastal areas during coastal storms. These trends are projected to increase in intensity in the future (Figure 11).

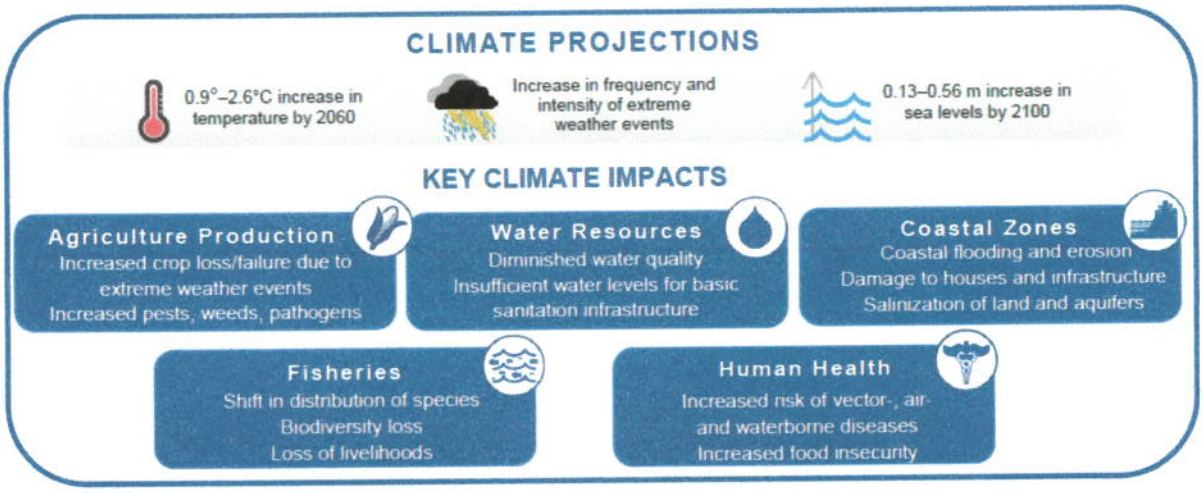

Figure 11. Main climate projections and their impacts for Liberia[143].

Temperature

Although there are gaps in the available data, there is increasing evidence of warming over terrestrial regions across Africa, consistent with anthropogenic climate change. Since 1960, Liberia has experienced an increase in the average annual temperature of 0.18°C per decade[144], along with a 16% increase in the average number of 'hot nights'[145] per year between 1960 and 2003[146]. Moreover, air temperatures across the region are predicted to continue rising into the future. In Liberia, the average annual temperature is projected to increase by 0.7°C, 1.2°C or 1.7°C for the period 2040–2059 for the Shared Socioeconomic Pathways (SSPs) SSP1-1.9, SSP24.5 and SSP5-8.5, respectively[147]. Temperatures are predicted to rise by 0.5°C, 2.0°C or 3.6°C for the period 2080–2099 under the

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[143] USAID. 2017. Climate Change Risk Profile: Liberia. Available at: https://www.climatelinks.org/sites/default/files/asset/document/2017_USAID%20ATLAS_Climate%20Risk%20Profile_Liberia.pdf

[144] USAID. 2012. Climate Change Adaptation in Liberia.

[145] Hot nights are nights with temperatures beyond the 90th percentile. From: World Bank Group. 2013. *Turn Down the Heat: Climate Extremes, Regional Impacts and the Case for Resilience*. Available at: http://documents1.worldbank.org/curated/en/975911468163736818/pdf/784240WP0Full00D0CONF0to0June19090L.pdf

[146] World Bank Group. 2021. Climate Change Knowledge Portal: Liberia climate data — historical. Available at: https://climateknowledgeportal.worldbank.org/country/liberia/climate-data-historical

[147] This climate projection is modelled from the global climate model compilations of the Coupled Model Inter-comparison Projects Phase 6 (CMIPS6). The historical reference period used is 1995–2014. The SSPs are five scenarios that consider how global society, demographics and economics may change over the next century and the impacts on climate change. SSP1-1.9 — Taking the Green Road — assumes optimistic trends for human development with a gradual shift towards sustainable practices. SSP2-4.5 — Middle of the Road — assumes a 'business-as-usual' human developmental pathway in the future. Finally, SSP5-8.5 — Taking the Highway — assumes an optimistic, energy-intensive human development but with a heavy dependence on fossil fuels.

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same SSPs[148]. This increase in temperature will be greater in the dry season (December–April) compared with the wet season (May–November) for both the 2040–2059 and 2080–2099 periods.

Increasing global temperatures have and will continue to contribute to rising sea levels. Sea level anomalies have been steadily increasing along Liberia's coastline over the last 20 years. Despite limited climate data in Liberia, satellite observation of sea surface height, which was initiated in 1993, has provided a robust evidence base to increase the confidence of these observations. In 2015, the sea level anomaly along the country's coast was ~63 mm. Sea levels are predicted to continue to rise in the future. Accordingly, the West Africa regional estimates for the period 2041–2060 predict 20 cm, 30 cm and 30 cm under the SSP1-2.6, SSP2-4.5 and SSP5-8.5 scenarios, respectively[149]. Long-term estimates for the 2081–2100 period predict sea level rise of 50 cm, 60 cm and 70 cm for the same SSP scenarios. By the end of the century, sea level rise is predicted to reach 84 cm. This rise in sea level will exacerbate current levels of inundation in coastal areas and contribute to increased coastal erosion by aggravating the impact of storm surges.

Rainfall

Overall, Liberia is predicted to experience a slight decrease in precipitation in the future. By the 2040–2059 period, precipitation is predicted to decline by 3%, 0% and 5% under the SSP1-1.9, SSP2-4.5 and SSP5-8.5 scenarios, respectively[150]. For the period from 2080–2099, precipitation is expected to decrease on average by 2%, 0% and 6% for the SSP1-1.9, SSP2-4.5 and SSP5-8.5 scenarios, respectively. The decline in rainfall is not consistent across the year or across the country, with precipitation in the wet season expected to increase slightly by 1–2% and rainfall in the dry season predicted to decline by 4–13% for the period 2040–2059 under the SSP1-1.9, SSP2-4.5 and SSP5-8.5 scenarios. Increases in annual average rainfall will mostly be concentrated along the coastline (Figure 12 below). The variability in rainfall throughout the year will by coupled with an increase in the frequency and unpredictability of intense rainfall events which has been observed since the 1960s[151], leading to an increased likelihood of flooding events. The continuation of this trend in the future is demonstrated by increases in the maximum 1-day precipitation, which is predicted to increase by 9%, 11% and 18% between 2041–2060 under SSP1-2.6, SSP2-4.5 and SSP5-8.5 respectively and by 7%, 15% and 36% by 2081–2100 under the same SSP scenarios[152].

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[148] World Bank Group. 2021. Climate Change Knowledge Portal: Liberia climate data projections. Available at: https://climateknowledgeportal.worldbank.org/country/liberia/climate-data-projections?variable=pr

[149] IPCC.2021. IPCC WGI Interactive Atlas: Regional Information (Advanced)

[150] World Bank Group. 2021. Climate Change Knowledge Portal: Liberia climate data projections. Available at: https://climateknowledgeportal.worldbank.org/country/liberia/climate-data-projections?variable=pr

[151] USAID. 2017. Climate Change Risk Profile: Liberia.

[152] IPCC.2021. IPCC WGI Interactive Atlas: Regional Information (Advanced)

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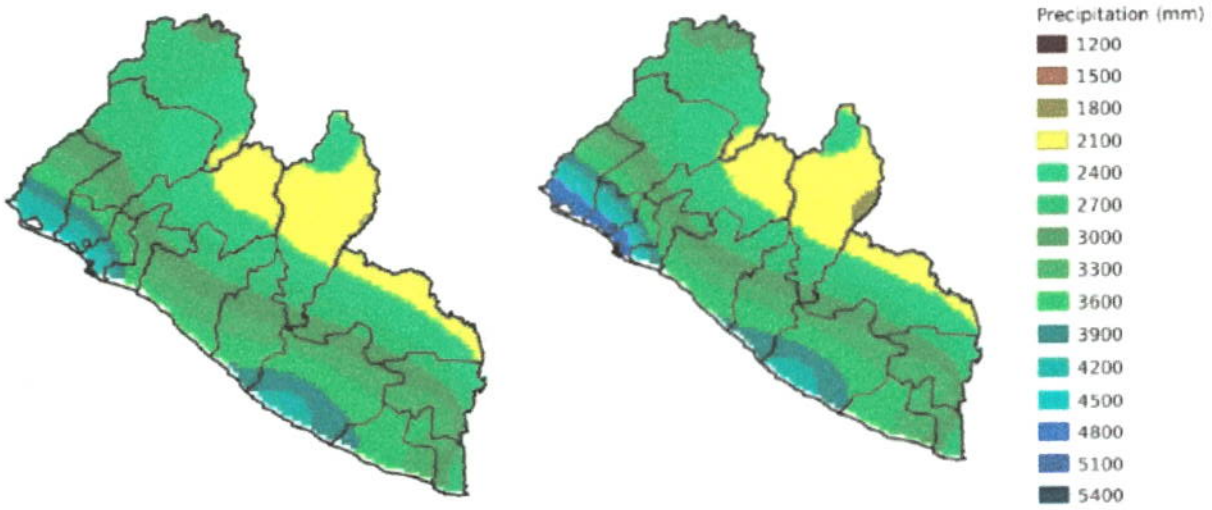

Figure 12. Projected changes in annual average rainfall for Liberia. Left: Observed average annual rainfall in 2013; Right: Projected future average annual rainfall (2050)[153].

Projected precipitation changes for Sapo National Park — located in inland Sinoe County — suggest increases in wet season precipitation of 3.54 ± 11.55% by 2050 and 5.25 ± 16.26% by 2080[154]. Coastal communities in Sinoe County will likely experience a marginal increase in rainfall. This increase is predicted to occur primarily during the early months of the wet season, beginning in southeast Liberia in May and extending west along the coast in June and July, suggesting more intense rainfall events[155]. The impacts of a greater frequency of high-intensity rainfall events, and associated flooding, are detailed below.

Flooding from intense rainfall events

Considerable increases in the frequency and unpredictability of intense rainfall events have been observed since 1960 throughout Liberia, which has in turn resulted in, *inter alia,* an increase in the incidence of extreme flooding events[156]. Almost 90% of the national population lives in areas at risk of flooding from the sea, river systems and swamplands, with flood risk exacerbated by baseline drivers such as inadequate drainage systems and the degradation of ecosystems (Section II.2.3). According to Liberia's National Disaster Management Agency (NDMA), floods have affected 60,000 people in three coastal counties (including Sinoe County) from January–July 2019. Within Greenville, the settlement of Sebeh is particularly vulnerable to both coastal and riverine flooding, given its geographical position adjacent to the Sinoe River and the Atlantic Ocean. According to all SSP scenarios, 1-day maximum precipitation is expected to increase further in the medium and long term, indicating more intense rainfall events in the future. The projected increase in heavy rainfall events may, in turn, result in greater flood risk for vulnerable communities[157].

High-intensity rainfall events also lead to increased contamination of water sources such as rivers because of agricultural runoff and sedimentation. Sinoe River, which runs through Sinoe County and forms an estuary at Greenville, is one such river important to local communities[158]. These rainfall events reduce water quality for both

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[153] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.
[154] Ibid.
[155] Ibid.
[156] USAID. 2017. Climate Change Risk Profile: Liberia.
[157] USAID. 2013. Climate Change Adaptation in Liberia.
[158] Kalinski V. 2019. *Climate Hazard, Vulnerability and Risk Assessment for the Coastal Zone of Liberia.* Part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

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commercial and domestic use. In addition, the increased contamination of water resources was noted during consultations with the National Fisheries and Aquaculture Authority (NAFAA) to be a considerable factor driving the migration of fish stocks. Increased rainfall and flooding are also projected to cause an increase in disease outbreaks as these events put greater pressure on Liberia's inadequate WASH systems. In particular, flooding associated with high-intensity rainfall events results in the failure of these WASH systems, increasing the spread of waterborne diseases such as cholera, which presents a considerable health risk to community members in affected areas[159]. Improving the resilience of infrastructure such as WASH systems by, *inter alia*, climate-proofing infrastructure and reducing exposure to climate hazards is a priority for the health sector, as outlined in Liberia's National Policy and Response Strategy on Climate Change[160]. Communities in the project area, including Pungbor, Tournata, Nanakru and Downtown-Mississippi, have limited access to formal sanitation systems and will consequently be particularly exposed to the impacts of heightened water pollution and the spread of disease associated with increased incidences of flooding events.

Future risk of drought

Although there have not been any incidences of drought in Liberia's recorded history[161], climate change-induced increases in average annual temperature and shifting rainfall patterns may potentially stimulate the emergence of drought over the 21st century. This observation prompted the development of the Liberia National Drought Plan in 2019 as a preparedness intervention. The Plan highlights the forestry, agricultural, fisheries, health and mining sectors as particularly vulnerable to a potential increase in drought occurrence and notes the gendered impact that potential future droughts will have[162].

The impact of increased air temperatures and greater incidences of flood events on agriculture and fisheries

Climate change-induced increases in air temperature (detailed in Section II.3.2 above) under all SSP scenarios in the medium- and long-term future will increase stress on many of the crops grown in Liberia. Rice, which is currently cultivated by ~74% of Liberian farmers and is the country's primary staple crop, is particularly sensitive to increasing humidity and temperatures, intense rainfall and the pests associated with warmer conditions[163]. For example, the interaction between rising temperatures and shifting rainfall patterns creates environments where certain pests, such as the pine caterpillar (*Dendrolmus punctatu*), can thrive. As a result, future climate trends under the SSP scenarios will lead to an increased incidence of crop pests throughout Liberia, adversely impacting both the agricultural and forestry sectors, as well as communities that harvest resources from forests[164]. Moreover, climate-induced temperature increases will affect communities within the project area — including Pungbor, Nanakru, Tournata and Bafu Bay — that rely on agriculture for their livelihoods. In Pungbor, yields of subsistence crops, including rice, will be particularly undermined by these climatic changes. Projected increases in the incidence of extreme precipitation events under all SSP scenarios, and resultant flooding, will further affect the productivity of the agricultural sector. The increased frequency of intense rainfall events leads to a reduced growing season, maturation and drying period for crops, as well as accelerated erosion of topsoil and waterlogging, which reduce the total arable land area. Rubber plantations are especially vulnerable to waterlogging, which will result in higher operational costs associated with upgrading drainage systems on plantations[165]. The waterlogging problem will ultimately impact GDP and fiscal revenues, as rubber is one of Liberia's major agricultural exports[166].

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[159] Kalinski V. 2019. Climate hazard, vulnerability and risk assessment for the coastal zone of Liberia. From: Project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

[160] Republic of Liberia. 2018. National Policy and Response Strategy on Climate Change.

[161] EPA. 2019. Liberia National Drought Plan.

[162] Ibid.

[163] USAID. 2017. Climate Change Risk Profile: Liberia.

[164] Ministry of Agriculture, Government of the Republic of Liberia. 2018. *West Africa Agricultural Transformation Project-P164810: Pest Management Plan*. Available at: https://moa.gov.lr/doc/issa_Revised%20Draft%20PPMP%20for%20WAATP%20Liberia_April%2027_2018_%20(2)_%20%20MZ.pdf

[165] USAID. 2017. Climate Change Risk Profile: Liberia.

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The fisheries sector will also be adversely impacted by climate change, particularly as a result of: i) rising sea temperatures caused by increasing global air temperatures; and ii) a greater frequency of extreme storm events. Rising sea temperatures, among other factors such as overexploitation, have led to a decline in fish stocks as they drive shifts in the strength and timing of upwelling, which is identified as the primary climate impact on marine fisheries, that will affect primary (phytoplankton) and secondary (zooplankton) production[167,168]. Accordingly, global climate models simulate a redistribution of fish stocks toward cooler temperate countries, undermining the fisheries industry in tropical countries such as Liberia. Relative to 2005 levels, the maximum potential catch along the West African coast is projected to decline by 30–50% by 2050 under an extreme climate change impact scenario — the SRES A1B scenario. Approximately 79% of the 1,066 exploited fish species included in this model will shift poleward by 2050[169]. This is projected to considerably impact food security, as fish is an important component of the Liberian diet and the primary source of protein in coastal areas[170]. Within the project area, communities in Sebeh, Nanakru, Tournata and Pungbor that strongly rely on fishing will experience a loss of livelihoods because of these climate change-induced shifts in fish stocks and distribution, as well as the additional impact of increased incidences of coastal storms. An increased frequency of extreme storm events is also projected to cause more frequent loss of fishing days and increased costs from loss of fishing gear[171]. Consultations with the NAFAA revealed that coastal communities within the project area have already experienced the impacts of extreme precipitation events and storms, and are exposed to challenges, including daily capsizing of canoes and limited technical capacity to adapt to these challenges and improve the productivity of their catch. The capsizing of canoes frequently occurs during storms in the wet season and has led to fatalities in the past. Without intervention, these climate hazards are projected to considerably undermine ~29% of the population in Sinoe County who depend on fisheries for their livelihoods.

Sea level rise

Like most coastal nations, Liberia is exposed to coastal erosion and shoreline recession resulting from the action of destructive ocean waves on the shore[172] combined with a rising sea level. Considerable shoreline recession has already been observed in the cities of Buchanan, Greenville, Harper, Monrovia and Robertsport, with the extent of beach loss estimated to be as high as 3 m/yr in extreme circumstances[173]. While sand mining has been responsible for much of this beach loss (Section II.2.1), climate change-induced SLR has also exacerbated the rate of coastal erosion, which is projected to continue increasing in the future[174].

SLR presents a considerable threat to coastal communities, in which ~60% of Liberia's population resides. A vertical rise of sea level by 1 cm has a horizontal extent of 100 cm on sandy beaches, meaning that any additional SLR under the SSP scenarios would impact Liberia's coastal communities. In particular, a vertical rise in sea levels of nearly 1 m by 2100 under a SSP5-8.5 scenario would result in the submergence of coastal zones in Liberia's cities, costing ~USD250 million in infrastructure loss. Vertical SLR exceeding 1 m would also affect agricultural and fisheries livelihoods, as well as important natural resources and ecosystems such as mangroves. Specifically, the

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[165] Ibid.
[167] Stanturf *et al.* 2013. Liberia: Climate Change Assessment
[168] USAID. 2017. Climate Change Risk Profile: Liberia.
[169] Stanturf *et al.* 2013. Liberia: Climate Change Assessment
[170] County Development Committee. [Date unknown]. Sinoe County Development Agenda 2008–2012. Available at: https://www.emansion.gov.lr/doc/SinoeCDA.pdf
[171] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.
[172] The action of waves may be either destructive or constructive. Destructive waves erode the coastline as the backwash — the water which flows back into the ocean after being deposited by a wave on the shore — is stronger than the swash — the water deposited on the shore by the wave. Constructive waves have a stronger swash than a backwash, which results in the deposition of material and sediment on the shore and ultimately build up the coastline. From: BBC. N.d. Coastal Processes. Available at: https://www.bbc.co.uk/bitesize/guides/zct8bk7/revision/1
[173] UNDP. 2006. *First State of the Environment Report for Liberia*. Available: https://www.thegef.org/sites/default/files/ncsa-documents/State_of_the_environment_report_final.pdf
[174] USAID. 2017. Climate Change Risk Profile: Liberia.

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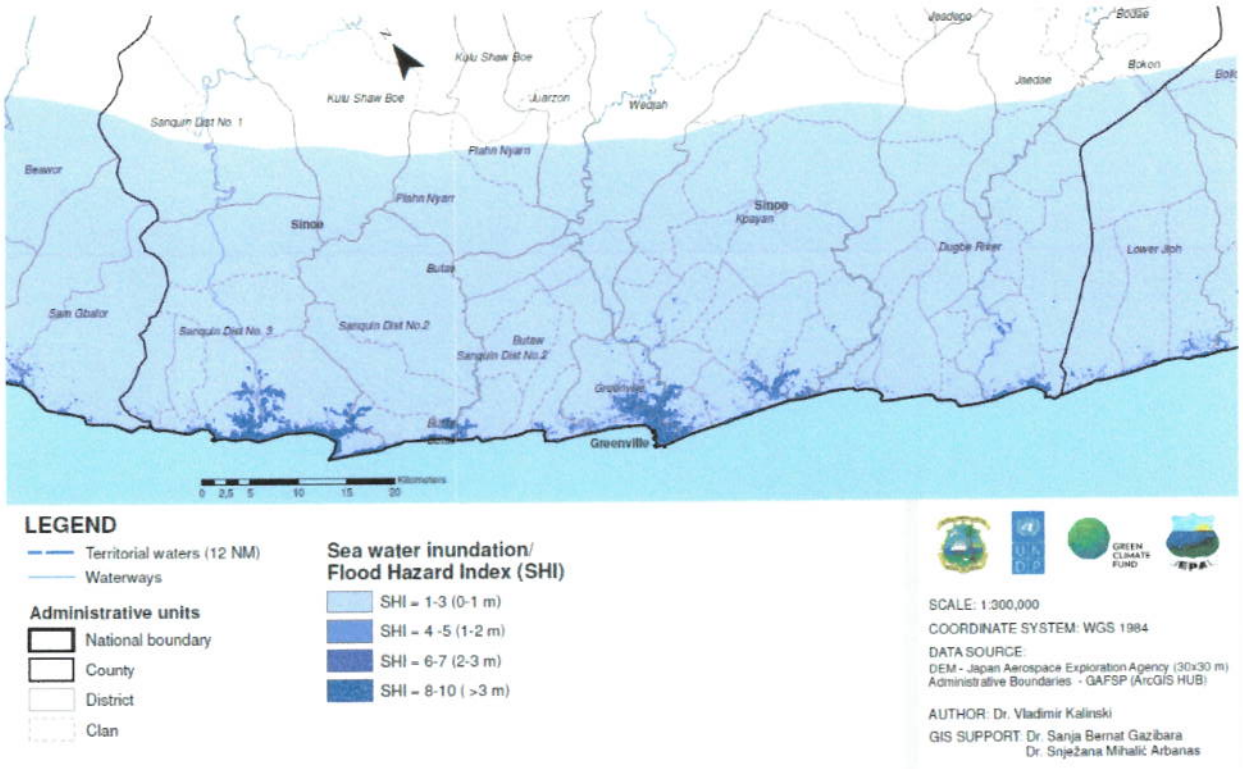
inundation of agricultural areas and resulting declines in soil quality and yields will undermine food security[175]. Low-income communities, particularly those residing in informal settlements, would be disproportionately affected by these impacts given their low adaptive capacity[176]. Large coastal settlements such as Greenville have already experienced the impacts of rapid coastal erosion from both SLR and sand mining[177]. Higher shoreline levels can also result in more extreme swell waves, more consistently damaging wave impacts and an increased frequency of severe coastal floods[178]. Swell waves have been observed to contribute to coastal flooding in the same manner as storm surges, primarily through wave run-up and wave setup along the coastline[179]. Most of Sinoe County is exposed to low levels of flood risk; however, what risk exists is concentrated along the coastline where some areas may experience up to and above 3 m of inundation (Figure 13 below)[180]. These levels of beach loss have adverse impacts on tourism potential, which is an important economic sector in the coastal zone. An additional adverse impact of SLR is the salinisation of land, rivers and aquifers, which have adverse impacts on agriculture and increase the cost of treatment for drinking water.



[175] Ibid.
[176] Ibid.
[177] UNDP. 2006. *First State of the Environment Report for Liberia*. Available: https://www.thegef.org/sites/default/files/ncsa-documents/State_of_the_environment_report_final.pdf
[178] Vitousek S, Barnard PL, Fletcher CH, Frazer N, Erikson L & Storlazzi CD. 2017. Doubling of coastal flooding frequency within decades due to sea-level rise. *Scientific Reports* 7: 1–9.
[179] Wave run-up refers to the driving of water onto the beach by a wave breaking, which can result in coastal flooding when occurring in tandem with wave setup. Wave setup describes a phenomenon where waves consistently break along the shoreline and prevent the recession of water back into the ocean from the beach, where it was initially driven by wave run-up. From: Kalinski V. 2019. *Climate Hazard, Vulnerability and Risk Assessment for the Coastal Zone of Liberia.* Part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".
[180] It must be noted that coastal flooding above 1 m of water level 'should be considered as dangerous for population and infrastructure'. From: Kalinski V. 2019. *Climate Hazard, Vulnerability and Risk Assessment for the Coastal Zone of Liberia.* Part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

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Figure 13. Sea water inundation and flood hazard in 2019 in Sinoe County, Liberia[181].

Greenville, the economic hub and capital of Sinoe County, has been identified as an important area that requires protection from SLR[182]. The areas around the Sinoe River delta in particular have experienced flooding caused by a combination of SLR and increasing volumes of freshwater flowing down Sinoe River during the wet season's intense rainfall events[183]. This has led to extensive coastal erosion: a sand bank that used to extend southwards into the river mouth on its western side has been completely eroded away in the last decade, which has led to further coastal erosion on the river mouth's eastern banks as well as into settlements on its northwestern edge (Figure 14). Consultations with communities in Downtown-Mississippi (Greenville) have revealed that residents have been considerably affected by this SLR, with over 50 homes eroded away between 2012–2018 (Figure 13), forcing residents to migrate inland.

Figure 14. Satellite photos of the Sinoe River delta in Greenville taken in February 2012 (left) and March 2018 (right) show sizable erosion of the Greenville peninsula area resulting in more than 50 houses being eroded or incapable of further habitation (red arrow). In addition, the southern tip of the main Mississippi Street and side streets (green arrow) have been completely eroded. The blue arrow represents the main river current direction along the original riverbed. A shipwreck (from 1990s civil war) at the mouth of Sinoe River delta has been encircled yellow and is believed to possibly have a function in redirecting local ocean bay currents towards the Mississippi Street area, which will be exacerbated by projected climate changes including an increased frequency of high-intensity rainfall events[184].

A rise in sea levels of 84 cm by 2100 under SSP5-8.5, combined with an increase in the frequency of high-intensity storms will result in a significant increased offshore wave height[185]. In addition to increased coastal erosion, SLR will impact vulnerable coastal communities in Sinoe County through: i) degradation of the mangrove and coastal ecosystems on which their livelihoods and food security depend[186]; and ii) inundation of important infrastructure

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[181] Kalinski V. 2019. *Climate Hazard, Vulnerability and Risk Assessment for the Coastal Zone of Liberia.* Part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

[182] UNDP & EPA. 2006. First State of the Environment Report for Liberia. Available at: https://www.thegef.org/sites/default/files/ncsa-documents/State_of_the_environment_report_final.pdf

[183] Kalinski V. 2019. *Climate Hazard, Vulnerability and Risk Assessment for the Coastal Zone of Liberia.* Part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

[184] Ibid.

[185] The significant wave height is the average height of the highest one-third of all waves measured which is equivalent to the estimate that would be made by a visual observer at sea. The significant wave height profile along Liberia's coast is shifting towards an increase in the occurrence of all large waves. The return period of extreme storm events that historically occurred once every 100 years are projected to decrease to 1 in 40 years under RCP4.5 and 1 in 25 years under RCP8.5 by the year 2100.

[186] Climate change degrades mangroves through inundation because of SLR and through changes in water temperature, salinity and sediment transport. For more information see: GEF Project Document. 2016. Improve sustainability of mangrove forests and coastal mangrove areas in Liberia through protection, planning and livelihood creation – building blocks towards Liberia's

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such as boat-launch sites, dwellings and socioeconomic spaces and amenities such as fish markets. Within Sinoe County, several additional sites are projected to be impacted by SLR-induced hazards. Sebeh is simulated to experience an increased incidence of SLR-induced coastal erosion and flooding, particularly because of the degradation SLR may have on adjacent wetlands. Tournata and Nanakru, while not currently at risk of SLR because of their elevation and protection from natural coconut forests, may be affected by future sea level inundation which presents a risk to agricultural productivity. Bafu Bay, like the two previous sites, is not currently at risk of SLR, however, future climate change projections indicate a potential flood risk by 2100. Finally, while Pungbor is also not currently at risk of SLR because of its elevation, an adjacent floodplain presents a potential future flood risk to the settlement (Table 1).

Table 1. Current and future climate change vulnerability of project sites within Sinoe County.

Site	Current Climatic Threats	Future Climatic Threats	Current Vulnerability	Future Vulnerability
Downtown-Mississippi	Loss of structures from beach erosion, flooding and SLR	Projected increases in SLR, which will exacerbate existing climate threats	High	High
Sebeh	Considerable and frequent impacts in the form of flash flooding and coastal erosion	Projected increases in SLR, which will exacerbate existing climate threats	High	High
Nanakru	No current climate threats. The community is 65 m inland and protected by coconut forests	Nanakru will fall within an area that is potentially vulnerable to future SLR, specifically inundation and erosion	Low	Moderate
Tournata	Not vulnerable	Tournata will fall within an area that is potentially vulnerable to future SLR, specifically inundation and erosion	Low	Moderate
Bafu Bay	Not vulnerable given natural protections in the form of rocky barriers and mangrove forests	Bafu Bay will not likely experience erosion, however, the settlement may experience flooding by 2100	Low	Low
Pungbor	Not vulnerable	The major future climate change threat is flooding caused by the adjacent floodplain	Low	Low

SLR is projected to threaten ecologically, economically, and culturally important mangrove forests in Sinoe County. Mangroves grow along most of Liberia's coastline and estuaries, situated along the boundary between land and sea with water depth following tidal cycles. Because mangroves provide important habitats for fish and shellfish, mangrove loss from SLR could adversely impact artisanal lagoonal fisheries in Liberia, including in Bafu Bay[187]. When mangrove forests are lost or degraded, local fish catches generally decline[188]. Mangroves also provide many important ecological goods and services for Liberia's coastal communities, of which the annual economic value is estimated by UNEP to be between USD200,000 and USD900,000/ha[189]. There are currently several mangrove forests in the project area, including near Downtown-Mississippi, Sebeh and Bafu Bay. Although the community in Downtown-Mississippi is largely urban, inhabitants rely on the mangroves in this area to act as a buffer against riverine flooding as well as to provide a source of non-timber forest products (NTFPs). The mangrove forests in Sebeh are an important source of food security, as communities use the forests for hunting.

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marine and coastal protected areas. Available at: https://www.conservation.org/docs/default-source/gef-documents/liberia-mangroves/5712-liberia-mangroves-prodoc-20160311.pdf?sfvrsn=20715c6e_2

[187] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.

[188] DAI. 2008. Liberia Environmental Threats and Opportunities Assessment (ETOA), Final Report to USAID/Liberia, Office of Economic Growth. Development Alternatives International, Bethesda, MD.

[189] Stanturf *et al.* 2013. Liberia: Climate Change Assessment.

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II.4. Problem statement

As detailed in Section II.3 above, Liberia's coastal zone is adversely affected by several climate change impacts, including increases in: i) sea level rise (SLR) of 20–30 cm by 2040–2059 resulting from rising temperatures; ii) the frequency of high-intensity coastal storms caused by strong winds blowing over the surface of the ocean; iii) the intensity of rainfall events, demonstrated by an increase in precipitation on the maximum rainfall day of 9–18% by 2041–2060; and iv) rainfall variability, with wet season rainfall increasing by 1–2% and dry season rainfall decreasing by 4–13% by 2040–2059. These climatic changes, which are projected to continue to intensify in the future under a range of SSP scenarios, exacerbate the impacts of heavy rainfall, storm surges and wave action on the country's coastal areas. The impacts of climate change, combined with non-climatic drivers — such as sand mining, the expansion of agricultural areas, unsustainable fishing, pollution and inadequate drainage systems — compromise the resilience of ecosystems and Liberian communities situated along the coastline. Consequently, local communities and ecosystems are experiencing increased coastal flooding and erosion, saltwater intrusion into groundwater supplies, waterlogging of inland areas and sedimentation of rivers and freshwater resources as a result of SLR and higher intensity rainfall events. The vulnerability of communities and ecosystems occurs through the: i) inundation and consequent damage of coastal infrastructure; ii) loss of fishery- and agriculture-dependent livelihoods; iii) decrease in stable income generation for coastal communities; iv) increase in conflict and competition over resources within communities; v) decrease in food and nutrition security; vi) increased risk of vector- and waterborne diseases through waterlogging; and vii) increased pressure on surrounding ecosystems to compensate for the reduced provision of services from coastal, wetland and mangrove ecosystems. In addition, the vulnerability of Liberia's coastal communities and their resilience to climate change, particularly in Sinoe County, is exacerbated by the limited capacity of the Liberian government to provide basic services and adequate support for, *inter alia*: i) water and sanitation; ii) healthcare; iii) utility-scale energy; and iv) road infrastructure. Figure 15 below provides a graphical representation of the impact pathways of climate change in Liberia, specifically on the coastal zones and populations. The white text fields in Figure 15 highlight the main climate threats and their impacts that the proposed project will address.

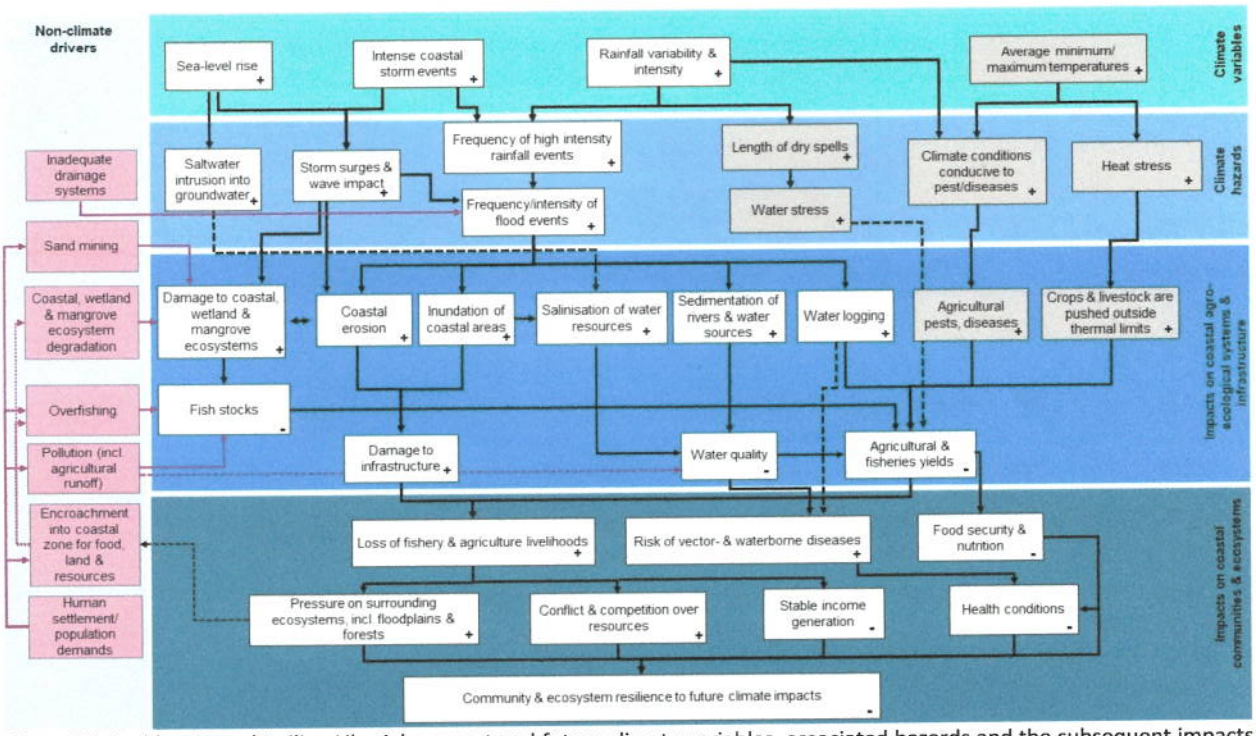

Figure 15. Problem tree detailing Liberia's current and future climate variables, associated hazards and the subsequent impacts on Liberia's coastal zones and population, including non-climatic drivers which exacerbate these impacts. The white text fields highlight the impact pathway the proposed LDCF project aims to focus on.

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II.5. Preferred solution

The preferred solution to overcoming climate change-induced SLR, coastal storms and rainfall variability and building sustainable coastal resilience requires an integrated management approach involving, *inter alia*, mainstreaming climate change adaptation into development planning and budgeting, enabling the adoption of climate-resilient livelihoods and practices and protecting coastal ecosystems, communities and infrastructure from current and future climate impacts. Implementing a suite of adaptation interventions will positively impact local communities by reducing their vulnerability and increasing their resilience to the impacts of sea level rise, intense coastal storms, as well as increasing rainfall variability. These interventions include, first, creating an enabling environment for local-level coastal adaptation planning and management in all coastal counties in Liberia, particularly by strengthening the capacity of county- and district-level planners to implement measures that prevent and/or reduce the impact of frequent and intense climate change-induced flooding and erosion. The increased capacity of coastal county planning institutions will enable the improved management of coastal ecosystems that assist in reducing the impacts of increasingly intense flooding events and the implementation of adaptive infrastructure across Liberia's coastal counties. Second, the solution includes adopting an innovative sea and river defence and risk management (SRDRM) approach to support the adoption of integrated coastal zone management (ICZM) principles by setting a framework for infrastructure management along Liberia's coastal zone that demonstrates river and wetland management. This approach also involves improving response planning and communication mechanisms between the numerous institutions involved in coastal zone management. Third, designing and implementing climate-resilient sea and river hybrid defence solutions in Sinoe County which will reduce the impact of flooding and erosion from increasingly frequent and intense storms. By using engineered and nature-based solutions, coastal areas will be protected from SLR and extreme rainfall event-induced flooding and storm surges, as well as slow down the speed of flooding waters. Lastly, in effort to reduce the vulnerability of coastal zones and communities, introducing sustainable, climate-resilient livelihood opportunities — that increase the adaptive capacity of coastal communities and reduce pressure on and degradation of surrounding ecosystems — will ensure the sustainability and effectiveness of the other adaptation interventions.

II.6. *Barriers*

While there is considerable potential for implementing interventions that promote climate change adaptation (CCA) and risk management in Liberia, an enabling environment that maximises the benefits of these interventions is necessary. There are several barriers to achieving this in the country, limiting technical and institutional capacity to address the challenges described in the project problem statement. These barriers are detailed below.

Barrier 1: Limited data and awareness with regards to climate change-related risk management in coastal counties

There is currently insufficient understanding of Liberia's present and future climate change risks — particularly in coastal zones — among the country's population and policy- and decision-makers. There are also limited data and studies available that detail Liberia's vulnerability to climate change impacts, specifically the effects of inundation, erosion and precipitation variability on coastal areas. Consequently, there is limited knowledge and awareness on appropriate climate change-related sea and river defence measures to support the effective monitoring and management of coastal and river ecosystems, as well as reporting on how these ecosystems are affected by climate change. Limited information on coastal processes, sea level rise (SLR), meteorological conditions, flash flood impacts, and swamp/wetland hydrodynamics exacerbates this knowledge gap. As a result, Liberia currently does not have an effective early warning system (EWS) for ensuring the country's preparedness for climate hazards such as storm surges and extreme rainfall events. However, the GCF-funded project entitled 'Enhancing Climate Information Systems for Resilient Development in Liberia (Liberia CIS)' which will be implemented from 2021–2026, aims to increase the capacity of hydro-meteorological services and associated networks across Liberia to monitor and predict extreme weather, climate-related hazards and climate trends.

Barrier 2: Gaps in local policy and planning to enable integrated coastal resilience

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While there are several policies, plans and strategies aimed at supporting the protection of Liberia's broader ecosystems and biodiversity, few promote the monitoring and conservation of Liberia's coastal and river ecosystems specifically. This — combined with policy- and decision-makers' limited understanding of the impacts of climate change on Liberia's coastal and river ecosystems — highlights an inadequate enabling environment to support integrated coastal management resilient to climate change in Liberia. Additionally, Liberia has limited financial and human resources in its policy regulation and enforcement agencies to address the country's climate change-related challenges adequately. The GCF-funded Monrovia Metropolitan Climate Resilience Project (MMCRP, 2021–2027)[190] — which aims to build the resilience of Liberia's capital city, Monrovia, to SLR and increasingly frequent and intense storms — includes implementing a national-level integrated coastal zone management plan (ICZMP) and supporting cross-sectoral coordination among the 10 government institutions responsible for climate-resilient coastal management[191]. However, while the MMCRP will focus on implementing national-level mechanisms to support integrated coastal zone management (ICZM), limited coordination among county-level coastal zone management stakeholders results in minimal inclusion of integrated CCA interventions into coastal County Resilience Plans (CRPs).

Barrier 3: Limited knowledge-sharing and technical capacity to support the design and implementation of sea and river defence management in coastal communities

There is limited scientific and engineering expertise within the relevant government institutions to identify, design and implement CCA interventions that integrate engineered and nature-based approaches. This challenge is exacerbated by limited capacity and resources to share knowledge and raise awareness on relevant climate risks — which is necessary for facilitating an improved understanding amongst the public and private sector of ecosystems and the associated services and values thereof. Therefore, as supported by Liberia's GCF-funded NAPs, there is a need to develop a centralised knowledge management system for disseminating information on appropriate CCA interventions as well as sea and river defence management options. Improved access to information on these solutions will support the national ICZM office and the future delivery of ICZM initiatives in Liberia.

Barrier 4: Limited institutional capacity and coordination for mainstreaming CCA and planning at national and local levels

There are 10 government institutions involved in the different aspects of coastal zone management in Liberia, resulting in coastal resources managed on a predominantly sectoral basis. This fragmented allocation of resources for coastal management — along with limited capacities among the different institutions at national and local levels — constrains the development of integrated and locally appropriate climate-resilient coastal management solutions. As a result, this undermines the sustainability of existing management structures and interventions relating to coastal zone management. Additionally, Coastal Community Action Plans (CAPs) — which would mainstream CCA as well as adaptive and sustainable livelihood practices in coastal communities — have not been developed in any coastal counties.

Barrier 5: Limited access to financing for effective sea and river defence management

The Government of Liberia (GoL) has limited financial capacity to invest in medium- to long-term interventions for enhancing climate resilience at a national scale in light of the country's development needs and low GDP — specifically USD621.80 per capita in 2019[192]. While there is considerable financing available for the protection of

[190] GCF. FP160: Monrovia Metropolitan Climate Resilience Project (MMCRP). Available at: https://www.greenclimate.fund/project/fp160#documents

[191] These institutions include: i) Ministry of Mines and Energy (MME); ii) Environmental Protection Agency (EPA); iii) National Fisheries and Aquaculture Authority (NFAA); iv) Ministry of Public Works (MoPW); v) National disaster Management Authority (NDMA); vi) Liberian Hydrological Services (LHS); vii) Liberian Meteorological services (LMS); viii) Liberian Maritime Authority (LMA); ix) Ministry of Finance and Development Planning (FNDP); and x) National Port Authority (NPA).

[192] World Bank Data. GDP per capita: Liberia. Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=LR

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ecosystems in the country, most investments are directed towards terrestrial ecosystems — particularly forests. Financing for the protection of coastal ecosystems predominantly comprises short-term grants from private foundations and government aid agencies. This is not sufficient for developing and implementing sustainable sea and river defence management interventions, however. In addition, fragmented institutional coastal management and an absence of incentives for private sector investment limit the development of public-private partnerships (PPP) for supporting coastal management.

Barrier 6: Limited access to training opportunities for local communities on effective coastal adaptation practices specifically in Sinoe County

With ~70% of Liberia's population living in coastal communities, a considerable proportion of the country's population is highly vulnerable to the coastal impacts of climate change. However, there is limited awareness of these impacts among the relevant vulnerable communities in Liberia, resulting in these communities being unable to adapt to the associated climate change hazards adequately. This is exacerbated by insufficient training initiatives at the local level aimed at enhancing the awareness of and supporting the implementation of sustainable coastal adaptation measures. Specifically, community trainings are necessary with regards to: i) locally appropriate climate-resilient sea and river defence measures; ii) sustainable, climate-resilient income-generating livelihoods, specifically for women and youth; and iii) adaptive measures to minimise the vulnerability of business operations and investment risks to climate change hazards, particularly in coastal counties.

Barrier 7: Access to financing and credit options for low-income coastal communities to diversify income is limited

While several efforts[193] have been made to modernise financing mechanisms in Liberia as well as promote inclusive finance options, the Liberian population still experiences numerous challenges in this sector. These challenges continue to limit their ability to diversify their income bases away from climate-sensitive livelihoods or to adopt climate-resilient practices that reduce vulnerability. Such challenges include, *inter alia*: i) limited access points for financial services, particularly in rural areas; ii) high costs associated with digital financial services; and iii) limited infrastructure to support digital services. There is currently only one commercial bank operating in Sinoe County and, given that most community businesses are informal micro, small and medium enterprises (MSMES), they do not benefit from conventional loan schemes offered by commercial banks. Community members, therefore, rely predominantly on informal and non-bank financial and credit facilities. However, as most community members are dependent on livelihoods that are vulnerable to climate change, their limited access to financing and credit options constrains their ability to adopt new climate-resilient and income-generating activities.

II.7. Baseline analysis

Several recent and ongoing initiatives within Liberia have been designed to address baseline developmental challenges, climate hazards and barriers. These initiatives, however, do not adequately account for the additional impact presented by future climate change conditions, which limits their long-term effectiveness. Despite this limitation, these initiatives represent a baseline to which the proposed LDCF project will provide additional finance to address climate change and promote adaptation. Table 2 below provides a summary of the baseline projects the proposed project will build on, as well as the project outcomes that will provide climate change additionality. Further details on the baseline projects are found in Annex 24: Baseline Analysis, while information on the baseline investment by the proposed project are available in Section III.5.

[193] In 2006, the Central Bank of Liberia (CBL) strengthened the commercial banking sector through increased capitalisation and reserve requirements. CBL later developed a Strategic Plan (2014–2018) for the Regulation and Supervision Department (RSD) which: i) assisted in addressing gaps in the regulation and supervision of the financial sector; and ii) modernised payments systems through the establishment of the Automated Clearing House (ACH) AND Real Time Gross Settlement (RTGS) systems. In 2016, CBL launched a Financial Sector Development Implementation Plan (FSDIP) which reinforced the need for well-developed financial infrastructure and to leverage digital technologies to expand service provision to unserved and underserved communities into the formal financial system. CBL later launched another Strategic Plan (2016–2018) aimed at modernising the financial sector, promoting financial inclusion and improving the capacity of CBL.

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Table 2. Baseline projects and initiatives in alignment with the proposed project.

Project title	Implementation period	Cost	GEF Agency/Executing Entity	Project summary	LDCF project additionality to the baseline
GEF/LDCF-financed projects					
Strengthening National Capacities to Meet Global Environmental Obligations with the Framework of Sustainable Development Priorities (ID 9390)[194]	2017–2021	USD3 million total[195]	UNDP/GoL (EPA)	The project aims to strengthen a targeted set of national capacities for achieving and sustaining environmental outcomes within the global framework of sustainable development priorities. The Liberian Environment Knowledge Management Systems (EKMS) — developed under this project and to be supported by the proposed LDCF project — intends to: i) strengthen institutional coordination; ii) increase access and dissemination of relevant information related to the Rio conventions[196]; and iii) promote adequate public awareness and education on climate change-related topics, Liberia's biodiversity and sustainable development.	Although this project includes some climate change elements, these are more focussed on mitigation and do not address details on SRDRM and coastal adaptation. The proposed LDCF project will build on the interventions of this project to: i) strengthen the EKMS knowledge hub for collecting and disseminating information related to integrated coastal zone management (ICZM) and coastal adaptation to climate change; ii) develop County Resilience Plans (CRPs) that aim to promote climate change adaptation-orientated development at the county level; and iii) develop appropriate coastal adaptation practices for communities under Outcome 2.
Conservation and Sustainable Use of Liberia's Coastal Natural Capital (ID 9573)[197]	2019–2025	USD15 million total[198]	Conservation International (CI)/Government of Liberia (Environmental Protection Agency, EPA) and CI Liberia	The objective of this project is to improve sustainable use and conservation of Liberia's coastal natural capital by mainstreaming the value of ecosystems and their related services into Liberia's development trajectory, with Sinoe County as one of the target counties. Planned outcomes of the project include, *inter alia*: i) ensuring that the value of biodiversity and ecosystem services — particularly in coastal areas — is incorporated into national decision-making and development pathways by developing Liberia's first national mangrove account under the Natural Capital Accounting	The efforts of this project will be synergistic with the interventions under the proposed LDCF project, specifically: i) improving coastal adaptation planning, response and communication mechanisms through capacity-building and awareness-raising initiatives on coastal ecosystem services and their value to communities and stakeholders under Outcome 2; and ii) identifying and implementing sustainable livelihood opportunities for coastal communities to facilitate long-term sustainable practices under Outcome 4. Although the LDCF project

[194] GEF. Strengthening National Capacities to Meet Global Environmental Obligations with the Framework of Sustainable Development Priorities. Available at: https://www.thegef.org/project/strengthening-national-capacities-meet-global-environmental-obligations-framework-0

[195] USD1,500,000 GEF Project Grant; USD1,500,000 co-financing.

[196] The three Rio conventions are: i) the Convention of Biological Diversity (CBD); ii) United Nations Convention to Combat Desertification (UNCCD); and iii) United Nations Framework Convention on Climate Change (UNFCCC).

[197] GEF. Conservation and Sustainable Use of Liberia's Coastal Natural Capital. Available at: https://www.thegef.org/project/conservation-and-sustainable-use-liberia-s-coastal-natural-capital

[198] USD3,944,220 GEF Project Grant; USD11,194,248 co-financing.

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				(NCA) framework; and ii) developing community incentives for shifting away from unsustainable resource-use practices in favour of preservation, restoration and sustainable management.	will build on this project's approach to promoting natural capital accounting and the sustainable management of ecosystems and their services in coastal areas, the project will specifically focus on coastal ecosystems such as mangroves and forests that provide adaptation benefits through coastal protection. Sustainable livelihoods will be selected that specifically increase the resilience of these livelihoods to climate change impacts.
Reducing deforestation from palm oil and cocoa value chains	2021–2026	USD74 million total[199]	Conservation International	This project will target the 'Biodiversity' and 'Land Degradation' GEF Focal Areas by combatting the degradation and deforestation of forested areas in northwestern Liberia. Improved land-use management strategies, combined with a focus on 'formal protected areas, community forestry, livelihoods and economic development' will be introduced to achieve this objective[200].	The LDCF project will build on the baseline work to be undertaken in the 'Reducing deforestation from palm oil and cocoa value chains' project through activities implemented under Component 4. By creating opportunities for integrated farming systems, fisheries, compressed stabilised earth blocks and their value chains (Output 4.2) the project will complement and draw on the introduction of 'improved sustainable production of food and commodity crops' introduced in the abovementioned deforestation project. Whereas livelihoods under the baseline project do not specifically address climate change risks, livelihoods under the proposed project will be designed to be climate resilient and to reduce the vulnerability of coastal communities to future flooding and erosion. Moreover, by facilitating access to finance for climate adaptation-orientated businesses (Output 4.3) the project will build on the promotion of restoration activities through innovative finance to be introduced in the abovementioned deforestation project[201].
Improve sustainability of Mangrove Forests and Coastal Mangrove Areas in Liberia through Protection, Planning and Livelihood Creation as a Building Block Towards Liberia's Marine and Coastal Protected Areas[202]					

[199] GEF. N.d. Reducing deforestation from palm oil and cocoa value chains. [online] Available: https://www.thegef.org/project/reducing-deforestation-palm-oil-and-cocoa-value-chains

[200] GEF. 2020. FSP CEO endorsement document. [online] Available: https://publicpartnershipdata.azureedge.net/gef/GEFProjectVersions/f0aacd75-c08e-e911-a83d-000d3a375888_CEOEndorsement.pdf

[201] GEF. 2020. FSP CEO endorsement document. [online] Available: https://publicpartnershipdata.azureedge.net/gef/GEFProjectVersions/f0aacd75-c08e-e911-a83d-000d3a375888_CEOEndorsement.pdf

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	2016–2019[203]	USD4 million total	Conservation International	Participatory land-use planning, in conjunction with establishing coastal protected areas, has been introduced across at least 35% of Liberia's mangroves under this project. A multifaceted approach has been taken to achieve this objective to: i) create an enabling environment for the establishment of coastal and marine protected areas by ensuring the necessary policies and plans are developed; and ii) reduce anthropogenic pressures on mangroves by introducing integrated land-use planning and sustainable, alternative	There are several synergies between the LDCF project and the 'Improve sustainability of Mangrove Forests and Coastal Mangrove Areas in Liberia through Protection, Planning and Livelihood Creation as a Building Block Towards Liberia's Marine and Coastal Protected Areas' project (hereafter referred to as the 'Mangrove Restoration Project'), specifically the introduction of additional climate-resilient livelihoods under Output 4.2, which aligns with the local economic development to be introduced among at least

[202] GEF. 2014. Project Identification Form. [online] Available: https://www.thegef.org/project/improve-sustainability-mangrove-forests-and-coastal-mangrove-areas-liberia-through

[203] The project duration was initially programmed at 36 months, or three years; however, it is listed on the GEF website as still currently under implementation.

[204] GEF. 2014. Project Identification Form. [online] Available: https://www.thegef.org/project/improve-sustainability-mangrove-forests-and-coastal-mangrove-areas-liberia-through

[205] These come from diverse sources, including UNDP's own funds, from UNCDF, from a range of bilateral donors (e.g. SIDA, DANIDA) and others (e.g. EU).

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Strengthening of the legal framework for the electricity sector and the hydrometric network to support hydropower development in Liberia[206] UNDP Programme Support	2016–2020 Ongoing	USD2.5 million USD60 million per year	MME, Norwegian Water Resources and Energy Directorate UNDP	The expected outcome of the second phase of this programme that aligns with the proposed project includes supporting the Liberian Hydrological Services (LHS) with the operation, maintenance and further development of their hydrometric network. Specifically, the project procured and installed 15 hydrometric stations and 14 rainfall stations, increasing national weather stations to an amount close to the initial number in Liberia before the civil wars (see Section II.2.6). UNDP plays an extensive supporting role in Liberia's national development and currently provides ~USD60 million per year in grants[205]. Several UNDP programmes pertain to coastal area development — the most relevant including: • Liberian Decentralisation Support Programme (LSDP) — aimed at developing a local government system built on principles and practices of good governance under the leadership of elected local officials; • Community-Based Recovery and Development; • Micro-Finance — Improved Access by Women to Financial Services in Rural Areas; • Disaster Risk Reduction Programme; and • Centre Songhai Liberia Initiative.	This project sets a baseline for the hydrometeorological equipment that provides climate information to support the early warning system to be developed and supported under the GCF project "Enhancing climate information systems for resilient development in Liberia (Liberia CIS)" and Output 2.1 of the proposed project. Despite setting an effective baseline with regards to technological capacity within the LHS, the project requires funding to continue operation and maintenance of the equipment, given that the project officially ended in 2020. Additionally, although the project procured sufficient equipment to increase Liberia's hydrometric infrastructure to similar levels to before the civil wars, this may not be adequate for future climate needs under climate change. The Liberia CIS and Output 2.1 of the proposed project will therefore assist in filling this equipment gap to ensure the particularly women — involved in livelihoods that are adaptation-oriented; and iv) improving disaster risk reduction by promoting SRDRM and climate adaptation principles, as well as by improving early warning systems. The LDCF project will build on this initiative by adding climate change capacity development and considerations to the most relevant programmes. This will include: i) increasing the capacity of local governance to consider climate change and SRDRM into development planning through the development of ICZM plans, RCPs and Guidance Manuals; ii) enhancing the climate resilience of communities in Sinoe County through direct investments in climate change defence infrastructure and awareness-raising of climate change and its impacts; iii) improving access to finance for entrepreneurs —

[206] MME. NVE technical assistance programme 2016–2020. Available at: https://www.nve.no/media/7825/2019-03-01-liberia.pdf

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					capacities of the LHS and hydrometric network are sufficient under climate change.
World Bank Forest Sector Project[207]	2016–2023	USD37.5 million	Forest Development Authority	The objective of the Forest Sector Project is to improve the management of — and increase benefit-sharing in — targeted forest landscapes across Liberia. The three components of the project include: i) strengthened regulatory and institutional arrangements for the implementation of reducing emissions from deforestation and forest degradation (REDD); ii) strengthened capacity for the management of targeted forest landscapes; iii) forest monitoring information system; and iv) project management, monitoring and communication. Accordingly, this project focusses on the expansion of the forest protected area network and the establishment of community forests. Focus is also placed on improving the institutional capacity of government agencies including the Forest Development Administration, EPA, MoA and Liberia Institute of Statistics and Geo-Information Services (LISGIS). Although one of the themes of the project includes climate change, this is mainly directed towards mitigation through REDD as opposed to the promotion of climate change adaptation.	By promoting the concept of sea and river defence and risk management (SRDRM) and developing integrated coastal zone management (ICZM) plans and Community Action Plans (CAPs), the LDCF project will build on the Forest Sector Project by increasing the institutional capacity of county- and district-level authorities to consider climate change adaptation principles in coastal development — including the use of nature-based solutions. These nature-based solutions include interventions similar to those used by the Forest Sector Project — including reforestation, community-based management and forest conservation — but will focus on coastal communities and increasing their capacity to provide coastal defence. Awareness-raising activities targeting coastal communities will focus on promoting the services coastal forests provide for protection from flooding and erosion.
Livelihoods and Employment Creation in Liberia	2021–2025	USD7.8 million	UNDP/GoL (Ministry of Commerce and Industry)	The objective of the 'Livelihoods and Employment Creation in Liberia' project is to contribute to reducing poverty and inequality in seven counties, namely Grand Bassa, Grand Cape Mount, Grand Gedeh, Lofa, Monsterrado, Nimba and Sinoe. The project aims to support the creation of income-generating opportunities for poor and vulnerable populations, including refugees and their host communities. The interventions of this project will be implemented under two components, specifically: i) supporting the	The interventions under this project will be synergistic with the those under Outcome 4 of the proposed LDCF project in particular, which aims to build the resilience of climate-vulnerable coastal communities by introducing gender-responsive options for climate-resilient income and livelihood diversification. Specifically, Output 4.2 of the proposed LDCF project will build on the efforts under Component 1 by developing diversified and climate-resilient livelihood options and income-generating activities. Outputs 4.1 and

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[207] World Bank. 2021. Liberia Forest Sector Project. Available at: https://projects.worldbank.org/en/projects-operations/project-detail/P154114.

				creation of sustainable, viable and diversified livelihood opportunities for the youth, women and persons living with disabilities by investing in and developing community infrastructure, environmental services, vocational skills, including digital skills, as well as inputs and technical advice to increase local food production — Component 1; and ii) strengthening business and enterprise development services by promoting access to finance, capacity building and innovation — Component 2.	4.2 will build on both Components 1 and 2 by facilitating and improving access to adaptation-orientated finance and enabling technologies among vulnerable communities, as well as building the capacity of and providing business advisory services to coastal adaptation enterprises.
GROW Liberia: Support to the Development of Markets and Value Chains in Agriculture in Liberia	2013–2018	USD 17 million total	Adam Smith International	This project is being implemented in Montserrado, Lofa, Bong and Nimba Counties, targeting five agricultural sub-sectors, namely: i) rubber; ii) oil palm; iii) agro-processing; iv) cocoa; and v) vegetables. Activities have concluded within the rubber, oil palm and agro-processing sub-sectors[208].	This LDCF project will build on GROW Liberia by introducing sustainable and additional livelihoods with a focus on value-chain development across all Liberia's coastal counties (Output 4.2). The introduction of inclusive finance under Output 4.3 will upscale the access to finance facilitated under GROW Liberia, which was limited to the rubber, cocoa and vegetables value chains in a select number of counties[209].

[208] GROW Liberia. N.d. About Grow. [online] Available: https://www.growliberia.com/about-grow

[209] Adam Smith International. N.d. GROW: Support to the Development of Markets and Value Chains in Agriculture Presentation. [online] Available: https://www.developingmarkets.com/sites/default/files/Grow%20Presentation.pdf

[210] Government of Liberia (GoL). 2019. Technology Needs Assessment report. Available at: https://ekmsliberia.info/wp-content/uploads/2020/12/tna-report-coastal-zone-liberia.pdf

[211] Government of Liberia. Environmental Protection Agency. 2018. National Policy and Response Strategy on Climate Change. Available at: https://www.epa.gov.lr/sites/default/files/National%20Policy%20and%20Response%20Strategy%20on%20Climate%20Change%20Final%20Document-min_0.pdf

[212] Consulate of the Republic of Liberia State of Georgia. 2017. Pro-Poor Agenda for Prosperity and Development (PAPD). Available at: http://liberianconsulatega.com/wp-content/uploads/2017/07/PAPD-Pro-Poor-Agenda-for-Prosperity-and-Development.pdf

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II.8. National strategies and plans

Although Liberia experiences extensive development challenges, considerable progress — in the form of policies, strategies and plans — has been made by the Government of Liberia (GoL) to address these challenges, such as the Pro-Poor Agenda for Prosperity and Development (PAPD). These policies, strategies and plans particularly relate to, *inter alia*, socioeconomic development and natural resource management — including coastal zone management. Additionally, progress has been made to acknowledge and address Liberia's vulnerability to climate change, as well as the additional impact of climate change on development challenges. The GoL has also ratified numerous international agreements and treaties strategies relevant to the proposed project, including the National Adaptation Plan of Action (NAPA). Further details of the proposed project's alignment to national priorities are provided below.

Technology Needs Assessment (TNA, 2019)[210]

Liberia's TNA identified coastal zones as a priority sector for climate change adaptation (CCA). In addition, the TNA prioritised three technologies for improving the resilience of Liberia's coastal zones, which specifically include: i) integrated coastal zone management (ICZM); ii) flood early warning systems (EWS); and iii) armour or rock revetments — that Outcomes 1, 2 and 3 of the proposed project will promote, support and contribute to, respectively.

National Policy and Response Strategy on Climate Change (NPRSCC, 2018)[211]

The NPRSCC was developed to ensure a comprehensive and consolidated approach to addressing the impacts of climate change in Liberia, with additional consideration of Liberia's developmental objectives. Accordingly, coastal zones have been identified as a priority for urgent adaptation intervention in Liberia — specifically, ensuring the protection of ~500 km of the country's coastline. The NPRSCC includes several components for achieving this objective, including to: i) promote disaster risk management and infrastructure to protect against SLR — which will be supported by the specific interventions under Outcomes 2 and 3 of the proposed project; ii) engage with coastal communities to facilitate participatory action for protecting and ensuring the continued viability of coastal areas — which aligns with Outcome 4 of the proposed project on developing sustainable, gender-responsive and climate-resilient community-based adaptation; and iii) design and implement a strategic communication action plan to inform and educate Liberian communities on the extent of climate change-related impacts on coastal areas and the adaptation required to overcome these challenges. The communication plan will be supported by specific interventions under Outcome 2 to enhance the knowledge capacity of coastal communities and enabling appropriate adaptation.

Pro-Poor Agenda for Prosperity and Development (PAPD, 2018–2023)[212]

The PAPD is the second series of National Development Plans (NDP) — following the Agenda for Transformation (AfT, 2012–2017) — expected under the Liberia Vision 2030 framework. The objectives of the agenda include: i) building more capable and trusted state institutions that lead to a stable, resilient and inclusive nation embracing, its triple heritage and anchored on its African identity; and ii) providing greater income security to an additional one million Liberians, and reduce absolute poverty by 23% through sustained and inclusive economic growth driven by scaled-up investments in agriculture, in infrastructure, in human resource development, and in social

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protection. While the proposed project will contribute indirectly to all four pillars of the PAPD, it will contribute specifically to three pillars, namely: i) Pillar One – Power to the People; ii) Pillar Two – The Economy and Jobs; and iii) Pillar Four – Governance and Transparency.

National Biodiversity Strategy and Action Plan (NBSAP, 2017)[213]

The NBSAP — first established in 2004 and later revised in 2017 — aims to ensure the protection of Liberia's biodiversity heritage by enabling awareness-raising programmes for Liberia's population about the importance of biodiversity, as well as by assessing and valuating ecosystem goods and services in the country. Moreover, it includes the development of a framework for mainstreaming biodiversity into Liberia's national accounting systems as well as its development policies, plans and programmes. The NBSAP includes five strategic goals for achieving its overarching aims, with goal five — 'Enhance implementation through participatory planning, knowledge management and capacity building' — particularly in alignment with the proposed project's Outcomes 1 and 2.

To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors (i.e. agriculture, energy, waste management, forestry and health) and coastal areas in Liberia (2017–2020)[214]

Liberia began its National Adaptation Plan (NAP) process in 2015 with the development of a roadmap based on: i) an evaluation of the existing climate change adaptation and mitigation initiatives; ii) an assessment of the knowledge, capacity and implementation gaps; and iii) an assessment of the capacity development needs. With support from the GCF, the objective of the project 'To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia' was to strengthen institutional frameworks and coordination for the implementation of the NAP process, expand the knowledge base for scaling up adaptation, develop capacity for mainstreaming climate change adaptation into planning and budgeting processes and systems, and formulate financing mechanisms for scaling-up adaptation — including public, private, national and international mechanisms. The proposed project will contribute to: i) expanding the knowledge base for scaling up interventions by introducing innovative technologies to support coastal adaptation planning under Outcome 2; ii) mainstreaming climate change adaptation into planning, budgeting processes and systems by strengthening the institutional capacity to address the vulnerability of coastal ecosystems (Outcome 1).

National Agenda for Transformation (AfT, 2012–2017)[215]

Liberia's AfT was a medium-term economic growth and development strategy created to enable Liberia's goal of reaching middle-income status by 2030. The objectives of the strategy were supported by four sector-specific pillars[216], with an additional fifth pillar further acknowledging cross-cutting challenges that impact the Liberian population's overall productivity and wellbeing. In particular, the fifth pillar entailed improving environmental management and ensuring its subsequent sustained contribution to economic development across all sectors, which is particularly important to Outcome 1 of the proposed LDCF project. The strategic goals of the AfT included: i) developing and implementing clear environmental policies and quality standards to guide environmental management — such as a national plan for a low-carbon, climate-resilient economy; ii) strengthening ownership and capacity of government and private sector agencies as well as civil society organisations (CSOs) for understanding and monitoring environmental policies and regulations; and iii) strengthening ownership and

[213] Convention on Biological Diversity. CBD National Strategy and Action Plan – Liberia. Available at: https://www.cbd.int/doc/world/lr/lr-nbsap-v2-en.pdf

[214] UNDP. Climate Change Adaptation. GCF National Adaptation Plans project in Liberia. Available at: https://www.adaptation-undp.org/projects/gcf-national-adaptation-plans-project-liberia

[215] Government of Liberia (GoL). 2019. Agenda for Transformation: Steps Toward Liberia RISING 2030. Available at: https://ekmsliberia.info/wp-content/uploads/2019/11/Liberia-Agenda-for-transformation.AfT_.pdf

[216] Pillar I— Peace, Justice, Security and Rule of Law; Pillar II — Economic Transformation; Pillar III — Human Development; and Pillar IV — Governance and Public Institutions.

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participation of communities in decentralised natural resource management and decision-making on environmental issues.

Nationally Determined Contribution (NDC)

Liberia's NDC — which is currently under development — includes two specific targets to build the resilience of coastal zones to climate change, namely: i) design and implement green-grey infrastructure approaches along 60% of Liberia's highly vulnerable coastline by 2030; and ii) establish an early warning system and predictive scenario modelling for climate disasters and coastal flooding by 2030. Of the proposed adaptation actions to achieve these targets, the project directly aligns with and contributes to three, which include: i) developing training, capacity building and strategic communication plans to enhance resilience to climate change at the household and community level by 2025 (Outcomes 2 and 4); ii) developing a strategic communication plan to educate and disseminate adaptation actions via, *inter alia*, awareness programmes, establishment of research and innovation centres within coastal communities, as well as the development of multi-stakeholder platforms for information sharing with regular/timely updates by 2025 (Outcomes 1 and 2); and iii) investing in coastal zone monitoring equipment for data collection, research and management purposes by 2030 (Outcomes 2 and 3).

Intended Nationally Determined Contribution (INDC, 2015)[217]

Liberia's INDC outlines short-, medium- and long-term planned actions for enabling the adaptation of Liberia's coastal zones to the impacts of climate change. The outcomes of the proposed LDCF project aligns with three of these adaptation actions, including: i) developing and implementing coastal zone policies, strategies and management plans (Outcome 2); ii) constructing grey infrastructure, such as sea walls or revetments (Outcome 3); and iii) facilitating technology transfer and training of institutional and local experts in coastal zone management and monitoring (Outcomes 1 and 2).

Initial National Communications (INC, 2013)[218]

Liberia's INC identifies the need for coastal protection technologies to address climate change-induced SLR and coastal erosion in the country. These technologies include: i) groynes; ii) sea walls; iii) revetments; iv) offshore breakwaters; and v) beach nourishment. Moreover, the INC outlines Liberia's plan to develop an effective early warning system (EWS) for the provision of timely and effective information through relevant institutions to enable vulnerable communities to adequately prepare for climate hazards. The proposed project will contribute to addressing the adaptation requirements of Liberia's coastal communities — as highlighted in the INC — through specific interventions under Outcomes 2 and 3.

National Policy for Disaster Risk Management (2012)[219]

The objectives of the National Policy for Disaster Risk Management are to: i) enhance national and local capacities for minimising vulnerability and disaster risks; and ii) prevent, mitigate and prepare for adverse impacts of hazards within the context of long-term development planning. The policy supports five strategies, which include: i) establishing effective and functional legal and institutional frameworks for disaster risk management (DRM); ii) strengthening disaster preparedness for efficient emergency response; iii) establishing improved risk identification, assessment, monitoring and EWS for disaster risks; iv) enhancing information and knowledge management for

[217] Government of Liberia (GoL). 2015. Intended Nationally Determined Contribution (INDC). Available at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Liberia%20First/INDC%20Final%20Submission%20Sept%2030%202015%20Liberia.pdf

[218] Government of Liberia. 2013. Initial National Communication to UNFCCC. Available at: https://unfccc.int/sites/default/files/resource/lbrnc1.pdf

[219] Government of Liberia. 2012. Disaster Management Policy. Available at: https://www.climate-laws.org/geographies/liberia/policies/national-disaster-management-policy

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disaster risk management; and v) contributing to local and national risk management applications for poverty reduction. Outcomes 1 and 2 of the proposed project directly align with this policy and further contribute to the above strategies, specifically by enabling improved CCA through capacity building and supporting early warning and risk management systems to provide accurate climate information to end users, particularly vulnerable coastal populations.

National Adaptation Plan of Action (NAPA, 2008)[220]

At the policy level, the proposed project aligns with three adaptation priorities identified in Liberia's NAPA, specifically: i) capacity building for the integration of climate change into institutions, development planning, infrastructure design, as well as land and coastal zone management planning (Outcome 1); ii) awareness raising through the dissemination of climate change and adaptation information, particularly for vulnerable communities such as farmers and coastal settlements (Outcome 2); and iii) mainstreaming CCA into policy through programmes in agriculture, forestry, fisheries, energy, health, gender and meteorology/hydrology (Outcome 1). At the project level, the proposed project will complement and build on interventions from two of the three high-priority adaptation projects identified in Liberia's NAPA, namely: i) 'Improved Monitoring of Climate Change: Enhancing adaptive capacity by rebuilding the national hydro-meteorological monitoring system and improving networking for the measurement of climate parameters'[221]; and ii) 'Coastal Defence System for the Cities of Buchanan and Monrovia: Reducing the vulnerability of coastal urban areas (Monrovia, Buchanan) to erosion, floods, siltation and degraded landscapes[222]'.

National Environmental Policy (2002)[223]

The overarching objective of Liberia's National Environmental Policy (NEP) is to ensure the improvement of the: i) natural environment; ii) quality of life of the Liberian population; and iii) economic and social living conditions of the country's current and future generations. In addition, its objective is to ensure reconciliation and coordination between Liberia's economic growth with its sustainable natural resource management. The outcomes of the proposed project align with the objectives of this policy by: i) strengthening Liberia's policy and institutional capacity to assess climate risks and to implement appropriate CCA planning in the country's coastal counties (Outcome 1); ii) implementing soft and hard interventions to reduce the vulnerability of Liberia's coastal communities and ecosystems to the impacts of climate change (Outcome 3); and iii) introducing gender-responsive and climate-resilient income-generating livelihoods to reduce the vulnerability of the coastal communities (Outcome 4).

III. STRATEGY

Given the baseline scenario and the projected impacts of climate change, current interventions in Liberia aimed at addressing the vulnerability of Liberian coastal communities to flooding and erosion are not sufficient, and external support is urgently required. The **proposed solution** to address the vulnerability of coastal communities to these hazards — as well as the barriers presented in Section II.6 — is to implement a sea and river defence and risk management (SRDRM) approach to protect coastal assets and promote climate-resilient livelihood diversification. This solution will focus on addressing current and future climate change impacts through a gender-responsive approach, building on ongoing baseline initiatives. Long-term objectives to achieve this include: i) introducing innovation and technologies into adaptation solutions and livelihoods that increase the resilience of coastal

[220] Government of Liberia. 2008. National Adaptation Plan of Action (NAPA). Available at: https://unfccc.int/resource/docs/napa/lbr01.pdf
[221] UNFCCC. Liberia: NAPA Project Profile. Available at: https://unfccc.int/files/adaptation/napas/application/pdf/20_libe_pp.pdf
[222] Ibid.
[223] Ministry of Foreign Affairs. 2003. Government of Liberia. The National Environment Policy of the Republic of Liberia (2002). Available at: http://extwprlegs1.fao.org/docs/pdf/lbr175141.pdf

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communities to climate change risks; and ii) using a systemic approach to mainstream climate change adaptation (CCA) and resilience options. Four project outcomes will support these objectives, namely:

- Outcome 1 — Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks;
- Outcome 2 — Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation;
- Outcome 3 — Reduced vulnerability of Sinoe County coastal communities to climate change-induced sea level rise impacts through hybrid solutions (nature-based and engineering); and
- Outcome 4 — Gender-responsive options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties.

These outcomes form part of the proposed project's Theory of Change (Figure 16) and will address climate change impacts by disrupting numerous impact pathways (IPs), as presented in Figure 17. The impact pathways and barriers that each outcome will address are discussed below, while Section IV.1 presents detailed descriptions of the project outcomes, outputs and activities. Specific details on how the project's outcomes and outputs support the GEF's CCA focal area objectives are also provided below.

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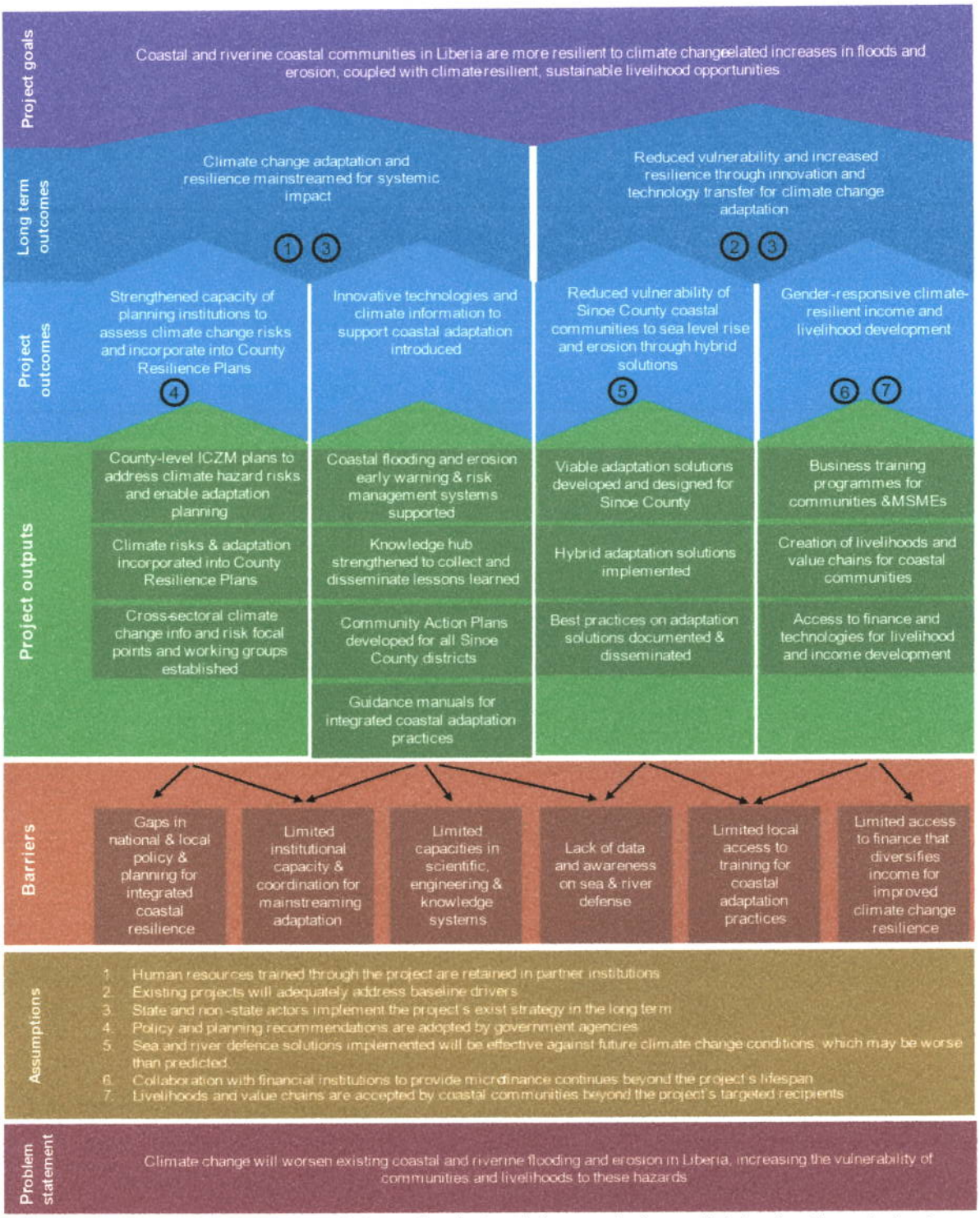

Figure 16. The proposed project's Theory of Change for Liberia. Black arrows indicate which barriers the project outcomes will address and the black circled numbers relate to the numbered project assumptions.

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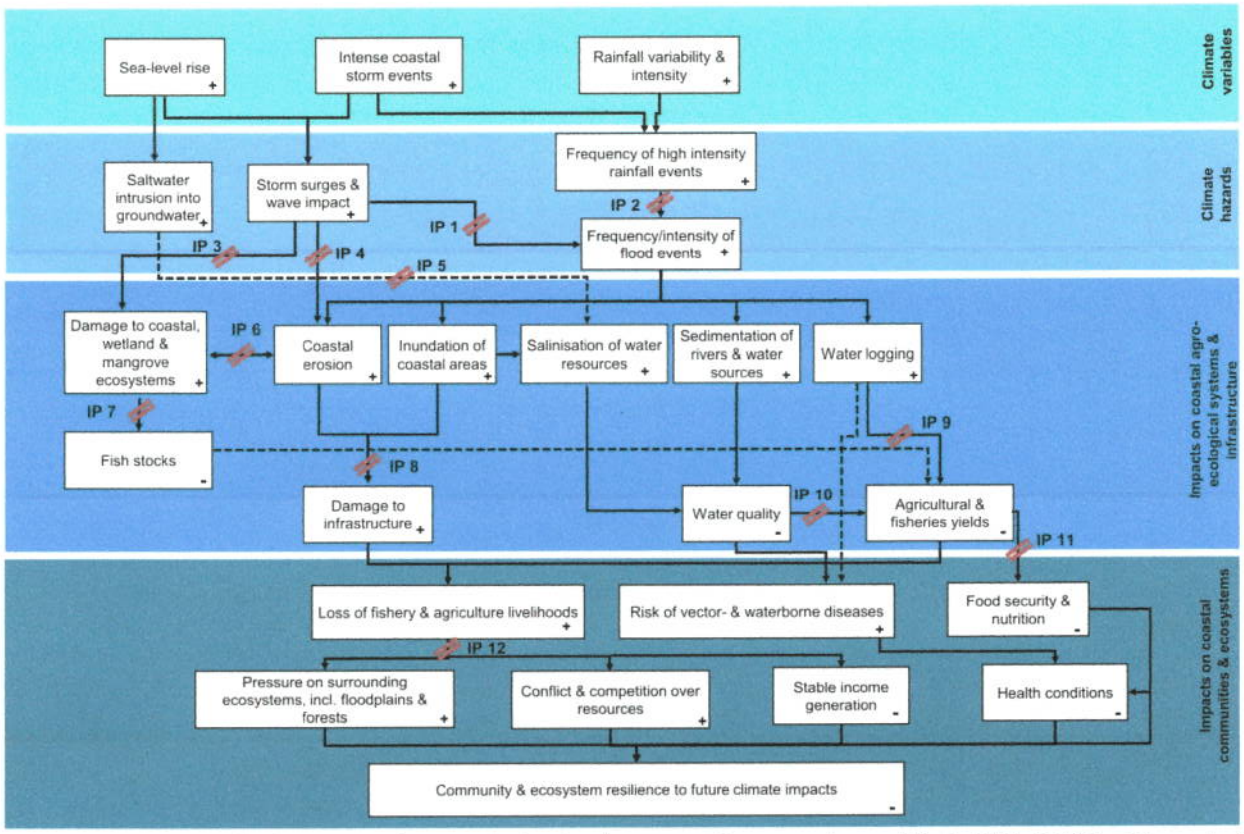

Figure 17. Solution tree for the proposed project, indicating the targeted impact pathways (labelled IP1–IP12) that the project interventions will disrupt, indicated with (//).

III.1. Strengthened institutional capacity to assess climate change risk and climate adaptation

Policies and agendas related to coastal management are being developed and implemented through several ongoing initiatives in Liberia. These include a national integrated coastal zone management (ICZM) plan — currently being developed through the GCF-funded 'Monrovia Metropolitan Climate Resilience Project' (MMCRP). This plan takes a climate-resilient approach to coastal management; however, vulnerability assessments and recommendations are only able to be presented at the national level, with limited focus on local level vulnerability. Consequently, the effective application of these recommendations across Liberia's coastal counties and districts is limited, as these national projects will not include site-specific vulnerability assessments and coastal management options. In addition, county level development plans are outdated and do not consider climate risks and climate change adaptation (CCA). As a result of these factors, the ability of the GoL to mainstream CCA and reduce the vulnerability of coastal communities to future flooding and erosion is limited.

The proposed solution – presented as Outcome 1 – to addressing the abovementioned constraints is to create an enabling environment for local-level coastal adaptation planning and management in all coastal counties. Specifically, this will involve increasing the capacity of county- and district-level planners to implement measures that reduce the frequency and intensity of climate change-induced flooding (**IP1** and **IP2** in Figure 17) and erosion (**IP4**) that result from future SLR and increasingly intense rainfall events predicted under the SSP1-1.9, SSP2-4.5 and SSP5-8.5 scenarios (as detailed in Section II.3.2). To accomplish this, Outcome 1 will incorporate climate change risk information and CCA solutions into county-level ICZM plans (under the framework of the national IZCM plans established under the MMCRP) and County Resilience Plans (CRPs). These plans, along with the increased capacity of coastal county planning institutions, will enable the improved management of coastal ecosystems that assist in reducing the impacts of increasingly intense flooding events on communities, their livelihoods and the health sector, and promote the implementation of adaptive infrastructure across Liberia's coastal counties. This

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infrastructure will reduce the salinisation of water resources from SLR, sedimentation of surface water reserves and water logging from increased flooding, which will minimise health risks to communities resulting from inadequate water quality or increases in water-borne vectors and diseases. Mainstreamed local-level ICZM and improved protection of coastal ecosystems will additionally assist in disrupting the positive feedback loop between ecosystem degradation and increased erosion caused by both flooding from increasingly intense rainfall events and baseline drivers of erosion (**IP6**). Through ICZM, protected ecosystems and improved management practices will also reduce pressure on natural resources such as fish, timber and non-timber forest products (NTFPs) (**IP7 and IP12**), enabling marine, riverine and coastal ecosystems to recover. This recovery will sustainably increase the provision of ecosystem services and resources to coastal communities. Moreover, the training and establishment of climate change information and risk focal points and working groups across all coastal counties will indirectly contribute to reducing damage to infrastructure from coastal erosion and flooding (**IP8**). The increased awareness raising and training through the focal points and working groups will promote the buy-in of local communities, the private sector and district officials of sea and river defence and risk management measures that reduce the vulnerability of coastal infrastructure to coastal erosion and SLR. Moreover, awareness raising and training will increase the capacity of these stakeholders to upscale sea and river defence interventions beyond the project's scope and lifespan.

Outcome 1 will additionally address two main barriers presented in Section II.6. First, Barrier 2 — gaps in national and local policy and planning to enable integrated coastal resilience — will be overcome by mainstreaming the ICZM approach and climate change adaptation into County Resilience Plans (CRPs) and county-specific ICZM plans. Second, Barrier 4 — limited institutional capacity and coordination for mainstreaming climate change adaptation and planning in government ministries at the local level — will be addressed by enhancing the capacities of county and district institutions to assess climate change risks. Outcome 1 will further address this barrier by supporting the revision and development of the abovementioned plans.

III.2. Innovative sea and river defence response planning and communication mechanisms

Within Liberia, the central authority for disaster management is the National Disaster Management Authority (NDMA), which functions through disaster management committees at the county, district and community level. Despite this institutional structure, the NDMA is functionally limited in terms of capacity, funding and support to address the increasing frequency and severity of coastal climate hazards[224]. There is also insufficient coordination between the NDMA and other institutions involved in disaster preparedness, mitigation and response, including the Liberia Meteorological Service (LMS), Liberia Hydrological Service (LHS) and the Environmental Protection Agency (EPA). Limited capacity and coordination of these institutions have led to a delayed response to assist victims of climate hazards, resulting in increased loss of lives and infrastructure. In addition to a limited capacity of the NDMA to respond timeously to climate hazards, there is insufficient information available for communities and district officials to understand climate risks and adaptation options, further restricting the current level of preparedness to flooding and erosion hazards.

Outcome 2 of the project will assist in reducing damage to infrastructure from coastal erosion and flooding (**IP8**) resulting from future SLR and increased intense rainfall events by adopting an innovative sea and river defence and risk management (SRDRM) approach. This approach will support the project's adoption of ICZM principles by setting a framework for infrastructure management along Liberia's coastal zone that demonstrates river and wetland management. SRDRM is therefore an innovative concept that jointly considers sea and river defence principles within the ICZM framework and presents a proactive approach to coastal risk management.

An important element of SRDRM involves improving response planning and communication mechanisms. This approach will prepare communities for future climate hazard events, building on the 'Enhancing Climate Information Systems for Resilient Development in Liberia Project' (Liberia CIS). Interventions under Outcome 2 will

[224] Kalinski V. 2019. Climate hazard, vulnerability and risk assessment for the coastal zone of Liberia. Developed as part of the project "To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia".

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include early warning and risk management systems, action plans, Guidance Manuals and a strengthened knowledge hub to directly support vulnerable end users and provide information for new adaptation opportunities to county and district officials as well as private sector actors. Improved early warning and disaster preparedness will assist in protecting infrastructure from climate change-induced climate hazards. This reduced damage to infrastructure — including homes and places of business — will ultimately increase the overall resilience of communities by preserving livelihoods that are critical for income generation, such as fishing and the production of staple crops.

Project interventions under Outcome 2 will address several barriers, including Barrier 1 — limited data and awareness on SRDRM within Sinoe and other coastal counties; Barrier 3 — limited capacities in scientific, engineering and knowledge systems to support the design and implementation of SRDRM for effective climate change adaptation in coastal counties; and Barrier 4 — limited institutional capacity and coordination for mainstreaming climate change adaptation and planning in government ministries and at the local level. Outcome 2 will overcome Barrier 1 by strengthening coastal adaptation planning, response and communication mechanisms within Sinoe County through the improved understanding of the value of coastal ecosystem services by communities and stakeholders. Specifically, this outcome will address both Barrier 1 and 3 by strengthening the EPA's existing Environmental Knowledge Management System (EKMS) knowledge hub to collect and disseminate lessons learned on SRDRM information available for all coastal counties. The knowledge hub will also utilise and improve existing climate and coastal wave observation technologies to produce information that can meet the requirements of end users, including farmers, fisherfolk and individuals involved in the fish trading system. Project interventions will also improve SRDRM information access and awareness management capacity by supporting and establishing early warning and alert systems designed to effectively reach vulnerable communities and assist decision-makers in addressing climate change impacts. Finally, Outcome 2 will address Barrier 4 by developing coastal Community Action Plans (CAPs) and Guidance Manuals, which will use information from the knowledge hub and adaptation options from the national NAPs project. These options will be applied at the county level by customising solutions to each county's specific context, drawing on county-specific vulnerability assessments. The coastal CAPs provide guidelines for coastal communities to participate in the monitoring of coastal ecosystems and their services and for the adoption of new livelihood and adaptation opportunities. At the same time, the Guidance Manuals will support district staff in Sinoe and other coastal counties to develop and disseminate integrated coastal management practices.

III.3. Hybrid climate change adaptation solutions

As a result of limited financing and technical capacity, coastal communities along much of Liberia's coast have insufficient protection against flooding and erosion caused by climate change-induced sea level rise (SLR), storm surges and intense rainfall events. This limited coastal protection is particularly the case for Sinoe County, one of Liberia's most isolated and vulnerable coastal counties. Although several baseline projects and initiatives attempt to address this vulnerability to flooding and erosion — including projects that aim to restore protective mangroves and forests — many of these initiatives are insufficient to address the additional impact of climate change in the long term. In addition, these initiatives often depend on utilising nature-based or engineered adaptation solutions separately, reducing their potential to protect vulnerable communities.

Under Outcome 3, climate-resilient sea and river hybrid defence solutions will be designed and implemented in Sinoe County. These solutions, including nature-based and engineered options, will reduce the impact of flooding and erosion from future SLR and increasingly frequent and intense storms caused by climate change (**IP1** and **IP2**) on vulnerable coastal areas. Engineered options, including revetments and groynes, will directly protect coastal areas from SLR and extreme rainfall event-induced flooding and storm surges. Similarly, nature-based solutions — including the restoration and conservation of valuable ecosystems such as mangroves and forests — slow down the speed of flooding waters, thereby reducing the impact of erosion (**IP4**). Combining these adaptation solutions will minimise damage to infrastructure and ecosystems from coastal erosion and flooding (**IP3** and **IP8**). In addition, engineered and biological barriers will reduce saltwater inundation of agricultural areas and surface freshwater sources by restricting the inland movement of seawater from storm surges that have a greater

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damaging impact as a result of future SLR. This restriction in saltwater movement will decrease waterlogging of inland areas and assist in preventing the reduction of water quality from both sedimentation and saltwater inundation (**IP9** and **IP10**), subsequently increasing agricultural yields. Moreover, restored ecosystems such as forests will further improve water quality by promoting the infiltration of freshwater from storm events into underground aquifers, helping to protect groundwater reserves from saltwater intrusion caused by storm surges and SLR (**IP5**).

As illustrated above, these impact pathways will be further addressed by removing Barrier 1 — limited data and awareness on SRDRM within Sinoe and other counties and Barrier 6 — limited access by local communities and local institutions to training opportunities on effective coastal adaptation practices in Sinoe County. The participatory design and implementation of hybrid adaptation solutions in Sinoe County will raise awareness of these opportunities within the county's coastal communities. At the same time, the documentation and dissemination of best practices from these interventions will assist in training communities and institutions in other coastal counties on these sea and river defence measures.

III.4. Gender-responsive and climate-resilient livelihood options

At present, livelihoods adopted by coastal communities — including primarily fishing, crop production and their related value chains — are vulnerable to climate hazards such as erosion, flooding and seawater inundation of surface and groundwater reserves, which will worsen under future climate change. These climate hazards damage equipment and crops, lower livelihood production and incomes, reduce food security and result in loss of life. Moreover, communities are often limited to livelihoods and practices that unsustainably utilise land and ecosystem resources. These unsustainable practices — which include monoculture crops that use polluting fertilisers and pesticides, overfishing, and sand mining — reduce the ability of ecosystems to provide essential services such as protection from storm surges, thereby worsening the exposure of coastal communities to climate change hazards. Compounding these current and future climate risks is often individuals' inability to adopt alternative, more sustainable livelihoods as a result of limited finance, capacity and technologies.

Under Outcome 4 of the proposed project, sustainable, climate-resilient livelihood opportunities, including climate-resilient fishing practices, integrated farming systems and compressed stabilised earth block construction, will be introduced that increase the adaptive capacity of coastal communities to climate change impacts and reduce pressure on and degradation of surrounding ecosystems. In conjunction with coastal protection provided by adaptive solutions implemented under Outcome 3, livelihood options will be designed and implemented to increase their resilience to waterlogging and saltwater inundation of inland areas resulting from SLR and intense rainfall events (**IP9** and **IP10**) through measures such as dykes. These livelihood alternatives — combined with technologies and practices that increase the efficiency of livelihood options and energy usage — will result in the growth of fishery and agricultural yields and improve food security and nutrition for coastal communities (**IP11**). Additionally, more diversified livelihoods will decrease conflict and competition over resources, resulting in more stable income generation and reducing pressure on surrounding ecosystems and fish stocks for resources (**IP12**). Reduced pressure on ecosystems and fish stocks — along with reduced erosion from replacing damaging practices such as sand mining with more sustainable alternatives — will reduce the degradation of critical coastal ecosystems. This reduced pressure will increase the resilience of these ecosystems and improve the generation of ecosystem services such as the provision of natural resources and protection from future flooding and erosion (**IP6** and **IP7**).

The interventions that will be implemented under Outcome 4 will also address two barriers, namely Barrier 6 — limited access by local communities and institutions to training opportunities on effective coastal adaptation practices in Sinoe County, and Barrier 7 — limited access to options and local financial credit for low-income coastal communities to diversify income and build resilience to climate change. The proposed project will overcome Barrier 6 by establishing training centres on newly introduced technologies involved in, *inter alia*, compressed stabilised earth block (CSEB) construction and integrated farming systems (IFS). These training centres will target local coastal communities and Micro, Small and Medium Enterprises (MSMES), focusing on youth and

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women groups. In addition, the proposed project will develop industry standards and codes of conduct that reflect best practices in CSEB production and IFS through coordination with relevant GoL institutions. Outcome 4 will also address Barrier 7 by providing access to climate-responsive financial products and technologies to coastal communities for developing livelihood and income diversification by collaborating with micro-finance institutions to provide micro-finance and insurance opportunities.

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III.5. Baseline investment

The proposed project will build on several baseline projects which have recently or are currently addressing baseline challenges and root causes of degradation in Liberia. Specifically, the project's proposed solution will target the climate change impacts not adequately addressed by these projects, thereby increasing the baseline projects' effectiveness in the long-term, enhancing the overall resilience of Liberian coastal ecosystems and communities. Summaries of the baseline projects are provided in Section II.5 and Annex 24: Baseline Analysis, while the additional funding contributed to these investments by the proposed project is presented in Table 3 below.

Table 3. GEF funding incremental value additional to the baseline for each outcome and output.

Outcome	Output	Business-as-usual (without LDCF funding)	GEF incremental value (with LDCF funding)
Outcome 1. Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks. LDCF budget: USD700,000	Output 1.1. County-level ICZM plans prepared for all coastal counties to address climate hazard risks on infrastructure, livelihoods and health, as well as to enable adaptation planning, monitoring, protection and the maintenance of sea and river defence.	Currently, responsibility for the management of Liberia's coastal zones is fragmented across 10 government institutions. In many cases, these institutions operate independently and with limited coordination, which detracts from the effective and sustainable management of coastal areas. While an Integrated Coastal Zone Management Unit (ICZMU) has been established under the Ministry of Mines and Energy (MME), the unit operates predominantly on an *ad hoc* basis in response to coastal climate hazards. As a result, Liberia is currently without an ICZM plan to effectively guide the efforts of the ICZMU. Additionally, limited financial, human and technical resources at the national and county-levels further inhibit the facilitation of coordinated efforts for effective coastal zone management.	LDCF resources will be used under this project to develop county-level ICZM plans, building on a national ICZM plan that will be developed under the GCF-funded 'Monrovia Metropolitan Climate Resilience Project'. ICZM enables an integrated approach for addressing several current and future coastal management challenges, including habitat loss, water quality degradation, depletion of coastal resources, changes in hydrological cycles and adaptation to climate change impacts, such as SLR. LDCF funding will be allocated towards *inter alia:* i) developing linkages between government institutions, local research bodies, the private sector and civil society groups through a ICZM Committee and Cross-Sectoral Working Group; and ii) facilitating the incorporation of climate change considerations into coastal zone management. Another important addition to the ICZM plans is sea and river defence risk management (SRDRM), which will outline the necessary visions, goals, policies and objectives to manage flooding and erosion defence mechanisms and infrastructure in Liberia.
	Output 1.2. Identified climate change risks and adaptation priorities incorporated into coastal County Resilience Plans as well as county and national planning and budgeting processes.	Although institutional capacity building to address coastal area development has progressed through initiatives such as the USD60 million UNDP Programme Support, there is limited knowledge and understanding of Liberia's climate change risks and the associated impacts on the population among county-, district- and local-level governance. Consequently, the incorporation of climate change considerations into national development plans,	LDCF resources will be used to support and implement Liberia's climate change-related priorities as identified in the GCF-funded NAP project. These priorities include developing: i) sector-based climate change strategies and action plans for coastal management; and ii) technical guidelines for relevant ministries to include climate change into their budgeting and planning processes. Using the ICZM plans developed under

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		policies and implementing processes is constrained. This is exacerbated by limited capacity among national- and county-level ministries for mainstreaming CCA into development plans.	Output 1.1, combined with the findings from this development process, coastal adaptation principles as well as monitoring, protecting and maintenance of SRDRM mechanisms will be incorporated into development plans at national and sub-national levels. Additional LDCF funding will be used to support human resource capacity to improve a local-level understanding of enhancing technical guidelines relating to SRDRM standards, protocols and indicator sets.
	Output 1.3. Cross-sectoral climate change information and risk management focal points and working groups established and trained in all coastal counties.	Currently, accessible information and awareness of Liberia's climate change risks, as well as SRDRM at local levels, is limited. Consequently, the already high climate vulnerability of Liberia's population — particularly communities living in coastal counties — is exacerbated by limited knowledge on how to appropriately reduce their vulnerability.	LDCF resources will be used to establish county-level, cross-sectoral focal points and working groups in all coastal counties and train them on climate change information and risk to enhance local awareness of climate risks and SRDRM. This output will build on the NAP's goal of building capacity in the private sector, financial intermediaries and other stakeholders on the application of adaptation activities. While the NAP project output focusses primarily on sectoral officials and stakeholders at the national level and in selected counties, Output 1.3 of the proposed LDCF project will focus on local capacity at the county level for all coastal counties not yet targeted.
Outcome 2. Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation. LDCF budget: US$1,100,000	Output 2.1. Coastal flood and erosion early warning and risk management systems supported to provide climate information, products and services that meet the needs of end users.	The Liberia National Disaster Management Policy highlighted risk identification and communication mechanisms as a priority because a robust disaster risk management (DRM) system that promotes a proactive approach can considerably reduce disaster losses. However, while disaster preparedness, mitigation and response institutions exist in Liberia, there is limited coordination among these institutions and no national mechanism for shared generation and use of weather- and climate-related information. There is also limited institutional capacity to collect, analyse, disseminate weather and climate data for planning, development and disaster risk reduction (DRR). Additionally, Liberia's civil wars led to the damage and loss of many of the country's hydrometric infrastructure. The USD2.5 million baseline project 'Strengthening of the legal framework for the	Under this output, LDCF resources will be used to strengthen existing coastal flood- and erosion-risk management and EWS within Sinoe County to address the impacts of climate hazards on communities. This will be done by supporting the interventions being implemented by the GCF-funded Liberia CIS project. Specifically, the LDCF project will: i) contribute to the procurement of weather stations and equipment to improve the collection of weather data; ii) increase the capacity of LMS staff to consider climate change in risk management and EWS; and iii) support early warning and preparedness information delivery systems targeting vulnerable coastal communities.

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		electricity sector and the hydrometric network to support hydropower development in Liberia' aimed to increase the technical capacity of the LHS and recover weather stations numbers to those before losses that occurred during the civil wars. However this project does not take into account capacity and infrastructure needs under future climate change conditions and subsequently lacks long-term funding mechanisms for the continued maintenance of the weather stations. A USD11 million national GCF-funded project entitled 'Enhancing Climate Information Systems for Resilient Development in Liberia (Liberia CIS)' is currently being implemented, which is aimed at addressing these baseline gaps and enhancing the detection, monitoring, analysis and forecasting of climate hazards in addition to improving warning dissemination and communication. Despite this, several gaps remain at the county level regarding equipment and technical capacity to implement EWS and communicate this information to vulnerable end users.	
	Output 2.2. Existing EPA Environmental Knowledge Management System enhanced to support the collection and dissemination of lessons learned on sea and river defence based on Sinoe County adaptation solutions.	Information services and products related to CCA and risk management that are targeted specifically at local communities have not been developed in many coastal counties. Consequently, vulnerable communities have limited knowledge and access to knowledge on climate risks. Although the Environmental Knowledge Management System (EKMS) developed under the USD3 million project 'Strengthening national capacities to meet global environmental obligations with the framework of sustainable development priorities' provides information dissemination and institutional coordination for sustainable development, its focus on climate change — particularly with regards to coastal adaptation — is limited and does not consider the concept of ICZM and SRDRM.	LDCF resources will be used to enhance the existing EPA national online knowledge hub — Environmental Knowledge Management System (EKMS) — with the objective of: i) collecting and disseminating data on effective SRDRM; and ii) contributing to the production and application of climate risk and adaptation information that meets the needs of vulnerable populations. Additionally, a decision-making support tool will be developed on adaptation options and risk management, targeting county- and district-level planners and private sector stakeholders.
	Output 2.3. Community Action Plans developed for all coastal districts of Sinoe County.	Given the limited knowledge and awareness of communities on Liberia's climate risks and the associated impacts on the population — including drivers such as sand mining which exacerbate these impacts — communities are not equipped with adequate knowledge to reduce their vulnerability to	Using LDCF resources, the proposed project will encourage coastal communities to adopt new adaptation and livelihood opportunities to increase their resilience to SLR and flooding and erosion induced by intense storm events through the development of Community Action Plans. The

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		these impacts. However, Conservation International (CI) and GoL are currently implementing a project entitled 'Conservation and Sustainable Use of Liberia's Coastal Natural Capital' which focusses on, *inter alia*, developing community incentives for shifting away from unsustainable resource-use practices in favour of preservation, restoration and sustainable management to improve sustainable use and conservation of Liberia's coastal natural capital.	plans will also include a framework for participatory community monitoring of coastal ecosystems and their services, encouraging communities to play an active role in reducing activities driving degradation.
	Output 2.4. Guidance Manuals for integrated coastal adaptation practices developed and disseminated to all coastal counties.	There is no evidence of knowledge products being developed to inform and guide the implementation of integrated coastal adaptation in Liberia's coastal and riverine counties.	Building on baseline information and analyses generated by the NAP project, as well as the proposed project's county-level ICZM plans (Output 1.1), the knowledge hub (Output 2.2) and best practices on adaptation solutions (Output 3.3), LDCF resources will be used to produce and disseminate a series of Guidance Manuals to coastal district staff within Sinoe County and other coastal counties to support participative ICZM practices. The manuals will include, for example, guidance for re-defining building codes for climate-proofing infrastructure in riparian forests or coastal wetland ecosystems and supporting climate-resilient agricultural development in response to climate change impacts.
Outcome 3. Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature based and engineering). LDCF budget: US$3,608,000	Output 3.1. Viable solutions to address climate vulnerabilities in Sinoe County developed and designed using multi-criteria and participatory processes for identifying, prioritising and planning adaptation and resilience solutions.	There is limited expert knowledge and technical capacity within Liberia's relevant government institutions to address the country's vulnerability to climate change impacts, specifically through the identification, design and implementation of appropriate CCA interventions which integrate both nature-based and engineered solutions. Under a business-as-usual scenario, interventions to address the impacts of climate hazards will likely continue to be focussed on grey infrastructure. Compared with hybrid solutions, this approach will be less effective against the intensification of these impacts under future climate change.	Using LDCF resources, Output 3.1 will focus on assessing viable adaptation intervention options for implementation in Sinoe County. These options — both engineered and nature-based solutions — will be considered and selected based on a rigorous multi-criteria analysis, which will include the effectiveness, impact potential, cost, political viability, sustainability and maintenance of each intervention, based on a combination of expert analyses and a stakeholder engagement process. This approach will ensure the viability of selected adaptation solutions to adequately address current and future impacts of climate change in Liberia, and particularly in Sinoe County.
	Output 3.2. Coastal- and catchment-level adaptation solutions implemented to improve the resilience of communities to the impacts of climate change in Sinoe	Considering Liberia's relatively low GDP and considerable development needs, the GoL has limited financial capacity to invest in medium- to long-term interventions to enhance the country's	Under this output, LDCF resources will be used to implement nature-based and engineered adaptation solutions — identified under Output 3.1 — to enhance the resilience of coastal

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	County.	resilience to climate change. In addition, investments available for coastal ecosystems predominantly comprise short-term grants from private foundations and government aid agencies. However, these are insufficient for developing and implementing sustainable sea and river defence management interventions. As a result, communities that are currently exposed to climate hazards such as erosion and flooding will become more vulnerable to these impacts under future climate change. There are currently no hard infrastructure initiatives to address coastal protection in Sinoe County, because they have mainly been targeted at more populous counties such as Monsterrado. There are, however, several initiatives aimed at protecting natural forest and mangrove ecosystems through community participation. This includes the USD15 million 'Conservation and sustainable use of Liberia's coastal natural capital' and the USD37.5 million 'Forest Sector Project'. Although these projects aim to improve the sustainable management of forest ecosystems and raise awareness of the benefits of ecosystem services, they do not specifically consider the role of coastal protection from these ecosystems in coastal areas.	communities to SLR and other climate change impacts in Sinoe County. This will include constructing revetments and groynes in the communities of Downtown-Mississippi and Sebeh designed to withstand the impacts of future climate change, as well as restoring protective ecosystems in targeted coastal sites across Sinoe County. To ensure the long-term sustainability of the nature-based interventions, LDCF resources will be used to establish a community-driven ecosystem-based monitoring programme for the coastal zone, using lessons learned from the baseline projects. Ecosystem-based monitoring will specifically focus on raising awareness of climate change impacts and ecosystem services that contribute to coastal protection.
	Output 3.3. Best practices on adaptation solutions documented and disseminated to other coastal counties for adoption and upscaling, including engagement with the private sector.	Given the limited available financing to invest in sustainable and effective coastal adaptation that incorporates both engineered and nature-based solutions, there are currently minimal coastal adaptation models specific to Liberia's coastal counties and adaptation needs that are suitable for replication and upscaling.	The adaptation options implemented under Output 3.2 will serve as a pilot project for effective coastal adaptation in Liberia. LDCF resources will be used to develop technical methodologies for documenting best practices of these adaptation solutions and lessons learned during implementation. These best practices and lessons learned will be specific to the context of coastal counties in Liberia and will enable appropriate adoption and upscaling of similar interventions in other vulnerable coastal counties. This output will also involve engagement with stakeholders — including the private sector — to ensure comprehensive and integrated best practices on adaptation solutions are collated and documented.
Outcome 4. Gender-responsive	Output 4.1. Business identification,	There is currently limited local-level knowledge and	Under this output, LDCF resources will be used to

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options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties. LDCF budget: US$3,099,100	development and management training programmes designed and delivered to communities and Micro, Small and Medium Enterprises in coastal counties, targeting women and the youth.	training on climate-resilient livelihoods and income-generating activities with a specific focus on the youth and women. Consequently, the livelihoods of coastal communities, and these groups in particular, are continually vulnerable to climate hazards, which is worsened by limited knowledge on the appropriate adaptive measures to minimise climate risks to businesses. In response, UNDP and the GoL, particularly the Ministry of Commerce and Industry have recently initiated a project entitled 'Livelihoods and Employment Creation in Liberia' targeted towards the reduction of poverty and inequality in seven counties, namely Grand Basse, Grand Cape Mount, Grand Gedeh, Lofa, Monsterrado, Nimba and Sinoe. The project aims to support the creation of income-generating opportunities for poor and vulnerable populations, with a specific focus on women, the youth and refugees and their host communities.	improve the ability of individuals to identify, initiate and sustain climate-resilient and sustainable enterprises, allowing them to better access livelihood and value-chain opportunities developed and implemented under Output 4.2. Specifically, funding will be used to design and deliver training programmes focussing on business identification, development and management to coastal communities.
	Output 4.2. Opportunities for integrated farming systems, fisheries, compressed stabilised earth blocks and their value chains created for coastal communities.	Numerous initiatives in Liberia are focussing on promoting sustainable and diversified livelihoods that reduce ecosystem degradation and benefit communities. These projects include: i) 'Conservation and sustainable use of Liberia's coastal natural capital ' (USD15 million); ii) 'Reducing deforestation from palm oil and cocoa value chains' (USD74 million); iii) 'Improve sustainability of mangrove forests and coastal mangrove areas in Liberia through protection, planning and livelihood creation as a building block towards Liberia's marine and coastal protected areas' (USD4 million); iv) 'Livelihoods and employment creation in Liberia' (USD7.8 million); and v) 'GROW Liberia: Support to the development of markets and value chains in agriculture in Liberia' (USD17 million). These livelihood initiatives, however, primarily target root causes of forest degradation and do not focus on increasing climate resilience for vulnerable communities. In addition, not all counties or major coastal areas are covered by these initiatives.	LDCF resources will be used to ensure the improved, sustainable use of natural resources initiated through the baseline projects by identifying and implementing sustainable, climate-resilient livelihood options for coastal communities. The livelihoods — developed in consultation with beneficiary communities and relevant county and district institutions — will be linked specifically to opportunities involving fisheries, compressed stabilised earth block (CSEB) and integrated farming system industries and their value chains. Moreover, these industries will be adapted to be appropriate for the specific climate change adaptation needs within Liberia's coastal communities.
	Output 4.3. Access to finance and technologies to develop livelihood and	While several efforts have been made to modernise financing mechanisms in Liberia and promote	Output 4.3 will be used to facilitate — in collaboration with micro-finance institutions and

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	income diversification enterprises of coastal livelihoods and resources facilitated in collaboration with national and county financial institutions.	inclusive finance, numerous challenges are still experienced by the country's population — particularly low-income coastal communities that are vulnerable to climate change. There is also limited available financing for agricultural producers. These challenges are further exacerbated by the high risk associated with financing the small-scale, semi-formal businesses, which predominantly constitutes businesses in Sinoe County. Resultantly, this limits the communities' capabilities to diversify their income base, and subsequently enhance their adaptive capacity. However, the 'Livelihoods and Employment Creation in Liberia' project aims to promote access to finance which is more inclusive and appropriately enables the economic advancement of vulnerable populations. The recently initiated CI project also aims to promote restoration activities by establishing innovative finance to decrease degradation and deforestation in Liberia's forested areas. Despite these initiatives, there is still limited focus on providing access to finance for promoting climate-adaptative livelihood options that are resilient to future climate change.	Village Savings and Loans Associations (VSLAs) — access to finance to support climate-adaptive enterprises in vulnerable communities. This will include training national and county financial institutions to integrate climate risk management into financial products and business cases as well as implement sector-wide guidelines to integrate climate change risks, vulnerability and adaptation opportunities into financial decision-making. Additionally, market studies will be undertaken on target communities to develop context-specific climate-responsive financial products, which will be piloted through existing VSLAs in Grand Cape Mount County.

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III.6. Assumptions

Several assumptions will need to be met for the proposed project's objectives and outcomes to be sustainable and successful in the long term. At the long-term outcome level, the assumptions listed below apply.

- Human resources trained through the project's capacity development outputs are retained and operational in the partner institutions, or that institutional knowledge is maintained in the long term.
- Baseline projects and initiatives (See Section II.8: Baseline Analysis and Annex 24: Baseline Analysis) that the proposed project will build on and complement will adequately address baseline drivers to ecosystem degradation and climate hazard vulnerability.
- State and non-state actors at all levels will continue to implement the proposed project's exit strategy.

At the project outcomes level, the main assumptions are provided below.

- Government agencies will adopt plans developed by the project at all levels (Outcome 1).
- Sea and river defence solutions implemented will be effective against future climate change conditions, which may be worse than predicted (Outcome 3).
- Collaboration with financial institutions to provide micro-finance continues beyond the project's lifespan (Outcome 4).
- Proposed livelihood options and value chains are adopted and scaled up by communities beyond the targeted recipients (Outcome 4).

III.7. Contributions to the GEF7 climate change adaptation focal area strategy

The proposed project interventions discussed above will contribute to three GEF7 climate change adaptation focal area objectives: CCA-1 — reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation; CCA-2 — mainstream climate change adaptation and resilience for systemic impact; and CCA-3: Foster enabling conditions for effective and integrated climate change adaptation. Specific project contributions to these focal area elements are described below, with further details provided in Annex 15: LDCF Core Indicators.

CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation.

The proposed project will contribute to CCA-1's Outcome 1.1 — Technologies and innovative solutions piloted or deployed to reduce climate-related risks and enhance resilience through the interventions under Outcomes 2, 3 and 4. Specifically, Outcome 2 will strengthen existing or developing new early warning and alert communication systems and their associated technologies, allowing communities to prepare for climate hazards early and thereby increasing their resilience (Output 2.1). By developing and implementing innovative engineered and nature-based adaptation solutions, Outcome 3 will increase the resilience of coastal community assets to flooding and erosion. Additionally, by restoring coastal ecosystems such as mangroves, this outcome will strengthen the capacity of these ecosystems to provide services to surrounding communities (Outputs 3.1 and 3.2). Finally, Outcome 4 supports this focal area objective by introducing and delivering training on new livelihood opportunities and their technologies, thereby strengthening and diversifying the income streams of communities vulnerable to climate change in a gender-responsive manner (Outputs 4.1 and 4.2).

The proposed project will also support CCA-1's Outcome 1.2 — Innovative financial instruments and investment models enabled or introduced to enhance climate resilience through interventions in Outcome 4. This will be achieved by introducing innovative technologies to entrepreneurs in coastal communities, including CSEBs, IFS and equipment that aid the fishery sector, such as boat motors and fish preservation units (Output 4.2). In addition, financial instruments, specifically platforms that increase entrepreneurs involved in climate adaptation-orientated livelihoods' access to micro-finance will be introduced through Output 4.3.

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CCA-2: Mainstream climate change adaptation and resilience for systemic impact.
The proposed project will contribute to this focal area objective by supporting Outcome 2.1 — Strengthened cross-sectoral mechanisms to mainstream climate adaptation and resilience, as well as Outcome 2.2 — Increased ability of the country to access climate finance or mainstream adaptation in large-scale, programmatic investment. Outcomes 1 and 2 will accomplish this by building on existing and developing new, county-specific plans and manuals, focussing on integrating a cross-sectoral approach to climate change adaptation. Outcome 1 will include preparing county-level ICZM plans and establishing cross-sectoral climate change information and risk focal points and working groups (Outputs 1.2 and 1.3). The inclusion of the private sector within focal point and working group capacity building and awareness-raising activities will promote the addition of climate change risks and adaptation measures in their business strategies and investment plans. Under Outcome 2, CAPs and Guidance Manuals will promote the participatory monitoring and management of coastal ecosystems, supporting other GEF themes, including sustainable land-use management and increased biodiversity.

CCA-3: Foster enabling conditions for effective and integrated climate change adaptation.
The proposed project will support the CCA-3 focal area objective through the LDCF Outcome 3.2 — Institutional and human capacities strengthened to identify and implement adaptation measures. This will be achieved by training line ministry officials, community members, small business holders, extension officers and hydrometeorological staff. National and county-level planners and decision-makers will be trained on incorporating SRDM and coastal adaptation into plans and budgeting processes through the project Output 1.2. Community members will be trained on implementing CAPs (Output 2.3) and community-based monitoring (Output 3.2). Additionally, small business holders and entrepreneurs within vulnerable communities will receive training on business planning and development (Output 4.1) and the implementation of selected livelihood options, including IFS, climate-resilient fishing practices and CSEB construction (Output 4.2). Under Output 1.3, focal points and working groups will be trained to provide awareness raising for the private sector and vulnerable communities on climate risks and SRDRM. The capacity of extension officers to deliver business training will be developed under Output 4.1, while individuals will be trained under Output 4.3 to perform the role of VSLA champions. Finally, through Outcome 2, hydrometeorological observers, forecasters and climatological technicians will be trained on using the updated EWS system (Output 2.1).

IV. RESULTS AND PARTNERSHIPS

IV.1. Expected results

The overall objective of the proposed project is to protect coastal communities and their assets from future climate change by implementing sea and river defence and risk management (SRDRM) approaches while simultaneously enhancing their income streams through livelihood diversification. This will be achieved through four complementary project components that will be implemented in Liberia's coastal counties, including: i) updating plans related to coastal management and relevant sectors such as fisheries and agriculture; ii) strengthening the institutional capacity of county and district level officials to apply SRDRM as well as climate change adaptation measures; iii) knowledge sharing and awareness raising; iv) improved risk management and early warning systems; and v) diversified and climate-resilient livelihood options. Additionally, hybrid nature-based and engineered interventions will be implemented in the vulnerable coastal county of Sinoe, which will be used as a pilot to collect best practices for dissemination to other coastal counties. Further details on these project components are provided below.

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Component 1. Institutional capacity strengthening for climate change adaptation planning in Liberia's coastal counties.

Outcome 1. Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks.

Outcome 1 will enhance the institutional capacity of national-, county- and district-level government officials to mainstream the implementation, protection and maintenance of sea and river risk defence mechanisms into developmental planning processes. This will include the preparation of county-level integrated coastal zone management (ICZM) plans that: i) address climate hazard risks; ii) include the monitoring, protection and maintenance of sea and river risk defence mechanisms; and iii) consider coastal adaptation principles. These county-level plans will build on the framework of the national ICZM plan developed under the GCF-funded 'Monrovia Metropolitan Climate Resilience Project' (MMCRP) (Output 1.1). The components of the proposed ICZM plans — as well as ICZM principles — will be incorporated under the proposed project into existing national and county planning processes, as well as into County Resilience Plans for several counties (Output 1.2). In addition, under this output, the human resource capacity of planning institutions will be supported by training programmes to increase local understanding of incorporating international standards, protocols and indicator sets into SRDRM. This output will build on the UNDP Programme Support initiative, which aims to support coastal area development, particularly with regards to improved local governance, community-based recovery and development, micro-finance and disaster risk reduction. Output 1.2 will add to this initiative by incorporating ICZM and SRDRM principles that address climate change to development planning processes at the county level. Finally, under Outcome 1, local awareness of climate change risks and the capacity to implement adaptation and livelihood options of both local communities and the private sector will be enhanced by training and establishing focal points and working groups within each coastal county (Output 1.3). This third output will complement the strengthened capacity of development planning institutions by increasing buy-in and participation of communities and the private sector for climate change adaptation planning. Each output under Outcome 1 is detailed below and will be implemented across all nine coastal counties of Liberia.

Output 1.1. County-level ICZM plans prepared for all coastal counties to address climate hazard risks on infrastructure, livelihoods and health, as well as to enable adaptation planning, monitoring, protection and the maintenance of sea and river defence.

Currently, responsibility for the management of Liberia's coastal zones is fragmented across 10 government institutions[225]. In many cases, these institutions operate independently and with limited coordination, which detracts from the effective and sustainable management of coastal areas. In response to this siloed approach, an ICZM Task Force was formed, hosted within the Ministry of Mines and Energy (MME). However, the task force has operated predominantly as an *ad hoc* response team in cases of flooding or other climatic hazards.

Output 1.1 will enhance the capacity of the county- and district-level institutions to effectively assess climate change risks to infrastructure, livelihoods and the health sector and support the revision of existing ICZM policies by preparing county-level ICZM plans. ICZM is a holistic, integrated approach to sustainably managing coastal areas in the long term by enhancing cooperation between coastal role players through transparent governance and stakeholder involvement. This approach is globally recognised as an appropriate process for addressing numerous current and long-term coastal management challenges, including habitat loss, water quality degradation, depletion of coastal resources, changes in hydrological cycles and climate change impacts such as sea level rise (SLR)[226], all of which threaten community health and income security as well as the ecosystems they depend on.

[225] These institutions include *inter alia:* the Ministry of Mines and Energy, Environmental Protection Agency (EPA), National Port Authority, Ministry of Agriculture, Ministry of Defence, Ministry of Public Works, Ministry of Internal Affairs, Forestry Development Authority and Liberia Maritime Authority.

[226] Climate of Coastal Cooperation. N.d. What is ICZM? Available at: http://www.coastalcooperation.net/part-III/III-1.pdf.

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ICZM plans for Liberia developed under Output 1.1 will build on the national ICZM plan formulated by the GCF-funded 'Monrovia Metropolitan Climate Resilience Project' (MMCRP) by mainstreaming the climate-resilient ICZM approach presented in this national plan at the county level. Specifically, elements of the GCF-supported national ICZM plan that will inform the county-level ICZM plans include: i) providing guidelines for integrating climate change risks into planning and coastal resource use: ii) supporting integrated development planning; iii) developing linkages between government institutions, local research bodies, the private sector and civil society groups through an ICZM Committee and Cross-Sectoral Working Group; iv) facilitating the incorporation of climate change considerations into coastal zone management; and v) a national high resolution, multi-criteria vulnerability map. Because of the close linkages between Output 1.1 of the proposed project and ICZM implementation through the MMCRP project, parallel in-kind co-financing of USD2,870,460 will be provided by the MMCRP.

Another important addition to the ICZM plans is Sea and River Defence and Risk Management (SRDRM), which will outline the necessary visions, goals, policies and objectives to manage flooding and erosion defence mechanisms and infrastructure in Liberia. Towards this, Output 1.1 will support planners at the national, county and local levels to formulate Sea and River Defence and Risk Management Plans (SRDRMPs) under the ICZM framework that incorporate climate information and outline adaptation options to address coastal development risks. To support the formulation of SRDRMPs, Output 1.1 will develop a district-level Sea and River Defence Investment Management Plan (SRDIMP), which will contribute to the overall ICZM planning framework. Specifically, the SRDIMP will provide development standards for implementing a new adaptation development approval process. These development standards will not only include climate change adaptation considerations but will also focus on addressing the challenge of illegal coastal reclamation, wetland degradation and sand mining, which aggravate current and future climate change impacts. The SRDIMP will ultimately assist the Ministry of Mines and Energy (MME), Environmental Protection Agency (EPA), Ministry of Agriculture (MoA) and the Forestry Division in demonstrating a transparent process towards setting priority adaptation intervention measures based on effective and sustainable engineering best practices. As part of the SRDIMP process, guidelines for establishing locally managed coastal protected areas (LMCPAs) will be included. This participatory approach will enable targeted coastal communities in Sinoe County to take ownership of management decisions regarding surrounding marine and coastal ecosystems. The LMCPA approach will include awareness raising and guidelines that address the baseline drivers of degradation such as pollution, sand mining and unsustainable fishing. In turn, this will assist in increasing the resilience of ecosystems to climate change, enabling them to provide ecosystem services such as defence to flooding and erosion, as well as natural resources that support additional livelihoods.

Output 1.1 will be implemented by the MME as a Responsible Party[227], with inputs from international and national ICZM specialists, who will assist in developing the ICZM plans near the beginning of the project's implementation phase and update them after three years. Engagement and consultations with stakeholders[228] through site visits in each coastal county and validation workshops will ensure the ICZM plans are county-specific. Additionally, two-day gender working sessions will be convened for individuals involved in ICZM planning and SRDIMP development to ensure the integration of gender-responsive actions.

Specific activities under Output 1.1 will include:

- Activity 1.1.1: Develop nine climate-responsive ICZM plans for all coastal counties in collaboration with stakeholders.
- Activity 1.1.2: Develop a pilot district-level SRDIMP within Sinoe County.
- Activity 1.1.3: Prepare and host two validation workshops for representatives from county- and district-level government officials responsible for coastal management to secure ownership of and operationalize the ICZM plans and SRDIMP.

[227] The Responsible Parties are the entities to which UNDP has entrusted the responsibility for implementing specific project focal areas. These responsibilities differ per Responsible Party and project Component.
[228] Including county-level stakeholders including government officials, superintendents etc; district-level stakeholder, including district officials and municipalities; and local-level stakeholders including communities, private sector actors, CSOs, and NGOs.

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Output 1.2. Identified climate change risks and adaptation priorities incorporated into coastal County Resilience Plans as well as county and national planning and budgeting processes.

Climate change has been incorporated to a limited extent in some national agendas and policies, including the Agenda for Transformation (AFT) 2030 and the Food and Agriculture Policy and Strategy 2008. However, this has not applied to all sectors relevant to coastal management, with limited integration of climate change risks and adaptation into coastal development planning and implementation processes. This exclusion primarily results from limited technical and institutional capacities among sectoral ministries at the national and county levels to effectively integrate climate change adaptation into the relevant strategies.

To address this gap in institutional capacity and incorporate climate change into planning processes, activities under Output 1.2 will support the priorities identified by the GCF-funded NAP project at a national and county level. These NAP priorities include developing: i) sector-based climate change strategies and action plans in coastal management; and ii) technical guidelines for relevant ministries to include climate change into their budgeting and planning[229].

In support of the abovementioned NAP priorities, monitoring, protection and maintenance of SRDRM and coastal adaptation principles developed under the ICZM framework (Output 1.1) will be incorporated into development planning processes under Output 1.2 at both the national and county levels in Liberia. This will entail integrating climate change risks and ICZM principles into County Resilience Plans (CRPs) for selected counties, including Sinoe, Grand Bassa and Maryland. These CRPs will include an assessment of climate change priorities and challenges for the country, as well as county-specific plans to ensure the climate resilience of the selected counties by incorporating the implementation of ICZM, adaptation options and gender responsiveness measures.

The technical capacity of planning institutions will also be supported under Output 1.2 to increase the local understanding of how to enhance technical guidelines relating to SRDRM standards, protocols and indicator sets. The mainstreaming of these guidelines will support the monitoring and management of coastal ecosystems through implementable actions that improve early warning systems (Outcome 2) and will draw on international standards for vulnerability and climate risk management, including ISO 14090:2019[230]. The project will apply these international standards — that will build on existing indicator sets that have been developed by national projects — at the local level.

Output 1.2 will be implemented by the EPA. Activities under this output will include training workshops on climate change risks, coastal adaptation, SRDRM, ICZM and gender responsiveness, which will be provided to national- and county-level planners and decision-makers by international and national experts. This training will be used to incorporate the aforementioned principles into development plans, budgeting processes and coastal CRPs.

Specific activities under Output 1.2 include:

- Activity 1.2.1: Design and host technical training programmes for relevant planners and decision-makers on incorporating climate change risks, coastal adaptation, ICZM principles and SRDRM guidelines and standards into planning and budgeting processes.
- Activity 1.2.2: Update national and county-level planning and budgeting processes to incorporate SRDRM and coastal adaptation principles using the training and capacity building under Activity 1.2.1.
- Activity 1.2.3: Develop County Resilience Plans for Sinoe, Grand Bassa and Maryland that incorporate climate change risks, ICZM principles and SRDRM.

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[229] UNDP. 2021. GCF National Adaptation Plans project in Liberia. Available at: https://www.adaptation-undp.org/projects/gcf-national-adaptation-plans-project-liberia.

[230] ISO. 2019. ISO14090:2019(en): Adaptation to climate change — Principle, requirements and guidelines. Available at: https://www.iso.org/obp/ui/#iso:std:iso:14090:ed-1:v1:en.

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Output 1.3. Institutional development planning capacity supported through the establishment and training of cross-sectoral climate change information and risk management focal points and working groups in all coastal counties.

Under Output 1.3, the identified county-level focal points will be trained to function as champions that actively promote the dissemination of climate information and the implementation of risk management and adaptation options within their counties. They will engage with communities and private sector actors within their counties to ensure their specific climate change adaptation requirements are considered for all future risk management and adaptation initiatives.

Local awareness of climate risks and SRDRM will additionally be enhanced through the training and establishment of county-level, cross-sectoral climate change information, adaptation, risk management working groups in all coastal counties. These working groups — as well as the focal points — will assist in facilitating capacity development and awareness raising at the county level, including by focussing on relevant private sector stakeholder representatives[231]. Through this approach, private sector stakeholders will be better equipped to include climate change risk information and adaptation measures into their business strategies and investment plans and will additionally be able to highlight business opportunities available through climate change adaptation, particularly in the agricultural, fisheries, forestry and hospitality sectors. Moreover, awareness-raising and capacity building of communities and private stakeholders will support institutional county-level development planning by promoting buy-in and participation for the developed plans. This will assist in increasing the effectiveness and sustainability of the developed ICZM plans, SRDIMP and RCPs under Outputs 1.1 and 1.2.

Output 1.3 will build on the GCF-funded NAP's goal of building capacity in the private sector, financial intermediaries and other stakeholders on the application of adaptation activities. While the NAP project output focusses primarily on sectoral officials and stakeholders at the national level and in selected counties, Output 1.3 of the proposed LDCF project will focus on local capacity at the county level for all coastal counties not yet targeted. Additionally, Output 1.3 of the proposed project will be supported by in-kind co-financing of USD714,400 from the MMCRP through an awareness-raising campaign on climate change impacts and adaptation practices to be undertaken through the GCF project.

The EPA will be responsible for the implementation of this output. First, project partners will detail and finalise selection criteria for individuals to be incorporated into working groups. Candidates will then be evaluated according to these selection criteria during visits to each coastal county. Working group candidates for selection will not be required to have specific expertise on climate change but will rather be selected from individuals or authorities who currently function within the county development system. Each working group will additionally include candidates who will focus on challenges and awareness raising about gender, the youth and people with disabilities. Second, the project will develop knowledge products, including by delivering radio programmes and printed material for use by focal points and working groups to disseminate information. Third, international experts will be employed to develop and deliver a training of trainers workshop to upskill the focal points and working groups. The focal points and working groups will use the training and knowledge products mentioned above in workshops with private sector stakeholders and awareness-raising sessions with targeted communities, aiming for at least one of each per county every three years. The capacity-building and awareness-raising programmes will be informed by the ICZM plans and Community Action Plans (CAPs) developed under Outcomes 1 and 2 respectively. In turn, Output 1.3 will promote local understanding and buy-in across all coastal counties for hybrid adaptation measures and alternative livelihood option interventions implemented under Output 3.2 and 4.2.

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[231] Potential private sector actors to be targeted include *inter alia*: businesses in the agricultural, fisheries, real estate and hospitality sectors, construction/brick entrepreneurs, logging, palm oil or forestry companies, actors in the financial services sector and members of the Liberia Private Sector Climate Action Alliance (LIFSCAA).

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Activities under Output 1.3 will include:

- Activity 1.3.1: Establish climate change working groups for each coastal county.
- Activity 1.3.2: Develop awareness-raising knowledge products that can be utilised by the focal points and working groups to increase the understanding climate risks as well as SRDRM.
- Activity 1.3.3: Prepare and host at least two training of trainer workshops in each coastal county to enable focal points and climate change working groups.
- Activity 1.3.4: Support focal points and working groups to host capacity-building and awareness-raising workshops on climate risks as well as SRDRM, targeted at local communities and the private sector, with a focus on female and youth involvement.

Component 2. Innovation, technologies and climate information introduced for coastal adaptation planning.

Outcome 2. Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation.

Outcome 2 will improve coastal adaptation planning, hazard response and disaster risk communication mechanisms by enhancing: i) local institutional and community understanding of adaptation options; ii) coastal flood and erosion risk management; and iii) coastal ecosystem services and their value to local stakeholders. The risk management referred to above will include the support of EWS to increase local access to climate and risk information, in addition to improving the ability of vulnerable communities to adequately prepare for climate hazards (Output 2.1). This will be done by supporting the project 'Enhancing Climate Information Systems for Resilient Development in Liberia (Liberia CIS)' by providing additional institutional capacity development and procuring hydrometeorological equipment. In conjunction, both projects will build on the project 'Strengthening of the legal framework for the electricity sector and the hydrometric network to support hydropower development in Liberia', which addresses baseline gaps in hydrometric infrastructure created by the country's civil wars but does not adequately address climate information needs under future climate change. At the community level, risk management will be supported under Outcome 2 by the development of Community Action Plans (CAPs) for each district in Sinoe County which will guide communities on adaptation practices that increase coastal resilience (Output 2.3). In conjunction, the EPA's Environmental Knowledge Management System (EKMS)[232] developed under the baseline project 'Strengthening National Capacities to Meet Global Environmental Obligations with the Framework of Sustainable Development Priorities' will be strengthened under Output 2.2 to better provide access to information and lessons learned on coastal management and climate change adaptation solutions for local institutions and communities across all coastal counties. This information — including knowledge from Outcomes 1, 3 and 4 of the proposed LDCF project as well as from other national initiatives — will be used to inform Guidance Manuals, which will assist coastal county district officials in the practical application of context-specific ICZM and adaptation solutions in a participatory manner (Output 2.4). The project will implement all these outputs across Liberia's coastal counties, except for the CAPs, which will be implemented only in Sinoe County. Specific outputs towards achieving this outcome and their activities are detailed below.

Output 2.1. Coastal flood and erosion early warning and risk management systems supported to provide climate information, products and services that meet the needs of end users.

The Liberia National Disaster Management Policy[233] highlighted risk identification and communication mechanisms as a priority because a robust disaster risk management (DRM) system that promotes a proactive approach can considerably reduce disaster losses compared with a traditional emergency management system that is more reactive. Included in this DRM approach will be a comprehensive and extensive early warning system (EWS). The benefits of an effective EWS — centred around the additional time it provides communities to implement preventative measures against damaging weather events — have been shown to outweigh its costs by 10 times in

[232] EPA. 2021. Environmental Knowledge Management System. Available at: https://ekmsliberia.info/institution/environmental-protection-agency/.
[233] NDMA. 2012. National Disaster Management Policy.

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some circumstances[234]. Indeed, consultations with communities in multiple coastal counties have highlighted the current absence of a functional EWS in many areas and emphasised that such a system would be beneficial, allowing communities to respond timeously to impending climate hazards.

Under Output 2.1, existing coastal flood and erosion risk management and EWS at the county level will be strengthened in all coastal counties. This will involve supporting activities under the national, GCF-funded 'Enhancing Climate Information Systems for Resilient Development in Liberia (Liberia CIS)' project[235] that aims to enhance the detection, monitoring, analysis and forecasting of climate hazards. Output 2.1 will specifically focus on supplementing the Liberia CIS interventions at the coastal county level and increasing the capacity of observers, forecasters and technicians to consider climate change impacts in hydrometeorological data collection and EWS. The Liberia CIS project will provide USD803,000 in co-financing through its staff training, acquisition of automatic weather stations and hydrological monitoring equipment, and rehabilitation of damaged equipment.

Output 2.1 will also be implemented by the EPA, with support from the Liberia Meteorological Service (LMS) housed in the Ministry of Transport (MoT), the Liberia Hydrological Service (LHS) located within the MME, the NDMA and the Red Cross. To ensure Output 2.1 effectively supports the Liberia CIS project without duplicating efforts, a capacity and equipment assessment will be undertaken by the EPA at the beginning of the implementation phase to validate the proposed interventions. Five synoptic stations[236] and 40 automatic rainfall stations with multimetre sensors that use satellite technology or very high frequencies (VHF) to transmit data will be acquired through the LDCF project to augment the existing capacity of the Liberia CIS project. These stations will target coastal counties that are insufficiently covered, such as Sinoe and Rivercess which currently have no synoptic or automatic weather stations and therefore have limited capacity to provide timeous weather information to coastal communities. The procured weather stations will be housed in local government properties and institutions such as universities to ensure their security and continuous operation, following memorandums of understanding (MoU) agreements with the LMS. The operation and maintenance of the stations following the end of the project's lifespan will be the responsibility of the LMS.

The use of the acquired weather station equipment will be supported by training for hydrometeorological observers, forecasters and climatological technicians within the LMS, ensuring that at least 50% of participants are women. A national climate change and EWS expert will provide the training, which will focus on using the acquired weather station equipment and incorporating climate change considerations into EWS, by drawing on national and regional programmes.

Improved early warning dissemination and communication systems under the Liberia CIS project will be supported by implementing mechanisms that increase the visibility of the information generated. Such dissemination mechanisms will be designed to effectively reach vulnerable coastal populations, ensuring equitable and user-friendly access for men, women and persons with disabilities. Communication methods will include pop-up applications on frequently visited government institution websites, radio broadcasts and mobile phone weather applications. These communication mechanisms will also build the capacity of vulnerable communities to employ information on response practices aimed at facilitating early action and rapid recovery from hazardous climate events such as floods. This information on the effective early action and recovery will also be incorporated into the knowledge hub under Output 2.2.

Activities under Output 2.1 include:

- Activity 2.1.1: Undertake a capacity and equipment needs assessment of existing risk management and EWS for all coastal counties, considering county-level needs gaps under the Liberia CIS project.

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[234] Rogers D & Tsirkunov V. 2010. Costs and benefits of early warning systems. Global Assessment Report on Disaster Risk Reduction.

[235] GCF. 2020. Enhancing climate information systems for resilient development in Liberia (Liberia CIS). SAP018 Funding Proposal.

[236] Synoptic stations are used to collect several types of meteorological data simultaneously over a larger area to obtain a broader view of weather patterns.

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- Activity 2.1.2: Procure and install synoptic stations and automatic rainfall stations in coastal counties to support the Liberia CIS project, based on the needs assessment in Activity 2.1.1.
- Activity 2.1.3: Provide capacity training for hydrometeorological observers, forecasters and climatological technicians in the LMS on incorporating climate change into risk management and EWS.
- Activity 2.1.4: Support early warning and preparedness information delivery system for vulnerable communities within all coastal counties.

Output 2.2. Existing EPA Environmental Knowledge Management System enhanced to support the collection and dissemination of lessons learned on sea and river defence based on Sinoe County adaptation solutions.

Under Output 2.2, the existing national Environmental Knowledge Management System (EKMS) knowledge hub will be enhanced to support the collection and dissemination of lessons learned on SRDRM and climate change adaptation information across all coastal counties. This will contribute to the production and application of tailored gender-specific climate risk and adaptation information that meets the needs of vulnerable end users, including fisherfolk, farmers and individuals involved in related value chains. Output 2.2 will build on the MMCRP, which will strengthen the EKMS by including information on climate risk-informed ICZM. Because of this linkage, the MMCRP will provide co-financing of USD160,250. Included in the output's support for the EKMS will be decision-making support tools developed for county and district-level planners and private sector stakeholders to identify adaptation options specific to their localities and needs. Given that the EPA currently houses the EKMS, the EPA will implement this output.

Information from the EKMS knowledge hub will additionally support the delivery of ICZM plans (Output 1.1), CAPs (Output 2.3) and Guidance Manuals (Outputs 2.4) to county- and district-level decision-makers as well as community leaders by including these resources within the knowledge hub. Lessons learned provided within the knowledge hub will draw on best practices on climate change and risk adaptation generated under Output 3.3.

Activities under this output include:

- Activity 2.2.1: Collect data on lessons learned on SRDRM within Liberia and beyond, including information from Output 3.3, desk studies and consultations with local stakeholders and similar project developers.
- Activity 2.2.2: Update the EKMS, based on information collected under Activity 2.2.1.
- Activity 2.2.3: Develop decision-making support tools on adaptation options and risk management that target county- and district-level planners and private sector actors.

Output 2.3. Community Action Plans developed for all coastal districts of Sinoe County.

Individual Community Action Plans (CAPs) will be developed in each of the six coastal districts of Sinoe County. In conjunction with awareness-raising programmes (Output 1.3) and the knowledge hub (Output 2.2), Output 2.3 will encourage and support coastal communities to adopt new gender-responsive adaptation and livelihood opportunities to increase their resilience to flooding and erosion caused by SLR and intense storm events. The adaptation options for these action plans will be informed by the GCF-funded NAP, combined with ICZM plans under Output 1.1 and the feasibility assessment under Output 3.1. In turn, the CAPs will inform the knowledge hub from Output 2.2 and sustainable livelihood options under Output 4.2. The EPA will be responsible for implementing the CAPs.

The CAPs will include a framework that enables participatory monitoring of coastal and river ecosystems and their services by local communities. This approach encourages vulnerable coastal communities to actively participate in monitoring and conserving ecosystems that provide ecosystem services — including protection from storm surges, hydrological regulation and natural resources such as timber and fish — that in turn increase the long-term resilience of both these ecosystems and communities to the impacts of climate change. Besides encouraging ownership of ecosystem conservation by local communities, a participatory monitoring approach also enables the use of local experience, knowledge and information, which strongly benefits ecosystem service valuation

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assessments and mapping exercises. In contribution to this ecosystem services assessment, an inclusive, participatory resource mapping exercise will be applied in targeted coastal villages within Sinoe County, involving communities in method selection, application, evaluation and verification. Diverse groups will be engaged to participate — women, men, the youth and persons with disabilities. The mapping exercise will include historical mapping to enable communities to document their observed environmental changes over time. Moreover, the mapping assessment will document different coastal resources used by communities and identify areas of particular value, such as resource harvesting zones, biodiversity hotspots, erosion zones, agricultural grounds and newly rehabilitated areas. The framework for participatory monitoring will also include guidance for the active involvement of relevant district government staff, specifically through the training of officers and stakeholders to use global information system (GIS) equipment and software to accurately document and display information gathered by participating communities. The results from the participatory monitoring will be used as a model to support local and regional decision-making processes and enhance community-based SRDRM in other coastal counties in Liberia.

Activities under Output 2.3 will include:

- Activity 2.3.1: Perform a baseline study to inform the content of the CAPs, including consultations with coastal communities to determine the specific adaptation needs for communities in each district.
- Activity 2.3.2: Develop CAPs for all coastal districts in Sinoe County, with participation from coastal communities and local authorities.
- Activity 2.3.3: Design and implement a framework within the CAPs for participatory community monitoring of ecosystems and their services.
- Activity 2.3.4: Hold a validation workshop for the CAPs with community representatives and local authorities from each district community.
- Activity 2.3.5: Hold training workshops for community representatives and local authorities on CAP implementation.

Output 2.4. Guidance Manuals for integrated coastal adaptation practices developed and disseminated to all coastal counties.

Complementary to the ICZM and SRDRM practices, a series of Guidance Manuals will be produced and disseminated to coastal district staff within all 30 coastal districts in Liberia. The manuals will include, for example, guidance for re-defining building codes using a 'build back better' approach to climate-proof infrastructure in riparian forest and coastal wetland ecosystems[237]. In addition, the manuals will support climate-resilient agricultural development in response to current and predicted climate change impacts. The Guidance Manuals will focus on integrated, climate-resilient coastal management practices informed by the baseline information and analyses generated by the NAP project, and the proposed project's county-level ICZM plans (Output 1.1) and best practices on adaptation solutions (Output 3.3). These Guidance Manuals will be developed and implemented through a participatory approach, involving county and district officials along with community members. The process will also be continuous, with the manuals further contributing information to the knowledge hub. The MME as a Responsible Party will be responsible for implementing and developing the Guidance Manuals.

Under Output 2.4, specific activities include:

- Activity 2.4.1: Collect information to inform the Guidance Manuals, including through consultations with communities.
- Activity 2.4.2: Draft district-specific coastal adaptation option Guidance Manuals and host a validation workshop with all district-level officials.
- Activity 2.4.3: Disseminate coastal district Guidance Manuals to relevant district staff through print and online systems.

[237] UNISDR. 2017. Build back better in recovery, rehabilitation and reconstruction. Available at: https://www.unisdr.org/files/53213_bbb.pdf.

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Component 3. Solutions for reducing vulnerability to climate change-induced sea level rise and coastal erosion.

Outcome 3. Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature-based and engineering).

Under Outcome 3, hybrid sea and river defence mechanisms will be designed and implemented to reduce the vulnerability of local communities and ecosystems to climate hazards, which are predicted to worsen under sea level rise (SLR) and other climate change impacts. These hybrid interventions will include nature-based solutions and engineered hard infrastructure. Engineered solutions such as rock armour revetments[238] and groynes[239] are common and established coastal protection interventions in Liberia, making them more easily accepted by stakeholders. However, nature-based solutions — which includes actions to protect, sustainably manage and restore natural ecosystems that address societal challenges[240] — are more beneficial than engineered solutions because they cost less and provide effective protection against flooding and erosion and additional ecosystem services for communities, such as improved availability of timber and food products. The preferred solution, therefore, seeks to incorporate a synergistic combination of trusted and effective engineered options with cost-effective and beneficial nature-based solutions. The nature-based element of the hybrid approach will build on existing baseline projects that focus on ecosystem management and restoration to address root causes of mangrove and forest degradation. Under Output 3.2, this approach will draw on best practices from these initiatives but will additionally include a focus on ecosystems that specifically provide coastal protection services, while community-based monitoring and awareness raising will focus on informing communities of climate change risks and adaptation options.

Outcome 3 will include a multi-criteria feasibility assessment to validate hybrid adaptation options identified during the PPG stage, which will then be implemented in selected target areas within Sinoe County. In addition, best practices from implementing these interventions will be collated for dissemination in other coastal counties. Details on the outputs to achieve this outcome and their activities are provided below.

Output 3.1. Viable solutions to address climate vulnerabilities in Sinoe County developed and designed using multi-criteria and participatory processes for identifying, prioritising and planning adaptation and resilience solutions.

Output 3.1 will entail a detailed, multi-criteria feasibility assessment of viable adaptation options identified during the PPG phase which will be implemented within Sinoe County under Output 3.2. The EPA and MME will be responsible for implementing this output. Activities will include a detailed mapping exercise of assets, livelihoods and ecosystems within the identified target sites vulnerable to climate change-induced SLR in Sinoe County. The feasibility assessment will be informed by the NAP and other relevant projects including the 'Enhancing Resilience of Liberia Montserrado County Vulnerable Coastal Areas to Climate Change' project and 'Monrovia Metropolitan Climate Resilience Project'. Best practices from these projects will be used to refine adaptation options — including using models that are private sector-driven — and prioritise specific sites within the targeted communities by using a combination of international and national expert knowledge. Moreover, the feasibility assessment will be informed by consultations with vulnerable local communities, including gender-sensitive discussions with women and youth groups. Nature-based and engineering adaptation options identified in Annex 13d: Adaptation Options Report will be built upon and validated, including: i) two revetments and four to five groynes within the Greenville communities of Downtown-Mississippi street and Sebeh (Figure 18); and ii) conservation and restoration of mangrove, wetland and coastal forest ecosystems at identified communities in Sinoe County — including Nanakru, Downtown-Mississippi, Sebeh, Pungbor, Bafu Bay and Tournata. Details on these proposed interventions are found in Annex 13d: Adaptation Options Report, while the proposed implementation approach is provided in Output 3.2 below.

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[238] A rock armour revetment is a sloping structure constructed of rocks of varying sizes built parallel to the coastline to absorb the energy of incoming waves.

[239] Groynes are low walls built perpendicular to the coastline that run from the beach into the sea to trap sediment and minimise coastal erosion.

[240] IUCN. N.d. Nature-based solutions for people and planet. Available at: https://www.iucn.org/theme/nature-based-solutions.

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Figure 18. Proposed placement of the engineered and nature-based adaptation measures in the key sites of: (a) Downtown-Mississippi; and (b) Sebeh in Greenville. Diagrams of the placement of interventions in the remaining sites can be found in Annex 13d: Adaptation Options Report.

The identified intervention options will be compared with other potential options and assessed through a rigorous multi-criteria analysis, ensuring that finalised adaptation solutions are viable and adequately address current and future impacts of climate change. Specific criteria for the analysis will include the effectiveness, impact, cost, political viability, sustainability, gender-differentiated needs and constraints and maintenance of each intervention. The multi-criteria analysis will be based on a combination of international and national expert analyses and an inclusive stakeholder engagement process.

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Output 3.1 will include the following activities:

- Activity 3.1.1: Perform a mapping exercise of site-specific assets, livelihoods and ecosystems vulnerable to climate change impacts within Sinoe County.
- Activity 3.1.2: Conduct a multi-criteria analysis to select site-specific, viable nature-based and engineered adaptation solutions, including details on costing, implementation and maintenance.
- Activity 3.1.3: Hold a validation workshop to finalise the feasibility assessment and selection of adaptation solutions with relevant stakeholders.

Output 3.2. Coastal- and catchment-level adaptation solutions implemented to improve the resilience of communities to the impacts of climate change in Sinoe County.

Based on the feasibility assessment and finalised selection of adaptation solutions under Output 3.1, Output 3.2 will implement the selected measures in targeted coastal areas to improve the resilience of coastal communities to SLR and other climate change impacts in Sinoe County. Interventions will target ~7,500 direct beneficiaries across 480 ha within Sinoe County through nature-based solutions — including the restoration and conservation of protective ecosystems such as mangroves and forests across all targeted sites — used in conjunction with engineered structures, including revetments and groynes (Annex 13d: Adaptation Options Report).

Nature-based solutions will be implemented at all identified sites and include a combination of participatory ecosystem conservation activities to encourage natural regeneration of ecosystems as well as supplemental restoration in areas that are degraded, using indigenous mangrove, wetland and forest species. An estimated 260 ha of ecosystems across all targeted sites will be conserved and/or restored, and Table 4 below provides the approximate areas per site. Ecosystem conservation will use a participatory, ecosystem-based sustainable management approach that will work with local communities to address baseline drivers of degradation such as sand mining, overexploitation of natural resources and pollution. Community buy-in to play an active role in conserving coastal forests and mangroves will be achieved by raising awareness among the communities on the services provided by coastal ecosystems. These services include better protection from flooding and erosion, non-timber forest products and improved fisheries stocks from mangroves — all beneficial to communities and their livelihoods. The ecosystem-based community management framework will draw on the ICZM plans and will be detailed in the CAPs, combined with technical expertise from relevant international organisations or NGOs, such as Conservation International (CI). CI, for example, is involved in implementing several ecosystem conservation projects within Liberia — including the baseline project 'Conservation of Sustainable Use of Liberia's Coastal Natural Capital' — which will provide best practices and lessons learned to inform both restoration and ecosystem conservation practices. This baseline project will additionally provide in-kind co-financing of USD1.5 million to the proposed project through its natural capital accounting and community incentives activities. The ecosystem-based community management approach will include the establishment of a community-driven coastal ecosystem-based monitoring programme, working with communities to monitor ecosystem services provided by conserved ecosystems as well as the success of restoration activities. The monitoring programme will assist in involving communities in quantifying ecosystem services and demonstrating the value of these services for the communities.

Table 4. Primary ecosystems and estimated area targeted for restoration and conservation at each of the proposed sites.

Proposed site	Primary ecosystem	Estimated area (ha) of ecosystems for active and passive restoration or conservation
Tournata	Coconut forest	162
Bafu Bay	Mangrove forest	11
Pungbor	Coconut forest	3
Downtown-Mississippi	Mangrove forest and wetlands	52
Sebeh	Mangrove forest and wetlands	16
Nanakru	Coconut forest	16

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Engineered structures will be implemented by the MME with support from the Ministry of Public Works (MoPW) — which has recently developed capacity in water sciences and engineering — in the highly vulnerable communities of Downtown-Mississippi and Sebeh. Two rock armour on-shore revetments of ~1.5 km (700 m in Sebeh and 800 m in Downtown-Mississippi) in length and 2.5 m wide will be constructed on the beaches surrounding both communities to protect them from further erosion resulting from wave action and flooding from storm surges. As there are no active rock quarries near Greenville, a new small rock quarry would need to be established to supply the rock material for constructing the revetments. Igneous rock deposits have been identified near the town of Bana, situated approximately 15 km from Greenville, which are suitable for the establishment of the quarry. The cost of the rocks will be covered through in-kind co-financing from the GoL of USD1,200,000. Construction of the revetments will draw on practices and lessons learned from the successful construction of a similar revetment in New Kru Town under the project 'Enhancing Resilience of Liberia Montserrado County Vulnerable Coastal Area to Climate Change Risks'. Best practices from this project and other initiatives in Liberia that involve revetment construction will be used to ensure the selection of the geomat, while other construction equipment will be sustainably sourced to ensure minimal environmental impacts. As the Downtown-Mississippi community revetment will prevent the movement of sediment down the beach and may result in the erosion of adjacent areas, five rock groynes will be constructed along the open beach north of the Downtown-Mississippi community to assist in mechanically trapping sediment in these areas. The GoL has committed to maintaining the engineered structures past the project's lifespan, for which a preliminary Operations and Maintenance Plan is provided in Annex 13e.

To ensure construction activities are implemented in an effective manner, have minimal impacts on the surrounding ecosystems and reduce safety risks to labourers and residents, a national coastal firm will be contracted to design and oversee these activities. An international coastal engineering expert will also be contracted to appraise and validate construction activities. While non-skilled people can be sourced entirely in the community where the nature-based and engineered adaptation interventions will be implemented, some semi-skilled and skilled labour are likely to be sourced from elsewhere in the country, especially for the engineered interventions. Labour for both the nature-based and engineered adaptation interventions will be sourced, as much as possible, from local communities, aiming to provide equitable income-earning opportunities for men, women, the youth and persons with disabilities. This will assist in reducing potential social risks resulting from the influx of workers from outside the area. Potential social risks will be further mitigated by establishing a Grievance Redress Mechanism (GRM) in conjunction with training for implementers and labourers on using the GRM, conflict resolution, cultural sensitivities, sexual exploitation and abuse and environmental safeguards. A Strategic Environmental and Social Assessment (SESA) will be undertaken to assess the potential adverse risks and impacts associated with "upstream" project activities, such as those involving planning support, policy advice and reform, and/or capacity building. Full Environmental and Social Impact Assessments (ESIAs) will also be undertaken in the first year of the project's implementation to address adverse risks and impacts associated with "downstream" project outputs, such as the physical footprint. This will ensure that all appropriate social and environmental safeguards are well developed and put in place. The full ESIA will be undertaken prior to initiating coastal defence interventions to assess any potential impacts on the communities, cultural heritage sites and coastal ecosystems, especially the Cestos-Senkwen Key Biodiversity Area located north of Greenville. It will include specialist biodiversity studies to confirm Critical Habitat statuses of the areas where project activities are planned to be implemented. For example, the ESIA could confirm whether the project's intervention sites are habitats to Endangered, Vulnerable or Critically Endangered species. This will allow for an informed decision to be made on the most appropriate plan with regards to either siting the planned activities or implementing specific mitigation measures. Further details on potential risks and recommended actions to prevent or mitigate these risks are presented in the Social and Environmental Screening Procedure (SESP, Annex 6) and Environmental and Social Management Framework (ESMF Annex 10).

Activities under Output 3.2 will include:

- Activity 3.2.1: Implement nature-based solutions, including conservation and active restoration of mangrove and forest ecosystems in Greenville and other sites in Sinoe County, informed by the multi-criteria assessment undertaken in Output 3.1.

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- Activity 3.2.2: Implement engineered solutions, including revetment and groyne construction in Greenville, informed by the multi-criteria assessment undertaken in Output 3.1.
- Activity 3.2.3: Establish a community-based coastal ecosystem monitoring programme to ensure the long-term sustainability of nature-based adaptation solutions.
- Activity 3.2.4: Undertake monitoring and evaluation of project interventions.

Output 3.3. Best practices on adaptation solutions documented and disseminated to other coastal counties for adoption and upscaling, including engagement with the private sector.

The implementation of adaptation options in Sinoe County under Output 3.2 will be used as a pilot project from which best practices will be collated under Output 3.3. Technical methodologies will be developed using national and international expertise to inform the detailed collection of best practices throughout implementation. Elements of these best practices that will be documented include: i) the suitability of interventions in different conditions; ii) their effectiveness in addressing specific impacts; iii) costs versus benefits; and iv) long-term sustainability. An international expert will be employed to undertake the analyses and documentation of the elements listed above, and to propose private sector models for implementing these best practices across Liberia's coastal counties. Subsequently, the best practices will be disseminated to relevant county and district-level officials in other coastal counties in the form of a comprehensive report to be adopted and upscaled in similar adaptation projects. In addition, this output will include engagement through workshops with relevant stakeholders in the private sector to encourage the adoption of climate-resilient practices and adaptation solutions for sectors such as agriculture, fisheries and construction. Other outputs within the LDCF project, including the establishment of focal points and working groups (Output 1.3) and the knowledge hub (Output 2.2), will further assist in disseminating the best practices through direct engagement with stakeholders and by making the produced report available online. The EPA will be responsible for the implementation of Output 3.3.

Activities under Output 3.3 will include:

- Activity 3.3.1: Develop technical methodologies for capturing information relevant to best practices.
- Activity 3.3.2: Through methodologies developed under Activity 3.3.1, collate best practice information into a report that can be disseminated to county and district officials in other coastal counties.
- Activity 3.3.3: Hold workshops to engage with private sector entities across all coastal counties on adaptation best practices.

Component 4. Livelihood diversification for climate resilience.

Outcome 4. Gender-responsive options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties.

Outcome 4 will address the current low adaptive capacity of livelihoods in coastal communities vulnerable to climate change by introducing opportunities that diversify sources of income and result in more climate-resilient livelihoods. This will include a particular focus on training, financing and developing diversified livelihood opportunities for women and the youth. Outcome 4 will build on multiple baseline projects that aim to implement sustainable, diversified livelihoods in specific areas of Liberia, including *inter alia* 'Livelihoods and Employment Creation in Liberia ', 'Reducing deforestation from palm oil and cocoa value chains' and 'GROW Liberia: Support to the Development of Markets and Value Chains in Agriculture in Liberia'. These projects primarily address root causes of ecosystem degradation, but do not have a focus on livelihoods that promote the resilience of businesses and communities to future climate change. First, Outcome 4 will include training programmes on business identification, development and management for communities and Micro, Small and Medium Enterprises (MSMES). Second, the project will create and develop climate-resilient livelihood opportunities involving integrated farming systems (IFS), fisheries, compressed stabilised earth blocks (CSEBs) and their value chains, based on similar initiatives in other African countries. Finally, the project will facilitate community access to finance and technologies for income diversification in collaboration with national- and county-level financial institutions.

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Details on specific outputs and activities that contribute to this outcome — which will be implemented across all coastal counties — are provided below.

Output 4.1. Business identification, development and management training programmes designed and delivered to communities and Micro, Small and Medium Enterprises in coastal counties, targeting women and the youth.

Under Output 4.1, training programmes focussing on business identification, development and management will be designed and delivered to coastal communities and MSMES in all coastal counties. The curricula for the training programme will be informed by a needs assessment to validate knowledge gaps identified in Annex 11: Gender Analysis and Gender Action Plan and Annex 13b: Community and Livelihood Vulnerability Report, as well as to identify additional priorities for target communities and MSMES. Training of trainer workshops for business collective representatives will be held in each coastal county to build their capacity to deliver the developed curricula through the training programmes. These training programmes will target 9,000 beneficiaries and will be delivered over three years with two workshops per year per coastal county, each targeting ~50 participants.

The training will improve the ability of individuals to identify, initiate and maintain climate-resilient and sustainable enterprises, allowing them to better access livelihood and value chain opportunities created and implemented under Output 4.2, as well as build their capacity with regards to UNDP's Social and Environmental requirements. These training programmes will be designed to specifically target business planning and development challenges that impact women and youth groups, including training that improves self-confidence, women's empowerment, literacy and knowledge on financing. The proposed project will build on entrepreneurial and skills training for vulnerable women, youth and people with disabilities through the 'Livelihood and Employment Creation in Liberia' project, which will provide co-financing to this output of USD1,130,000. The Ministry of Commerce and Industry (MoCI) will be the Responsible Party to implement this output, with support from the UNDP Livelihoods programme and the Liberia Private Sector Climate Action Alliance (LIFSCAA). Other organisations such as Medical Liberia, the National Institute for Public Opinion and the Foundation for Community Initiative, all involved in gender equality work, are also potential sources of expertise to contribute towards the curricula and training of trainers.

Specific activities under this output include:

- Activity 4.1.1: Undertake a needs assessment to determine or validate priorities for the training programme curriculum.
- Activity 4.1.2: Using the needs assessment under Activity 4.1.1, design a training programme for business identification, development and management targeting coastal communities and MSMES.
- Activity 4.1.3: Hold training of trainers workshops for representatives from business collectives on the identification, development and management of climate-resilient businesses in centralised localities in all coastal counties.
- Activity 4.1.4: Hold business training workshops on the identification, development and management of climate-resilient businesses, hosted by members trained under Activity 4.1.3 across all coastal counties, specifically targeting women and the youth.

Output 4.2. Opportunities for integrated farming systems, fisheries, compressed stabilised earth blocks and their value chains created for coastal communities.

Output 4.2 will involve providing training and implementing additional and climate-resilient livelihood options for coastal communities, which will ensure the improved, sustainable use of natural resources. Identified livelihood opportunities will be refined through consultations with beneficiaries and relevant county and district institutions, non-governmental organisations (NGOs) and private sector actors with experience in these livelihood sectors (for example LIFSCAA), to ensure they meet local needs and are sustainable in the long term. Expertise from supporting stakeholders such as the United Nations Industrial Development Organisation (UNIDO), the Liberia Agency for

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Community Empowerment (LACE), the National Fisheries and Aquaculture Authority (NAFAA), LIFSCAA, NGOs and private sector stakeholders in the fishing, agricultural and construction sectors will also be used to advise on equipment selection and procurement for the different livelihoods. This will ensure that equipment is locally sourced or manufactured where possible — which will assist in supporting Liberia's economy — and the equipment is sustainable and has minimal impacts on the environment. Specific livelihoods and value-chain opportunities that target women will be considered to ensure equal gender participation. The Ministry of Agriculture (MoA) will be responsible for the overall implementation of this output, with support from the UNIDO, LACE, the NAFAA, LIFSCAA and relevant community-based organisations (CBOs) and NGOs. Additionally, the project will build on the 'Livelihood and Employment Creation in Liberia' project, which will provide USD150,000 in co-financing through the diversification of livelihoods for vulnerable communities in Liberia.

Community livelihoods will be explicitly linked to climate-resilient opportunities involving integrated farming systems (IFS), fisheries, CSEBs and each livelihood's value chains. These options are being implemented successfully in other African countries in the region and will be adapted to be appropriate for Liberia's specific climate change adaptation needs. Building on best practices from other countries, implementing the livelihoods under the industries identified above will require introducing several novel techniques and technologies. To support this, the project will work with relevant government institutions[241] and private sector stakeholders in the agricultural, fisheries and construction sectors to develop industry-level standards and codes of conduct that reflect best practices for fisheries, IFS and CSEB construction. Simultaneously, at least nine training and awareness-raising centres will be established — potentially by renting or modifying community buildings or centres — in central localities in each county, focussing on upskilling communities on the introduced technologies, practices and standards for these livelihoods and their value chains. These centres will be used to provide training for each of the identified livelihoods, including training on equipment use, sustainable best practices, waste or pollution management and awareness and gender equity. Training on business planning, development and management under Output 4.1 will additionally benefit livelihood training recipients — especially women and the youth — in maximising the benefits and sustainability of their enterprises.

Initial consultations with communities on the targeted livelihood options and value chains were well received. A summary of the communities consulted, additional livelihoods to be implemented and potential benefits of these livelihoods are presented in Table 5. As a result of Covid-19 restrictions regarding movement within Liberia, the national consultants were unable to visit all coastal counties; however the ones they visited[242] provide representative examples across the length of Liberia's coastline. In addition to the communities listed in Table 5, additional communities in all counties will be approached and the livelihoods validated in the initial stages of the implementation of Output 4.2. Descriptions of the three targeted livelihoods — IFS, climate-resilient and sustainable fishery practices and CSEBs — are provided below.

Table 5. Counties and communities consulted, suggested additional livelihoods proposed and their potential benefits.

County (communities consulted)	Suggested livelihood(s) to be implemented	Potential benefits of additional livelihoods
Grand Bassa County (Bacconie, Edina, Little Bassa, Neetor)	CSEBs, fishing and IFS	• Reduced produce losses resulting from delays in getting products to market • Reduced risk of crop seasonality • Improved fish and crop preservation for access to markets • Reduced risk to life from increasingly hazardous ocean conditions while fishing • Reduced pressure on beaches and rivers from sand mining • Lowered cost of brick construction
Grand Cape Mount County (Robertsport	CSEBs, fishing and IFS	• Reduced agricultural losses using climate-resilient practices • Reduced risk to life from increasingly hazardous ocean conditions

[241] Including the Ministry of Public Works, Ministry of Agriculture and National Fisheries Authority

[242] namely: Grand Bassa County (Bacconie, Edina, Little Bassa and Neetor), Grand Cape Mount County (Robertsport Downtown and Uptown and Kru Town), Maryland County (Half Graway, Harper City), Sinoe County (Bafu Bay, Downtown-Mississippi, Nanakru, Pungbor, Sebeh and Tournata).

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Downtown and Uptown, Kru Town)		while fishing • Reduced pressure on beaches and rivers from sand mining • Lowered cost of brick construction • Alternative income streams during low agricultural or fishing seasons
Maryland County (Half Graway, Harper City)	CSEBs, fishing and IFS	• Reduced pressure on beaches and rivers from sand mining • Lowered cost of brick construction • Alternative income streams during low agricultural or fishing seasons
Sinoe County (Bafu Bay, Downtown-Mississippi, Nanakru, Pungbor, Sebeh, Tournata)	Fishing, IFS	• Reduced agricultural losses using climate-resilient practices • Reduced risk of crop seasonality • Reduced risk to life from increasingly hazardous ocean conditions while fishing • Improved fish and crop preservation for access to markets

Agricultural production is impacted by climate hazards and climate change through changing seasonality of rainfall seasons, erosion or waterlogging of farmlands and increases in temperatures (see Section II.3). The preferred solution to addressing this is a climate-smart approach that maximises agricultural production while accounting for changes in climate and reducing impacts on supporting ecosystems. The concept of IFS represents a climate-smart agricultural approach that involves integrated agriculture and aquaculture activities, which will enable the complementary production of vegetables, staple crops, small livestock and fish within the same farm. An IFS approach reduces the amount of land required for agriculture as it makes more effective use of available space, thereby limiting agricultural expansion into protective ecosystems without compromising productivity for farmers. IFS also promotes the diversification of agricultural crops— such as cassava, rice, fruit[243] and vegetables[244] — and increases the ability of entrepreneurs to sell products year-round, both by producing crops that grow during different seasons and practices and equipment that improve the storage and preservation of vegetables and fruits. The integration of crops, livestock and aquaculture will be designed for different agricultural components of the IFS to support the increased productivity of others. For example, livestock can graze on crop residues and weeds while providing manure to fertilise subsequent crops. An IFS approach will also aim to reduce the application of expensive and potentially polluting inputs such as fuel, fertiliser and pesticides, thereby limiting negative impacts on the surrounding environment and subsequently increasing overall production in a smaller land area[245]. Related value chains that will also be developed and benefit from IFS include agro-inputs, agro-logistics, packaging, storage and aggregators. To improve the climate resilience of the IFS approach, adaptation solutions such as dykes will be implemented around croplands to protect them from flooding and saltwater inundation. These will be complemented by inputs from the proposed project that include, for example, climate-resilient seeds, fish or eggs, chicks, feeds, equipment for pond and dyke construction, packaging material and solar driers. The project will draw on practices and lessons from existing projects in Liberia involved in IFS, including Local Farm Inc., the Integrated Rice-fish Farming (IRFFS) project[246] and initiatives through the Liberia Farmers Development Corporative (LIFADCO)[247].

Regarding the fisheries sector, fisherfolk are affected by climate change through increasingly dangerous ocean conditions, reduced fish stocks and damage to landing sites and equipment. To address these risks, the proposed project will introduce: i) safer and more efficient fishing equipment for increasingly turbulent ocean conditions — for example, more stable boats, life jackets and sustainable fishing nets; ii) improvements for the more efficient drying and processing of fish; and iii) refrigeration units for the storage of fish and production of ice. The

[243] Including *inter alia* mangoes, pawpaw, bananas, oranges, avocadoes, pineapples, apples, peaches and berries.
[244] Including *inter alia* cucumbers, carrots, onions, okra, bitter ball, pepper, tomatoes, potatoes, cassava, amaranth greens, cabbage, spinach and lettuce.
[245] Archer DW, Franco JG, Halvorson JJ & Pokharel KP. 2018. Integrated farming systems. Encyclopaedia of Ecology, 2nd edition.
[246] LEAP4FNSSA. 2021. IRFFS: Integrated Rice-fish Farming: A Research and Extension Development Based Initiative to Improve Food Security and Nutrition in Liberia. Available at: https://library.wur.nl/WebQuery/leap4fnssa-projects/211.
[247] Liberia Agricultural and Environmental Journalists Network. 2021. LIFADCO expands integrated farming in Nimba. Available at: https://lajnet.com/lifadco-expands-integrated-farming-in-nimba/?fbclid=IwAR1wo0n7qRp7c5ZKiXOaGEmT5yBH21e23NCR0rShCSiA6I9imz6Nvc4XAE0.

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development of the refrigeration units will draw on eco-friendly cold storage facilities designed through the MMCRP, which is providing co-financing of USD94,500 for this intervention. The project will teach more efficient and sustainable fishing practices to fisherfolk and the surrounding communities and include awareness raising on reducing water and beach pollution, which directly impact fish stocks. These technologies and practices will increase the availability of fish to sell at market, as fish products can be stored for longer periods. Improved drying techniques and cookstoves will additionally reduce fuelwood requirements for processing the fish, limiting pressure on forest and mangrove ecosystems.

Unmanaged beach and river sand mining for the construction of bricks in many of Liberia's coastal counties worsens the impacts of climate change-induced coastal erosion and increases the vulnerability of communities to climate hazards. The construction of CSEBs has the potential to provide a sustainable alternative to using traditional earth blocks or cement bricks that require a higher percentage of beach or river sand. Providing alternatives to using beach or river sand will assist in limiting erosion from unsustainable sand mining and reduce the amount of pollution involved in the production of cement. Additionally, the wider use of CSEBs will result in reduced carbon emissions, transport costs and needs to import material from outside the country[148]. This is because the earth primarily used to make the blocks can often be sourced from the construction site itself with a low percentage of sand used compared with cement (20% as opposed to 75% sand mix). Therefore, in addition to being more sustainable, CSEBs are more economical than cement bricks. Despite these advantages, CSEBs have the potential to degrade faster in areas of high rainfall and, as a result, local buy-in for this new technology has been low in certain south-eastern counties, including Sinoe. CSEBs, however, was well received in other counties visited during the PPG phase, including Grand Bassa, Grand Cape Mount and Maryland. The county-specific feasibility of introducing this technology will be assessed in receptive coastal counties to determine techniques (including the use of waterproofing additives or coatings) that maximise their durability. Through the project, equipment and supplies including cement and earth mixers, soil tests, sieves and brick presses will be provided to participating communities, which will be able to support several households working together.

Activities under Output 4.2 will include:

- Activity 4.2.1: Hold validation workshops with beneficiary communities as well as county and district level institutions to finalise site-specific needs and livelihood opportunities.
- Activity 4.2.2: Establish training and awareness-raising centres focusing on the use of technologies for the proposed livelihoods, particularly with regards to IFS and CSEBs and provide training on best practices for the targeted livelihoods.
- Activity 4.2.3: Working with relevant government institutions at the county and district level, develop industry level standards and codes of conduct that reflect best practices for fisheries, IFS and the construction of CSEBs.
- Activity 4.2.4. Procure equipment for and implement climate-resilient fisheries, IFS and CSEBs and their value chains across 480 households.

Output 4.3. Access to finance and technologies to develop livelihood and income diversification enterprises of coastal livelihoods and resources facilitated in collaboration with national and county financial institutions.

A number of strategies and initiatives exist within Liberia that focus on increasing inclusive finance. These include, for example, the National Financial Inclusion Strategy (2020–2024) and the Central Bank of Liberia 'MSME Project' funded by the World Bank. Loan programmes such as this have had a considerable positive impact on individuals and communities by increasing business opportunities, conducting literacy programs, increasing participation and decision-making, improving the quality of goods and services, and elevating market values. Microcredit institutions have also been shown to particularly benefit women and the development of their businesses within Liberia. Despite these advances, there is a gap within the finance sector regarding small and medium sized loans for businesses and inadequate loan services in certain parts of the country. Addressing these gaps and providing better access to finance is a critical element to addressing the vulnerability of many rural and coastal communities.

[148] Waziri BS, Lawan ZA & Mala MM. 2013. Properties of compressed stabilised earth blocks (CSEB) for low-cost housing construction: A preliminary investigation. International Journal of Sustainable Construction Engineering & Technology, 4: 39–46.

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Under Output 4.3, access to finance to support enterprises focussed on increased climate change adaptation in vulnerable communities will be facilitated by the Ministry of Commerce and Industry (MoCI) as a Responsible Party in collaboration with formal micro-finance institutions (MFIs) and existing community-run savings schemes such as Village Savings and Loans Associations (VSLAs). To ensure that the climate-resilient livelihoods introduced under Output 4.2 will be sustainable over the long term, Output 4.3 will develop and implement a pilot project within Grand Cape Mount County, with the collaboration of an appropriate MFI partner (consultations with Access bank and BRAC have indicated their interest to work with the project, and are potential partners). At present, there are no financial institutions operating within this county, while Access and BRAC are interested to expand (see Annex 13g on Inclusive Finance Strategy and Private Sector Engagement). Within the two proposed target communities, Central Ward/Downtown and Kru Town[249], residents rely on VSLAs as their main form of finance, with certain residents alternatively travelling to Bomi County to carry out transactions. Grand Cape Mount exemplifies several of the challenges faced by other coastal counties within Liberia, particularly the lack of financial institutions and a dependence on VSLAs within its rural communities. To stimulate the development of climate-responsive financial products, a training workshop with national and county financial institutions will be convened on integrating climate risk management into financial products, supported by business cases outlining the benefits of investment into climate adaptation livelihoods (Activity 4.3.1). This will be followed by the development and implementation of sector-wide guidelines for financial institutions on integrating climate change risks, vulnerability and adaptation opportunity assessments in decision making (Activity 4.3.2). The guidelines for financial institutions will be complemented by the undertaking of market studies within the target communities in Grand Cape Mount County (Activity 4.3.3). These studies will assess existing and outstanding financing opportunities, the required context-specific and climate-responsive financial products, and the potential market demand for said products, including community-specific business cases, cash-flow analyses and rates of return. Engagements with MFIs during the development of this strategy have revealed that these market assessments are a prerequisite to expansion into these communities.

Following the market assessments, an appropriate MFI partner will be identified and context-specific climate-responsive financial products will be developed (Activity 4.3.4) in collaboration with the MFI partner and informed by the market studies undertaken in Activity 4.3.3. There is a high likelihood of finding an appropriate MFI partner. For example, engagement with Access Bank revealed that the Bank has an expansion plan which is set to be implemented in 2022 and will target currently underserved areas. BRAC Liberia is also currently developing a gradual expansion plan to target isolated rural areas and have highlighted smallholder farmers as a key beneficiary of their services to be targeted under this plan. MFIs also stand to gain from a partnership by accessing large sets of customers through the identification and capacity building of community champions to act as agents, who would have been expensive for the MFIs to recruit on their own[250].

Once the climate-responsive financial products have been developed, linkages between existing VSLAs and the MFI partner will be established. This will be achieved through the identification of between one and three champions within the VSLAs in the two target communities, who will receive the necessary training to become part of the MFI partners agent network. Training will focus on the climate-responsive financial products, as well as the standard procedures for registering new clients to the MFI. In this way, existing financial structures — the VSLAs — within target communities will be utilised to facilitate access to climate-resilient financial products necessary for the development of climate-resilient livelihoods established under Output 4.2. VSLA champions will also receive the necessary equipment to undertake their responsibilities, including, *inter alia*, a mobile cellphone and a data plan for the duration of the pilot. Community members, particularly the beneficiaries of Output 4.2, will then be engaged through workshops facilitated by the VSLA champion, which will present the climate-resilient financial products. These activities will contribute to the priorities outlined in the Liberia National Financial Inclusion

[249] The population of these sites are 415 people and 630 people, respectively.
[250] IFC. N.d. Banking Outside of the Box. [online] Available: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/viewer.html?pdfurl=https%3A%2F%2Fwww.ifc.org%2Fwps%2Fwcm%2Fconnect%2F9f6471ea-b623-492e-9d19-53c64957f18c%2FFactsheet%2B-%2BFidelity%2BBank%2BGhana.pdf%3FMOD%3DAJPERES%26CVID%3DlNGf21M&chunk=true

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Strategy (2020 – 2024), particularly those under Pillar 1, 'Access to Financial Services and Credit', which recommend the development of policies 'to support linkages between the formal financial sector and VSLAs'[251]. Output 4.3 will build on interventions under the 'Livelihood and Employment Creation in Liberia' project, which will provide in-kind co-finance of USD2,150,000 through the establishment of MSMES and improved access to finance, including VSLAs and other finance initiatives.

Activities under Output 4.3 include:

- Activity 4.3.1: Hold training workshops with national and county financial institutions on integrating climate risk management into products and business cases to promote investments into climate adaptation livelihoods. The training will also include modules on UNDP Social and Environmental Standards.
- Activity 4.3.2: Design and implement sector-wide guidelines for financial institutions to integrate climate change risks, vulnerability and adaptation opportunity assessments in decision making.
- Activity 4.3.3: Undertake market studies in the target communities, outlining existing financing, required climate-responsive financial products, and potential market demand including community-specific business cases, cash-flow analyses and rate of returns.
- Activity 4.3.4: Develop context-specific climate-responsive financial products, informed by engagement with an MFI partner and the market studies under Activity 4.3.3.
- Activity 4.3.5: Identify appropriate champions within existing VSLAs in Grand Cape Mount County and provide agent training, focussing on climate-responsive financial products, as well as necessary equipment.

IV.2. Partnerships

Private sector engagement

The proposed LDCF project will facilitate private sector engagement to support the implementation and sustainability of climate change adaptation (CCA) interventions. Through several interventions, the project will promote an enabling environment for the systemic development of public-private partnerships (PPP) to support improved coastal management and enhanced resilience of coastal communities.

The private sector's involvement will be streamlined throughout several outputs in the proposed project. To achieve this, private sector participation and representation will be promoted through the cross-sectoral focal points and working groups (Output 1.3), which will be established to facilitate capacity development and awareness raising of climate change information and risks. Through this engagement, businesses within the private sector will be better equipped to enhance the adaptive capacity of their operations — particularly during extreme rainfall events — and identify opportunities for climate-resilient business. Through climate-proofing business operations, the private sector is adequately positioned to share best practices and encourage adopting climate-resilient practices and adaptation solutions — specifically for private companies, businesses and MSMEs in the agricultural, fisheries and construction sectors (Output 3.3). The feasibility assessment to be undertaken (Output 3.1) will also consider, *inter alia*, CCA option models driven by private sector stakeholders to ensure the identification of viable and sustainable adaptation solutions specific to the Sinoe County context. Output 3.1 will also include engagement with community businesses and MSMEs in the fishery, agricultural and construction sectors to ensure that proposed interventions adequately address their specific adaptation needs and have no adverse impact on them. Under Output 4.1, private sector representatives through LIFSCAA and other private sector stakeholders will assist the MoCI by providing expertise for business training which will be directed towards empowering and upskilling individuals — particularly women — and MSMEs within the target communities. In addition, private sector representatives such as members of the LIFSCAA or businesses involved in fishing, agriculture and construction will be approached to assist in sourcing sustainable and cost-effective equipment as well as provide best practices for livelihood options under Output 4.2. This involvement will include, for example, assisting in piloting the compressed stabilised earth blocks (CSEB) value chains. Through Output 4.2, the uptake of additional and climate-resilient livelihoods by private sector stakeholders in communities in all coastal counties —

[251] CBL. 2020. *National Financial Inclusion Strategy: 2020–2024.*

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including MSMEs, farmers, fisherfolk and individuals involved in construction — will be facilitated and encouraged. Finally, MFIs such as Access Bank and BRAC will be engaged to assist in developing and providing climate-responsive financial products for entrepreneurs in target coastal communities, including individuals involved in the development of livelihoods under Output 4.2.

Several private sector stakeholders in Sinoe and other coastal counties have been identified, expressing a willingness to participate in and support the implementation of the proposed project. These private stakeholders include, *inter alia*, Golden Veroleum Liberia (GVL), Liberia Ruby Life Forestry Investment Inc., Equatorial Palm Oil PLC Maryland Oil Palm Plantation, Bea Mountain Mining Corporation, Sime Darby Plantation, Cavalla Rubber Corporation, LIFSCAA, Access Bank and BRAC. Promoting private sector engagement will facilitate consideration of CCA measures into business investments and enable a pathway towards reducing the high costs and risks associated with investing in CCA. The abovementioned private sector stakeholders will benefit from the project through awareness-raising activities focussed on climate change, climate risk and SRDRM under Output 1.3, 2.2 and 3.3. Other private sector stakeholders that will benefit from this awareness raising include farmers, fisherfolk, construction workers, MSMEs and other entrepreneurs involved in the fishing, agricultural and construction sectors within target coastal communities. These stakeholders will additionally benefit directly from adaptation interventions under Output 3.2 as well as business training, livelihood opportunities and climate-resilient financial products developed and provided through Outcome 4.

Private sector engagement has already been initiated during the project implementation phase with representatives from priority economic sectors such as agriculture, coastal management, energy and waste. The engagement focussed on identifying, *inter alia*: i) knowledge gaps regarding CCA; ii) current practices relating to CCA, as well as corporate social responsibility; iii) the support required to invest in CCA interventions, specifically coastal protection activities; and iv) the most effective information products and methods of delivery for disseminating climate change information. The support necessary for including the private sector involves awareness raising and information dissemination on climate change impacts and potential adaptation options, training on climate change impacts and adaptation options and access to financial assistance to implement CCA activities. Many respondents indicated an interest in engaging in CCA within their operations and envisioned potential financial benefits from this engagement.

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Partner stakeholder projects

Throughout project implementation, the proposed project will collaborate with and build on several complementary recent and ongoing projects implemented by partner stakeholders that address the same development challenge as the proposed project. This collaboration will broaden the impact of project interventions, avoid duplication of efforts and enable sharing lessons learned throughout implementation. Table 6 below provides the details of these projects and their alignment with the proposed project including the objectives, outcomes and budgets, as well as co-finance links to the outcomes of the proposed project. Furthermore, a description of all stakeholder partners and their contributions to achieving project intervention results is provided in the Stakeholder Engagement Plan (Annex 9).

Table 7. Recent and ongoing initiatives and alignment with the proposed project.

Project title	Implementation period	Cost	GEF Agency/Executing Entity	Project summary	Coordination and alignment with LDCF project
Monrovia Metropolitan Climate Resilience Project[252]	2021 – 2027	USD25 million total[253]	UNDP/Government of Liberia (EPA)	The objectives of the 'Monrovia Metropolitan Climate Resilience Project' (MMCRP) are to: i) protect the coastal communities and infrastructure in West Point against erosion caused by sea level rise (SLR) and increasingly frequent high-intensity storms; ii) build institutional capacity and support policies for implementing Integrated Coastal Zone Management (ICZM) across Liberia; and iii) protect mangroves and strengthen gender- and climate-sensitive livelihoods to ultimately build local climate resilience in Monrovia.	The interventions to be implemented under MMCRP align with the outcomes of the proposed LDCF project, specifically: i) strengthening institutional capacity to develop appropriate planning mechanisms for mainstreaming climate change adaptation, which includes the development of county-level ICZM plans (Outcome 1); ii) reducing the vulnerability of coastal communities in Sinoe County to climate change-induced SLR using both engineered and nature-based solutions (Outcome 3); and iii) introducing gender-responsive options for climate-resilient livelihoods in vulnerable coastal communities (Outcome 4). The interventions and lessons learned from the outputs of this GCF project will inform numerous aspects of implementation under the LDCF project and provide considerable potential for scaling up.
Enhancing Climate Information systems for Resilient Development in Liberia (Liberia CIS,	2021–2036	USD11 million[255]	African Development Bank (AfDB)/Government of Liberia (EPA)	The objective of Liberia CIS is to further strengthen Liberia's climate-related observing and monitoring capabilities, early warning and early action systems, and other environmental-related information systems. It seeks to drive a paradigm shift towards	Liberia CIS will complement the proposed LDCF project by developing a national Multi-Hazard Impact-Based Forecasting and Early Warning System. The project will also involve training and equipping the Liberia Meteorological Service (LMS), Liberia Hydrological Service (LHS), Environmental Protection

[252] GCF. Projects and programmes. FP160: Monrovia Metropolitan Climate Resilience Project. Available at: https://www.greenclimate.fund/project/fp160#details

[253] USD17 million GCF financing; USD8 million co-financing.

[254] GCF. Projects and programmes. SP108: Enhancing Climate Information Systems for Resilient Development in Liberia (Liberia CIS). Available at: https://www.greenclimate.fund/sites/default/files/document/sap018-afdb-liberia.pdf

[255] USD10 million GCF funding; USD1 million co-financing.

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GCF)[254]				evidence-based climate-informed decision-making, planning and response. The overarching goal is to integrate green growth, environmental resilience and adaptation into national development planning through effective climate information systems.	Agency (EPA) and the National Disaster Management Agency (NDMA) to: i) collect weather and climate data; ii) maintain and calibrate technical instruments; iii) forecast weather events and provide early warnings; and iv) scale-up evidence-based climate-informed decision-making, planning and response actions countrywide — which will contribute to fulfilling Outcomes 1 and 2 of the proposed LDCF project.
Energy and Environment (E&E) Programme[256]	2020–2024	USD58 million	UNDP/GoL (EPA)	The E&E Programme seeks to support the efforts of the GoL in achieving diversified and inclusive economic growth through investments in sustainable and eco-friendly agriculture, food security, job creation and enhanced resilience to climate change and natural disasters. The programme approach includes enabling diversified and inclusive economic growth within a broader development context to facilitate synergies among four thematic areas, namely: i) Livelihood Diversification, Disaster Resilience and Climate Change; ii) Biodiversity, Conservation Ecotourism and Land Management; iii) Renewable Energy Access; and iv) Waste Management.	The E&E Programme will complement several interventions under the proposed LDCF project and contribute lessons learned to inform the proposed project. The proposed project will particularly build on 'Livelihood Diversification, Disaster Resilience and Climate Change' by: i) strengthening capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development processes (Outcome 1); ii) establishing innovative technologies to support coastal adaptation to climate hazards (Outcome 2); iii) implementing hybrid solutions to reduce the vulnerability of coastal communities to climate change-induced sea-level rise (Outcome 3); and iv) developing and implementing gender-responsive income-generating and livelihood diversification options (Outcome 4). The hybrid solutions implemented under Outcome 3 to reduce the vulnerability of coastal communities will also contribute to 'Biodiversity, Conservation Ecotourism and Land Management' thematic area under the E&E Programme.
To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors	2017–2020	USD2,3 million	UNDP	Liberia began its National Adaptation Plan (NAP) process in 2015 with the development of a road map based on an evaluation of the existing climate adaptation and mitigation initiatives, an assessment of the knowledge, capacity and implementation gaps, as well as an assessment of the capacity development	The proposed project will contribute to: i) expanding the knowledge base for scaling up interventions by introducing innovative technologies to support coastal adaptation planning under Outcome 2; ii) mainstreaming climate change adaptation into planning, budgeting processes and systems by strengthening and institutional capacity to address

[256] UNDP. Project title: Environment and Energy Programme. Available at: https://info.undp.org/docs/pdc/Documents/LBR/Energy%20and%20Environment%20Approved%20Programme%20Document.pdf

[257] UNDP. Climate Change Adaptation. GCF National Adaptation Plans project in Liberia. Available at: https://www.adaptation-undp.org/projects/gcf-national-adaptation-plans-project-liberia

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(i.e. agriculture, energy, waste management, forestry and health) and coastal areas in Liberia[257]				needs. The objective of the project 'To advance the National Adaptation Plans (NAP) process for medium-term investment planning in climate-sensitive sectors and coastal areas in Liberia' was to strengthen institutional frameworks and coordination for the implementation of the NAP process, expand the knowledge base for scaling up adaptation, build capacity for mainstreaming climate change adaptation into planning, and budgeting processes and systems, and formulate financing mechanisms for scaling-up adaptation, including public, private, national and international mechanisms.	the vulnerability of coastal ecosystems (Outcome 1).
GCF Readiness and Preparatory Support: Liberia[258]	2017–2019	USD727,553	Government of Liberia (EPA)	The proposed LDCF project will build on the two main objectives of this GCF project, specifically by: i) strengthening the capacity of the NDA to coordinate climate change activities in Liberia; and ii) assisting the development of Liberia's climate change country programme — which included identifying the country's priorities and potential projects, conducting stakeholder training and identifying opportunities for engaging with non-governmental stakeholders. While most of the work under this project was at a national level, a foundation for engagement with several local stakeholders has been established under the project.	The LDCF project will employ the NDA's enhanced capacity to coordinate other actors and ensure strong engagement at the subnational level and across different sectors. The enhanced capacity at the national level will be localised at the county level, linking the climate change focal points between these levels.

[258] GCF. Readiness Proposal: Liberia. Available at: https://www.greenclimate.fund/sites/default/files/document/readiness-proposals-liberia-epa-nda-strengthening-strategic-frameworks_1.pdf

[259] The risk rating levels include Low, Moderate, Substantial or High (L/M/S/H) and are identified from a Risk Matrix that uses risk impact and probability, rated from 1 (Negligible) to 5 (Extreme).

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IV.3. Risks

Despite thorough planning, strong engagement with the private sector and project partner stakeholders, the LDCF project is exposed to some level of risk to its implementation. A list of project risks and subsequent mitigation measures are summarised in Table 7 below and detailed in the UNDP Risk Register (Annex 7). The Project Manager, with support from the Safeguards Officer and Monitoring and Evaluation (M&E) Officer, will monitor risks on a quarterly basis and report on the status of these risks to the UNDP Country Office (CO). The UNDP CO will then record progress in the UNDP ATLAS risk log on a scale of 1–5 — where 1 is the lowest risk and 5 the highest. These risks will be reported as critical when the impact and probability are high; for example, when the impact rating is 5, as well as when the impact rating is 4 alongside a probability rating of 3 or higher. Management responses to critical risks will also be reported to the GEF in the annual Project Implementation Report (PIR).

Table 8. Summary of project risks, including a description of each risk and the resultant consequences, the risk rating and proposed mitigation measures.

Identified risk and consequence	**Risk rating (L/M/S/H), including impact and probability (I and P, rated 1–5)**[259]	**Proposed mitigation measure(s)**
Social and Environmental: Extreme weather events that occur during project implementation delay project interventions.	**Moderate** I = 3 L = 2	Assessments and consultations during the PPG phase included a thorough inventory of potential site-specific hazards, including information provided by local communities and climate experts. Project implementation activities will be scheduled to avoid coinciding with periods of the year when extreme weather events are more prevalent. Workplans and budgets will provide for weather-related interruptions to ensure that the project remains on schedule. Project interventions are designed to address the impacts of future climate change and to be resilient to climate change hazards themselves.
Social and Environmental: Limited awareness and engagement with community leaders and local-level development practitioners potentially result in limited local buy-in and ownership.	**Low** I = 2 P = 3	Local awareness raising and stakeholder engagement were undertaken during the PPG phase and will continue throughout project implementation. Awareness raising will focus on climate risks, sustainable livelihood opportunities and adaptation options. Specifically, awareness raising will be implemented through numerous project outputs, including: i) the development of county- and local-level plans and Guidance Manuals (Outputs 1.1, 1.2, 2.3 and 2.4); ii) local engagement through focal points and working groups (Output 1.3); iii) an accessible knowledge hub with information on lessons learned (Output 2.2); and iv) training on business identification, development and management for local entrepreneurs, with a focus on climate-resilient livelihood options. In addition to the abovementioned outputs, the project will also disseminate information during implementation through regular publications of project newsletters and other media (for example, videos for community screenings), which will enhance awareness of the project and its interventions and improve engagement with

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		local communities.
Social and Environmental: Insufficient incorporation of gender responsiveness into project interventions may result in not achieving a fully gender-responsive project.	**Moderate** I = 4 P = 2	A Gender Analysis and Action Plan has been developed and advised project interventions during the PPG stage and will be further implemented throughout the project to ensure gender equality is incorporated into all activities. A Gender Officer will be included in the Project Management Unit (PMU) to ensure all gender-related aspects of the project are sufficiently implemented. The project has outputs with a focus on gender-responsiveness that account for the specific vulnerabilities of women and other disadvantaged groups. This includes awareness raising that will involve information on the specific climate change challenges women experience (Output 1.3) and gender-responsive Community Action Plans (Output 2.3). Specifically, Outcome 4 strongly focusses on gender by prioritising women and youth groups in business training, livelihood options and access to finance.
Social and Environmental: Findings and recommendations of Social Environment Screening Procedure (SESP) risks not followed up on and addressed, resulting in negative impacts on ecosystems and communities.	**Moderate** I = 4 P = 2	A Project Safeguard Officer will be included in the PMU to ensure safeguards compliance. The SESP will be updated iteratively throughout the project implementation cycle to ensure all risks are tracked and updated. In addition, safeguard documents, including a Strategic Environmental and Social Assessment (SESA), full Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP), will be developed before the initiation of relevant on-the-ground interventions. Stakeholder engagement will follow the Stakeholder Engagement Plan and adhere to the best practice to ensure any stakeholder concerns regarding the project are acknowledged. Consultation following FPIC (Free, Prior, Informed Consent) approach is recommended for resettlement activities, especially. Additionally, a Grievance Redress Mechanism has been developed to use for receiving and addressing grievances from external stakeholders regarding project interventions.
Financial: Limited response by financial institutions to invest in adaptation-orientated projects may result in the potential failure of livelihood options under Outcome 4.	**Moderate** I = 3 P = 3	During the PPG phase, the private sector — including financial institutions — were engaged to gain inputs and commitment to the project. The project will continue to strongly focus on engagement with the private sector and finance institutions throughout the implementation process. Specifically, the proposed project continue to build on discussions with these institutions to identify solutions to climate change impacts while providing business and investment opportunities within climate-vulnerable sectors, building on existing access to finance projects and initiatives.
Financial: Failure to commit to and provide co-financing, resulting in interventions dependent on contributions through co-financing compromised and not implemented.	**Moderate** I = 3 P = 3	UNDP and GoL have committed to providing in-kind co-financing for the project, including the costing for rock materials which have been verified by GoL and UNDP.
Operational: Delays and reduced chances of success from low human and institutional capacity to implement climate change adaptation projects, particularly at the county level.	**Low** I = 2 P = 2	The proposed project consists of outputs with strong institutional capacity-building elements at the national, county and district levels that are designed to promote intervention effectiveness and sustainability. The abovementioned capacity-building elements include the development of ICZM plans, County Resilience Plans and district-

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		level Guidance Manuals that will inform county- and district-level officials (Outputs 1.1, 1.2, 2.4). Institutional capacity in Sinoe County for ICZM, risk management and climate change adaptation will also be developed under Output 1.2 and 2.1. Finally, iterative lessons learned and best practices on ICZM, risk management, climate change adaptation and livelihoods will be disseminated to coastal county institutions through focal points and working groups, the knowledge hub, best practice collection and training (Outputs 1.3, 2.1, 3.3 and 4.1).
Operational: Limited coordination between project partners and stakeholders may result in project delays, non-participation of stakeholders and communities, and the ineffective implementation of interventions.	**Low** I = 2 P = 3	During the PPG phase, project management arrangements have explicitly been established. In addition, during project implementation, one project manager, several county and local community-level site officers, finance experts and one coastal expert will be competitively procured, ensuring effective long-term coordination between the Implementing Partner, project partners and stakeholders.
Operational: Limited capacity of the EPA to effectively engage, coordinate and integrate district- and county-level planning and investments into national adaptation processes may result in project delays or ineffective implementation.	**Low** I = 2 P = 3	The proposed project will strengthen the coordination capacity of the EPA while also building the capacity of other project partners including the agricultural, fisheries, mining and energy sectors. This will be done by adding adaptation planning into county-level plans and processes under Output 1.2. County-level capacity will also be developed under the project to ensure that adaptation planning is driven through a bottom-up approach and is county specific. This will be achieved through county and district level plans and Guidance Manuals (Outputs 1.1, 1.2 and 2.4) and strengthening the EKMS knowledge hub which will disseminate lessons learned and best practices to all coastal counties (Output 2.2). Additionally, focal points and working groups (Output 2.3) will be capacitated to contribute to national adaptation planning.
Operational: Limited long-term operations and maintenance of coastal adaptation interventions may jeopardise the sustainability and effectiveness of hard coastal adaptation measures.	**Moderate** I = 2 P = 4	An operations and maintenance plan has been developed during the PPG stage, which will be refined in the early stages of implementation once interventions are verified under Output 3.1. The GoL has indicated commitments to provide resources for the continued maintenance of hard interventions beyond the project's lifespan.
Operational: Community initiatives led by individuals can potentially fail if the individual moves to another town. By funding projects led by individuals, there is a risk of failure or short-lived project, particularly if the individual does not have strong ties with the community.	**Moderate** I = 3 P = 3	When providing funding to community initiatives, the Project will favour the initiatives that are led by existing associations, cooperatives over the ones that are submitted by individuals or newly-formed associations. Project activities implemented through existing community associations have a higher chance of success, because even if individuals move away from the project's intervention sites, the association remains in the community and project activities be continued by new members.
Political: National- or county-level political complications potentially delay or limit project implementation.	**Moderate** I = 4 P = 3	The GoL has indicated a strong commitment to the proposed project, which will ensure strong institutional governance of the project and limit the potential of ineffective implementation of project interventions.
Safety and security: Conflict or civil unrest near or in target sites could potentially delay the on-the-ground implementation of project interventions and jeopardise the safety of stakeholders and local communities.	**Low** I = 3 P = 1	Most of on-the-ground interventions will be undertaken in Sinoe County, which — because of its relative isolation — is unlikely to experience civil unrest. The potential for unrest will be closely monitored before in-field activities to ensure the security of project implementers.
Safety and security: National or regional restrictions resulting from the	**Moderate** I = 2	A Covid-19 Strategy was developed during the PPG stage that outlines risks and contingencies to mitigate against Covid-19 risks

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Covid-19 pandemic may result in project delays.	P = 4	to project implementation. The Stakeholder Engagement Plan details safety protocols related to stakeholder engagement during project implementation. Additionally, provisions have been made in the project workplan to ensure the project remains on schedule.
Social The construction of project infrastructure will cause physical displacement at the hard engineered intervention sites in Greenville area (people living on the shore). If poorly executed, these displacements could community complaints and/or protests.	**High** I = 4 L = 5	A Resettlement Action Framework (RAF) was developed. The resettlement will be done by the Government (for the project). Therefore, the RAF is for the Government to apply. A Resettlement Action Plan (RAP) will be developed during the project's implementation phase and will specify the actions to be taken in order to properly resettle and compensate affected people and communities, as well as how the livelihoods of local communities impacted by the displacement will be preserved and enhanced. The Ministry of Internal Affairs (MIA), through the Local Authority, will oversee implementing the land acquisition, resettlement and compensation processes. The MIA will use its own resources, which will not flow through UNDP accounts. While there is no documentation or meeting notes, there is precedence to the effect above, where similar projects in the past (in Buchanan and in New Kru Town) the Government managed the movement of people using its own resources and process outside the project budget. These projects were also financed through UNDP, but the resettlement was not done through UNDP-managed funds. When Government is involved in the land acquisition, resettlement and/or compensation processes for the benefit of the Project, the Project must review the actions to confirm whether they meet or not the objectives Standard 5 (Displacement and Resettlement). If there are any gaps in the achievement of aims and objectives of Standard 5, those gaps will have to be satisfactorily addressed by the Project before commencement of the activities.

The Social and Environmental Screening Procedure (SESP), attached to the project as Annex 6, provides a detailed analysis of the project's social and environmental risks. This analysis examines the risks presented in Table 7 and provides detailed assessments of these risks, while also identifying how the project will manage these risks to ensure they do not occur. The SESP identified 23 risks, of which two scored as High, five were scored as Substantial, 16 were scored as Moderate, resulting in an overall categorisation of High Risk.

The High risks pertain to:

i. the project's adaptation interventions being executed near potential Critical Habitat sites, including Key Biodiversity Areas (KBAs), with the potential of creating adverse impact to fauna and/or flora species and the ecosystems that support them; and
ii. the physical and economic displacement caused by the hard engineered interventions in the Greenville area.

The Substantial risks pertain to the potential adverse impacts of:

i. the project quarry site;
ii. impact of compressed stabilised earth block (CSEB) production sites on the environment;
iii. poor waste management, poor handling (storage, transport) of hazardous materials (e.g. hydrocarbons, lubricants for construction equipment, etc.) on construction sites;
iv. landslide and safety risks associated with project excavations; and
v. Sand mining activities in project landscape.

Based on the ESMF and the RAF, respectively. the project will require a Strategic Environmental and Social Assessment (SESA)/Environmental and Social Impact Assessment (ESIA), project-level Environmental and Social Management Plan (ESMP) and a Resettlement Action Plan (RAP) within the first year of implementation and before the commencement of on-the-ground activities, including coastal adaptation interventions under Output 3.2 and livelihood activities under Output 4.2. The Government will be in charge of managing the land acquisition, resettlement and/or compensation processes for the benefit of the Project should that be needed. A Resettlement

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Action Framework (RAF) was developed. The resettlement will be done by the Government (for the project). Therefore, the RAF is for the Government to apply. The Project is required to review the actions of the Government to confirm whether they meet or not the objectives Standard 5 (Displacement and Resettlement). If there are any gaps in the achievement of aims and objectives of Standard 5, those gaps will have to be satisfactorily addressed by the Project before commencement of the activities. To ensure that Standard 5 requirements are applied upfront, the Project will promote and participate in all government-led community consultations (i.e. avoid government gate-keeping), and supplement when needed the Resettlement Action Plan (RAP). The RAP will be developed during the project's implementation phase and will specify the actions to be taken in order to properly resettle and compensate affected people and communities, as well as how the livelihoods of local communities impacted by the displacement will be preserved and enhanced. Ultimately, the ESIA and ESMP will address these aspects.

The ESIA will include biodiversity studies to confirm the critical habitat status of the areas and an analysis of social risks to communities and potential cultural heritage areas. Also included in the ESMP will be a Waste Management Plan to address hazardous and non-hazardous materials generated through project interventions and to assist in improving current waste management practices within target communities. A project-level Grievance Redress Mechanism (GRM) is also included in the Stakeholder Engagement Plan (Annex 9). This details how grievances can be submitted to the PMU, as well as how they will be collected, addressed and resolved.

A project-level ESMP will be developed following the full ESIA, with the purpose to ensure that social and environmental impacts and risks identified during the ESIA process are effectively managed during the implementation of the project. Additionally, the engineering firm responsible for developing and overseeing the implementation of engineered structures (revetments and groynes) under Output 3.2 will be required to submit a Environmental and Social Management Plan (ESMP) prior to commencing construction activities. This ESMP will outline how construction activities will avoid, minimise and mitigate potential effects on the environment, communities and workers. Commitments within the ESMP will be aligned with: i) the project's Environmental and Social Management Framework (ESMF: Annex 10); ii) the ESMP; iii) the UNDP Social and Environmental Standards; and iv) relevant Liberian social and environmental requirements.

The proposed project has dedicated gender-responsive components, particularly under Outcome 4. Despite this, there are potential gender-related risks to women identified in the SESP, including gender-based violence resulting from increases in women's income within households through opportunities provided by the project. A Gender Analysis and Gender Action Plan (GAP) (Annex 11) was developed during the PPG phase, which provides details on gender-related risks, gender-responsive approaches and mitigation pathways for the project. Awareness and sensitisation sessions will also be organised and/or reinforced in the target communities to explain the benefits of the Gender Equality and Women's Empowerment for the communities.

Finally, a Covid-19 Strategy (Annex 25) has been developed to identify how Liberia has been affected by the pandemic. The strategy also discusses how the proposed project is likely to be impacted by Covid-19, and the project strategy for dealing with these impacts and other potential Covid-19-related risks.

IV.4. Stakeholder engagement and South-South cooperation

Stakeholder engagement and participation has been mainstreamed throughout the project design, with an emphasis on the project's responsiveness to the unique needs of project beneficiaries. This was aimed at ensuring the promotion of ownership of project interventions among target communities during implementation. The two sections below provide an overview of stakeholder engagement that has already occurred during the project identification and project preparation phases, as well as the planned stakeholder engagement for the project implementation phase.

Overview of stakeholder engagement undertaken during the project identification and project preparation phases

To initiate stakeholder consultation during the project identification phase, a National Dialogue event was convened in June 2019, to engage representatives from the public sector and civil society. The engagement aimed to identify climate change adaptation (CCA) priorities for Liberia and decide on focal areas for CCA programming,

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which led to the subsequent selection of the proposed project. Public sector representatives in attendance included the Minister of Finance and Development Planning, Members of the House and Senate Standing Committees on Environment and Natural Resources, as well as other high-level officials. Civil society organisation (CSO) attendees included the President of the University of Liberia, representatives from the GEF Implementing Agencies and international and local NGOs.

Throughout the project preparation phase, stakeholder consultations were undertaken to: i) share information about the proposed project and obtaining feedback; ii) assess the feasibility of proposed interventions; iii) determine the main climate hazards impacting affected ecosystems; iv) identify appropriate implementation modalities and arrangements; v) develop accurate indicators to evaluate the social and economic feasibility of proposed interventions; vi) establish new relationships with local communities and the private sector to ensure ongoing support for interventions; and viii) maintain existing relationships with stakeholders. The main stakeholders engaged during this phase were identified during the project identification phase by using methods such as detailed stakeholder mapping, and their relevance to the proposed project was further validated during the project preparation phase. The primary stakeholders are detailed in Table 8 below.

Table 9. List of the main stakeholders consulted during the project preparation phase and their indicative roles and responsibilities.

STAKEHOLDER GROUP	DESCRIPTION	INDICATIVE ROLES AND RESPONSIBILITIES	RELEVANT PROJECT OUTPUT(S)
NATIONAL GOVERNMENT, MINISTRIES, AND AGENCIES	• Ministry of Mines and Energy (MME) • Environmental Protection Agency (EPA) • Ministry of Agriculture (MoA) • Ministry of Public Works (MoPW) • Ministry of Finance and Development Planning (MFDP) • Forest Development Administration (FDA) • Ministry of Commerce and Industry (MoCI) • Ministry of Gender Children and Social Protection (MoGCSP) • Ministry of Defence (MoD) • National Disaster Relief Management (NDRM) • Port authorities (National Port Authority) • Liberia Maritime Authority • National Fisheries Authority (NAFAA)	These stakeholder groups will support project implementation by representing the Implementing Partner (EPA) and Responsible Parties (MME, MoA and MoCI). The GoL has committed to providing ~USD1,832,000 in co-financing to the project. They will also mainstream integrated coastal zone management (ICZM) and sea and river defence and risk management (SRDRM) principles into their plans and strategies, and benefit from capacity development under the project.	1.2.
COUNTY GOVERNMENTS	• County Government and Superintendents • District and clan officials • Municipalities	These stakeholder groups will support the Implementing Partner and Responsible Parties in project implementation. They will also mainstream ICZM and SRDRM principles into their plans and strategies and will benefit from capacity development under the project.	1.1, 1.2, 1.3, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 4.2 and 4.3.
NATIONAL NGOS	• The Society for Conservation of Nature (SCNL) • Fund a Child's Education (FACE) • Liberia Agency for Community Empowerment (LACE) • Association of Environmental	These agencies are already supporting and implementing on-the-ground activities at some project sites. In addition, they have the potential to provide both co-financing and general partnership support to project implementation.	3.2, 4.1 and 4.2

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	Lawyers		
CSOS	• Agricultural organisations (Farmers Union of Sinoe, Southeast Region Farmers Union Network of Liberia) • Community-based organisations (CBOs), including women's groups (Sinoe Women Forum), youth groups (Sinoe County Youth Association, Grand Bassa Youth Forum and Cape Mount Youth) and the Disabled Association • Liberia Business Association • Collaborative Management Association	These organisations represent direct beneficiaries of this project, who will benefit from awareness-raising campaigns, capacity-building workshops and any livelihood revenue schemes. Many organisations will have members engaging in CSEB ventures, as well as those who will learn how to construct and adapt coastal defence measures.	4.1, 4.2 and 4.3
LOCAL COMMUNITIES	• Vulnerable coastal and riverine communities within coastal counties including, but not limited to, fisherfolk, small traders, farmers and homeowners	These communities are direct beneficiaries of the project. They will benefit from awareness-raising campaigns, capacity-building workshops and any livelihood revenue schemes. Many will learn how to prepare and construct coastal defence measures.	1.1, 1.3, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 4.1, 4.2 and 4.3.
GENDER-BASED STAKEHOLDERS	• Female stakeholders included in consultations under Outputs 1.1, 2.1, 3.1, 4.1, 4.2 and 4.3 to ensure gender considerations are adequately mainstreamed into climate change adaptation interventions.	Climate change impacts affecting Liberian coastal communities can have a differential impact on women, to the extent that ensuring gender responsiveness in the project design is essential. To this end, interventions will target, *inter alia*, women as key beneficiaries to ensure that project outputs are gender responsive. Women will benefit from capacity development initiatives and coastal resilience-building interventions under the project.	1.1, 2.1, 3.1, 4.1, 4.2 and 4.3.
METEOROLOGICAL UNITS	• Liberia Airport Authority • Liberian Hydrological Services (Department of Mineral Exploitation and Environmental Research, Ministry of Mines and Energy) • Agrometeorological Department • Liberia Meteorological Services (Ministry of Transport)	These units provide the basic support to gathering and analysing climate data and diffusing climate advice to key local stakeholders. Ultimately, they are involved in operating and managing early warning systems (EWS) and will benefit from technical capacity-building activities that will enhance their ability to incorporate climate change impacts in hydrometeorological data collection and EWS (Output 2.1).	2.1 and 2.2.
PRIVATE SECTOR	• Liberia Private Sector Climate Action Alliance (LIFSCAA) • Golden Veroleum Liberia (GVL) • Mantra Logging • Liberia Business Association • Construction/brick entrepreneurs • Private sector actors in value chains such as fishing and energy, real estate and hospitality sectors	Private sector actors can provide opportunities for employment in coastal towns/villages, which will enhance the climate resilience of these communities by providing additional livelihood opportunities. They can also provide training and implementation support for livelihoods introduced under the project. Additionally, the private sector will benefit from climate change and adaptation awareness raising from the project under Outputs 1.3 and 3.3.	1.3, 2.1, 2.2, 3.2, 3.3, 4.1 and 4.2.
RESEARCH INSTITUTIONS	• Central Agricultural Research Institution (CARI) • Liberia Institution for Biomedical Research (LIBR) • Construction research groups	These institutions may be involved in research activities linking natural resource management and coastal EbA principles to address climate change impacts. Their capacity to, *inter alia*, house and manage the	2.1, 2.2 and 4.2.

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		upgraded EWS (Output 2.1), undertake hydrometeorological data collection (Output 2.1), collect data on SRDRM (Output 2.2) and assist with the development of standards and codes of conduct reflecting best practices for climate-resilient fisheries and integrated farming systems (Output 4.2), will be developed through the project.	
INTERNATIONAL ORGANISATIONS	• Conservation International (CI) • United Nations Mission in Liberia (UNMIL) • United Nations Industrial Development Organisation (UNIDO) • UNDP Country Office and other UN agencies • GEF Focal Point • Relevant Multilateral agencies • International Union for Conservation of Nature (IUCN)	These organisations will provide technical and strategic guidance for the project, ensuring its effective implementation and that it draws from international best practices. In addition, UNDP has committed to providing USD200,000 in cash co-financing as well as parallel co-financing of USD3,430,000 from the 'Livelihood and Employment Creation in Liberia' project and USD3,840,510 from the MMCRP. CI will provide in-kind co-financing under Output 3.2 of USD1.5 million. These international organisations, such as CI, may provide technical services for the implementation of nature-based solutions under Output 3.2.	All project outputs
FINANCIAL SERVICES SECTOR	• Micro-finance and insurance sectors, such as Access Bank, Afriland First Bank and Building Resources Across Communities (BRAC International)	They will provide economic and financial sustainability options by providing micro-finance and employment opportunities.	4.2 and 4.3.

Stakeholder engagement during the project preparation phase was facilitated by two field visits to potential project sites that occurred from 29 January 2021–5 February 2021 and 2–5 June 2021. During these visits, focus group discussions and interviews were the main tools used to engage with stakeholders. These consultations were facilitated to identify community vulnerability to climate change, including, *inter alia*: i) important ecosystems within proposed project sites and their ecosystem services and ecosystem health (as applicable), as well as observed climate and non-climate threats to ecosystems; ii) existing livelihood strategies and the availability of alternative livelihoods; and iii) access to basic services and infrastructure. Community beneficiaries were identified as the main stakeholder group followed by focus group discussions with these community members comprising 8–20 participants in Downtown-Mississippi, Nanakru, Pungbor, Kommanah Town, Bafu Bay, Tournata, Sebeh and Ponkpoh. Key attendees included members of cooperatives, community leaders and representatives from CSOs such as community-based organisations, women's groups and youth groups. Focus group discussions revealed that agricultural communities viewed cassava and vegetable cultivation as priorities for enhancing agricultural value chains. Fishery value chains were also mentioned as important livelihoods requiring support to improve the climate resilience of fisherfolk. During the consultations, participants noted that despite the climate-resilient properties of cassava, shifting rainfall patterns and resulting periods of unexpected heavy rainfall events and prolonged dry seasons were negatively affecting yields. Additional challenges farmers are exposed to include: i) the non-existence of a farmers' association, that constrains cooperation between farmers; ii) limited technical capacity to implement modern production techniques; iii) the absence of storage facilities; iv) low access to credit facilities; and v) inadequate provision of social services to farmers. These challenges, among others, were identified as driving factors behind the decline in the number of farmers as many had migrated to urban areas in search of better livelihood opportunities. Moreover, the absence of micro-finance facilities specifically designed to accommodate farmers was also consistently emphasised as a major constraint to improved agricultural productivity.

During the field visits, public sector stakeholders at the national and local levels were also interviewed. National-level stakeholders included the National Climate Change Focal Person, Minister of Lands, Mines and Energy and

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representatives from the Ministry of Internal Affairs. Local-level stakeholders in Sinoe County, Grand Bassa, Grand Cape Mount and Maryland included several superintendents and the regional coordinator for the Farmers Union Network of Liberia (southeast region). In addition, representatives from the Liberia Institute of Statistics and Geo-Information Services and the National Fisheries and Aquaculture Authority (NAFAA) were also consulted. The NAFAA focal point noted that the primary challenges fisherfolk are exposed to in Sinoe included limited equipment such as safety jackets, nets, storage facilities or ice to preserve fish, regular capsizing of canoes and the migration of fish species. Limited technical capacity to improve the productivity of their operations during the dry season when catch levels are low, as well as the migration of fish species, were also noted as key challenges for fisherfolk.

Private sector engagements were convened with representatives from relevant companies including Golden Veroleum Liberia (GVL), Ruby Life Forestry Investment Inc., Mandra Forestry Liberia, Equatorial Palm Oil PLC Maryland Oil Palm Plantation, Bea Mountain Mining Corporation, Sime Darby Plantation, Cavalla Rubber Corporation and micro, small and medium enterprises (MSMEs). These engagements focussed on how the private sector in Sinoe County, Grand Bassa, Grand Cape Mount and Maryland can best align their operations and investments with CCA and mitigation priorities. Specifically, a review was conducted of current operations, performance, the CCA impact of corporate social responsibility initiatives, existing initiatives and challenges presented to CCA interventions. Common themes raised during these engagements included: i) a noted impact of climate change hazards on operations, particularly the inaccessibility of most roads during the wet season; ii) a commitment to corporate social responsibility enacted through measures such as the provision of clean water and clinics, as well as upgrading road infrastructure; and iii) a desire for government-led incentives to facilitate increased investment in CCA, particularly through tax rebates. Climate change indicators, such as reporting on waste management, energy consumption and the implementation of CCA, were not well incorporated into monitoring and evaluation systems used by the companies interviewed. These gaps are largely attributable to an absence of legal imperatives to report greenhouse gas emissions and an inadequate national strategy on CCA, limiting private sector stakeholders' consideration of these actions as a strategic priority. Moreover, limited avenues for holding private companies accountable for actions related to climate change mitigation and adaptation were raised during consultations with MSMEs, who also noted a general limited awareness regarding CCA.

Representatives from Liberia's Private Sector Alliance on Climate Change were additionally remotely engaged (further detail is outlined in Section IV.2). The Private Sector Alliance includes members from several priority economic sectors for CCA, including agriculture, coastal management, energy and waste. The main support required includes awareness raising and information dissemination on climate change impacts and potential adaptation options, training on climate change impacts and adaptation options and access to financial assistance to implement CCA activities. Many respondents indicated an interest in engaging in CCA within their operations and identified potential financial benefits from doing so.

Overview of stakeholder engagement planned for project implementation

Continuous engagement with stakeholders — particularly community beneficiaries and the public and private sectors — will be maintained during the project implementation phase, primarily in the form of capacity building, awareness raising and information sharing and institutional strengthening. This engagement will be supported and guided by a detailed Stakeholder Engagement Plan (Annex 9). The plan will ensure consistent and ongoing engagement with key stakeholders to: i) facilitate information sharing and awareness raising regarding CCA interventions; ii) establish community ownership of project interventions; iii) promote gender equality and the empowerment of marginalised groups including the youth and persons with disabilities; and iv) enhance complementarity with other ongoing initiatives.

Local communities — the primary beneficiary group of the proposed project — will be engaged through several project outputs to ensure all relevant interventions are informed by the needs of the beneficiaries. First, communities will be targeted by awareness-raising and capacity-building activities (Output 1.3) to improve their understanding of, and secure their buy-in for, the CCA interventions and livelihood opportunities that will be introduced under Outputs 3.2 and 4.2, respectively. The content included in awareness-raising products will be

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gender responsive and focus on promoting gender equality as well as disability-inclusive and gender-responsive climate actions. This understanding will be reinforced by developing an early warning and preparedness delivery system that aims to provide necessary and accessible climate change and climate hazard information to vulnerable communities (Output 2.1). At least 50% of beneficiaries that will be consulted will be women, disaggregated by age and disability, to promote equitable participation of men and women, the youth and people with disabilities in developing the EWS. This will also ensure that the climate change information provided by EWS respond to the needs of all end users, particularly women. Access to climate information will be extended by strengthening the Environmental Knowledge Management System (EKMS) knowledge hub (Output 2.2), which will utilise awareness raising to inform target communities on the existence and use of the hub. The EKMS will include gender-specific data to promote gender mainstreaming and increase available data on the gender-differentiated impacts of climate change. Second, community beneficiaries will be further engaged by the development of Community Action Plans (CAPs, Output 2.3), which will include a participatory resource mapping exercise and a framework for the monitoring of coastal and river ecosystems. At least 50% of the participants in the resource-mapping exercise will be women, to ensure that CAPs adequately reflect the needs of all beneficiaries in each district. Gender mainstreaming will additionally be promoted by convening working sessions that ensure gender is fully integrated into the CAPs and their supporting frameworks. This engagement will also ensure that the CAPs adequately reflect the environmental and socioeconomic priorities of each unique context and promote ownership of the plans. Third, local ecological knowledge will be garnered to inform the development of Guidance Manuals for integrated coastal adaptation practices (Output 2.4). Gender will be mainstreamed into the Guidance Manuals by including gender-specific data as well as a specific focus on gender responsiveness which will be presented during validation meetings. Fourth, communities will be engaged in the implementation of community-based coastal ecosystem monitoring programmes (Output 3.2) to enhance the long-term sustainability of nature-based solutions implemented under this project output. At least 50% of participants will comprise women, the youth and people with disabilities to ensure these groups are equitably able to participate in, and benefit from, income-earning opportunities. Aimed at gender equality, the project grievance redress mechanism will also include reporting procedures on sexual harassment and abuse in the workplace to reduce the incidence of sexual- and gender-based violence. Finally, consultations with local communities will inform the identification of site-specific needs and livelihood opportunities (Output 4.2). The additional livelihood opportunities developed under this output will also be validated by communities to ensure they are appropriate for the local context. Similarly, 50% of participants engaged in this process will comprise women, disaggregated by age and disability, to ensure equitable participation and inclusivity.

Public sector stakeholders at the national, county and district levels will also be engaged throughout several project outputs. Specifically, the project will provide technical and human capacity building to officials, planners, decision-makers and climate information system units at all levels of government to, *inter alia*: i) adequately assess climate change risks and prepare county-level ICZM plans (Output 1.1); ii) incorporate SRDRM, as well as coastal adaptation principles into relevant plans (Output 1.2); iii) implement and manage the EWS (Output 2.1); iv) effectively implement CAPs (Output 2.3); and v) understand and use the climate-resilient coastal management Guidance Manuals (Output 2.4). These capacity-building initiatives will better equip recipients to incorporate CCA into their operations and enable them to meaningfully engage in project activities. Gender will be mainstreamed into capacity-building initiatives to ensure that public sector officials can adequately integrate gender responsiveness into future planning processes. For example, technical training programmes (Activity 1.2.2) will include training on gender-mainstreaming processes with specialised training on gender and climate change provided to the Project Gender Officer and the PMU. Training programmes will also encourage equitable participation between men and women by ensuring at least 40% of training programme participants under Activity 1.2.3 are women, disaggregated by age and disability. The feasibility mapping exercise (Output 3.1) will be informed by engagement with, *inter alia,* public sector stakeholders to ensure priority assets, livelihoods and ecosystems are reflected in the final exercise. This engagement will also consist of 50% women participants, disaggregated by age and disability, to ensure equitable participation and gender mainstreaming. Similarly, county- and district-level officials will be engaged under Output 4.2, which involves the collaborative development of industry standards and codes of conduct for fisheries and integrated farming systems, compressed stabilised earth block construction and their value chains. The project's gender coordinator will ensure that the industry codes are gender responsive to promote gender mainstreaming.

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Under Output 3.3, workshops on CCA will be convened with private sector representatives to encourage the adoption of CCA options in climate-vulnerable sectors such as agriculture, fisheries and construction. The content of these workshops (Activity 3.3.3) will include gender-disaggregated data and gender-mainstreaming best practices for private sector stakeholders to consider. The training workshops under Output 4.1 on business identification, development and management to improve the adaptive capacity of recipients will specifically target gender responsiveness in MSMEs. These workshops will be informed by a needs assessment (Activity 4.1.1) that will collect and analyse data disaggregated by sex, age and disability on livelihood needs and priorities to ensure the adequate consideration of differentiated socioeconomic impacts of climate change on women, men, boys and girls. Accordingly, training will include information on, *inter alia,* shared responsibilities for unpaid care work, targeting men and boys to promote gender equality and equity. At least 70% of participants in business training workshops (Activity 4.1.4) will comprise women, the youth and people with disabilities. Financial institutions will be engaged under Output 4.3 to: i) enhance their capacity for integrating climate change information and risks into products and business cases; and ii) improve the linkages between micro-finance provision and CCA-oriented businesses. Workshops convened under Activity 4.3.1 will include content on products tailored to women-run MSMEs to promote gender equality. These engagements will result in greater access to micro-finance among vulnerable coastal communities — specifically women, the youth and people with disabilities — which will in turn support livelihoods implemented under Output 4.2. Another outcome will be improved capacity among financial institutions to incorporate CCA considerations into their operations and updating financial and insurance-sector policies and programmes.

In addition to engagement with stakeholders at the national and local levels, the project will engage global stakeholders to explore opportunities for meaningful participation in climate change efforts, focussing on the impacts of SLR and shifting rainfall and temperature patterns. Stakeholders will include the Global Center on Adaptation, Global Resilience Partnership, InsuResilience, Africa Risk Capacity, Africa Adaptation Initiative, the African Development Bank's Adaptation Benefits Mechanism and initiatives such as the West Africa Biodiversity and Climate Change programme. These stakeholders will be engaged to facilitate information sharing and establishing partnerships for, *inter alia,* regional cooperation with countries that are implementing initiatives on coastal erosion, flooding and climate-resilient livelihoods in geopolitical, social and environmental contexts relevant to the proposed project in Liberia.

IV.5. Gender equality and women's empowerment

According to the 2008 national census report, of Liberia's population of 3.5 million people, 50.1% were males and 49.9% females. Currently, Liberia's population has increased to 4.8 million at an annual growth rate of 2.1%. The country's population growth rate is influenced by, *inter alia*: i) high fertility rates[260,261]; ii) a substantial portion of the population is women of reproductive age[262]; iii) early marriage practices; iv) widespread polygamy; and v) minimal family planning services. Although the constitution of Liberia provides for gender equality[263], an analysis of gender equity in Liberia indicates the structural marginalisation of women in the country.

During the PPG phase, men, women, women's groups and representatives were consulted — including through targeted focus group discussions — to discuss the role of women at the county and community levels. Several gender-related gaps and inequalities were identified, specifically regarding women's roles in communities, their participation and decision-making, as well as access to and control over natural resources. The inequalities identified relate to, *inter alia*: i) minimal participation and decision-making of women — estimated at 30–40%, compared with ~60–70% of male participation and decision making; ii) unequal access to and control over resources, specifically land, which inhibits women's access to agricultural production inputs and technology; iii) minimal training and capacity-building opportunities — compounded by a considerable portion of girls and women who have not acquired formal education; and iv) limited access to financing options, as well as income-generating

[260] Five children per woman.
[261] CIA Factbook. Liberia. Available at: https://www.cia.gov/the-world-factbook/countries/liberia/
[262] Approximately 50% of the population is between 15–54 years of age.
[263] Constitution of Liberia, Article 8

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and economically productive activities. These gender inequalities and gaps are predominantly attributed to cultural norms and values that determine specific gender roles within communities.

The differentiated climate change impacts on men, women, girls and boys should be considered during project design and implementation to reduce equity gaps and avoid reinforcing the abovementioned existing patterns of gender disadvantages. Climate change impacts on underprivileged populations are considerably disproportionate, undermining measures for human growth and productivity and gender equality. While gender-disaggregated data on climate change have been limited, available data on the differential impact of climate change on women and men are emerging. For example, Liberia's Climate Change Gender Action Plan[264] provides that, as a result of climate change, women in Liberia experience reduced economic activities even though their workloads increase, often resulting in their poor health conditions, early death and food insecurity. Climate change impacts are also linked to maternal mortality and sexual and gender-based violence in Liberia. The Gender and Social Impact report[265] lists several climate hazards in coastal areas — particularly floods, increasing frequency and intensity of drought periods, sea level rise and storm surges — and the associated differentiated consequences reported by both men and women from three coastal counties, namely Sinoe, Grand Bassa and Montserrado. With regards to floods, both men and women are affected by water-borne diseases that may result from the contamination of water sources, however the responsibility of finding clean water sources may most likely be on women, particularly because of the expectations associated with women's reproductive roles. Other specific consequences noted were the impacts of climate change on livelihoods. With regards to the fisheries sector, for example, fishing is predominantly undertaken by men, while women are involved in the processing and selling of fisheries products. Storm surges result in reduced catch for men and consequently reduce the availability of fish products women can process and sell. This, resultantly, impacts the income of both men and women.

The proposed project design includes several outputs that contribute to addressing the abovementioned gender-related challenges and gaps. These outputs include: i) Output 1.1 — the development of Sea and River Defence and Risk Management Plans (SRDRMP) will build gender-responsive climate resilience within communities; ii) Output 2.3 — encouraging the participation of women in the CAPs the development; iii) Output 4.1 — developing and hosting training programmes on business identification, development and management will target women and the youth; iv) Output 4.2 — creating additional and climate-resilient livelihoods and value chains will provide socioeconomic benefits for women and increase their access to and control over natural resources; and v) Output 4.3 — facilitating improved access to finance options and technologies will serve women and enable livelihood and income diversification. Gender-responsive indicators include gender-disaggregated beneficiaries of CCA awareness-raising programmes, CCA interventions in Sinoe County, technical training and implementation of gender-responsive livelihood diversification and improved access to finance. These indicators will be complemented by designing and implementing business training programmes that target women and the youth.

Gender Action Plan

The project's Gender Action Plan (GAP) includes five priority approaches to ensuring the activities implemented under the proposed project are gender responsive and the outputs aim to reduce gender inequalities and empower women. This ensures that specific gender goals are reflected in the effectiveness and success of the proposed project. In addition, the GAP aligns with national gender policies and international recommendations on gender equality, as well as UNDP and GEF's gender policies which emphasise clear commitment towards achieving gender equality and women empowerment. A detailed GAP — which includes gender-related outcomes, activities and indicators — is provided in Annex 11, while Table 9 below provides a summary of gender-responsive approaches to be implemented through the project.

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[264] IUCN. 2012. Climate Change Gender Action Plan for the Government of Liberia. Available at: http://extwprlegs1.fao.org/docs/pdf/lbr189011.pdf.

[265] UNDP. 2019. Gender and Social Impact of Climate Change in Liberia Report. Available at: http://ccksp.gnf.tf/sites/default/files/Gender%20%26%20social%20impact%20assessment%20on%20climate%20change%20REPORT%20-%20FINAL%206-26-19.pdf.

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Table 10. Gender-responsive measures to be implemented by the proposed project.

Approach	Measures to be implemented by the project
Capacity building, awareness raising and training	The project will increase awareness, knowledge and human capacity for building climate resilience and adaptation. The GAP supports equitable gender benefits to the project's capacity-building, awareness-raising and training opportunities. In addition, the information materials used for creating awareness in communities should reflect gender responsiveness. Specific actions will include, *inter alia*: i) promoting equal access to opportunities by providing technical training and planning processes; ii) improving institutional capacity to address gender in climate change planning, programming and implementation; iii) producing gender-responsive awareness-raising products; and iv) capacitating communities to participate in climate change adaptation and resilience-building processes
Livelihood/economic opportunities	The project seeks to reduce inequality by ensuring men and women equally benefit from the project's livelihood and income-generating initiatives. This component will increase livelihood options and create market linkages and value-chain opportunities for men, women and vulnerable groups in coastal counties. Specific actions will include: i) supporting livelihood options that improve the gender-differential needs of the population in coastal communities; ii) selecting target beneficiaries for livelihood programmes by prioritising women-headed households, families that rely on the sea and ecosystems for their livelihood and other marginalised groups; iii) promoting equal access to economic opportunities by ensuring fair and equal treatment of unskilled and skilled workers, ensuring equal pay for equal work and promoting workers' safety through prevention of sexual abuse and harassment; and iv) reducing barriers that limit women's access to livelihood training and opportunities
Decision-making	The project will contribute to national efforts to increase women's roles in leadership and decision-making processes. Specific actions will include: i) ensuring women can lead and participate in all climate change decision-making processes under the project, including county development planning processes, monitoring and evaluation and community involvement in climate change processes; and ii) promoting gender-responsive decision-making by producing knowledge products on gender-sensitive climate action
Participation	The project will support processes that ensure the participation of key stakeholders and communities in several processes such as assessments, screenings and validation processes. Specific actions will include: i) ensuring that project assessments, environmental and social impact assessments, as well as consultations and validation processes are gender-responsive and inclusive in design and implementation; and ii) ensuring assessment reports and findings reflect gender-responsive participation.
Monitoring and Evaluation	This aligns with the programme's accountability — the project supports women and men to participate and lead the fostering of enhanced coastal adaptation measures. Specific actions will include: i) increasing women's participation in monitoring and evaluation systems; ii) establishing gender-sensitive monitoring and evaluation systems; and iii) promoting the collection, analysis and use of sex- and age-disaggregated data.

IV.6. Innovativeness, Sustainability and Potential for Scaling Up

Innovativeness

Although there have been several coastal adaptation projects introduced in Liberia, they have been narrowly focused in their scope — generally employing hard adaptation approaches in isolation with limited consideration of nature-based solutions. The proposed project will bridge this gap by implementing innovative hybrid interventions that balance site-specific soft (nature-based) and hard (engineered) approaches — supported by integrated planning and management processes — to develop hybrid SRDMs to address, inter alia, coastal flooding and coastal erosion (Output 3.1). This hybrid approach will allow for the use of hard interventions to address the most urgent coastal erosion needs, while using more cost-effective nature-based solutions (soft interventions) where appropriate to achieve long-term resilience. The development of ICZM will complement the hybrid approaches by ensuring a holistic and integrated approach to managing coastal zones is adopted throughout the nine Liberian coastal counties (Output 1.1). The spatial extent of the ICZM plans will cover both coastal ecosystems

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as well as riverine ecosystems with river mouths located within coastal zones to ensure that the full coastal hydrology is adequately managed[266]. This geographical focus will be supported by the Sea and River Defence Investment Management Plan to be piloted in Sinoe County (Activity 1.1.2). The integration of nature-based solutions into the adaptation approach will also yield numerous co-benefits to local communities that will improve buy-in and promote sustainability. In addition, the development of ICZM plans will enable a more sustainable management of coastal areas, with the long-term goal of, *inter alia*, reducing coastal flooding. The reduction of flooding will generate social co-benefits for community members in the form of improved public health by restricting the spread of waterborne diseases (Section II.3.2). These hybrid interventions have not been substantively introduced in Liberia before — with previous efforts mostly focussing on communities around the capital of Monrovia — and have never been introduced within Sinoe County. The proposed approach will yield numerous lessons, with information on best practices and lessons learned being documented and disseminated (Output 3.3) to, inter alia, broaden the existing knowledge base on coastal adaptation in Liberia and enable the replication of proposed interventions in other coastal counties.

The abovementioned hybrid interventions will be complemented by another innovative element of the project — the development of additional and diversified livelihood strategies (Output 4.2) with training, financial and technological support (Output 4.1 and 4.3, respectively). Although previous projects have introduced climate-resilient livelihoods in Liberia — such as the 'Monrovia Metropolitan Climate Resilience Project (MMCRP)' — these interventions have not been introduced in Sinoe and several other coastal counties and have not explicitly focussed on coastal communities. Resultantly, the proposed interventions will address the climate vulnerability of beneficiary coastal communities in an innovative manner and generate important best practices and lessons learned to enable the replication of project activities at a broader scale. The diversification of livelihoods will focus on improving the climate resilience of agricultural and fishery-based occupations, expanding associated value chains and reducing the dependence of beneficiaries on unsustainable practices, such as sand mining, that contribute to environmental degradation.

Supporting this innovative approach, the stakeholder engagement process discussed in the preceding section strongly focussed on community ownership and deepening their understanding of current and projected climate changes and the resulting impacts. Specifically, the development of Community Action Plans (CAPs) in Sinoe under Output 2.3 will involve a participatory resource-mapping approach to integrate local/traditional knowledge of the local context with hard data. This integration will ensure that the resulting planning instruments respond to community needs and are relevant to the prioritised resources and areas while also enhancing community ownership of these CAPs. Simultaneously, this process will improve community knowledge regarding the interrelationship between climate change and natural resources. Community ownership will be further strengthened by enhancing the EKMS knowledge hub (Output 2.2), which will facilitate communication between decision-makers, contribute to disseminating information collected through early warning and risk management systems (Output 2.1) and provide decision-making support tools that enable planners and the private sector to improve decision-making on adaptation and risk management. The information disseminated by the EKMS hub will specifically be tailored to meet the needs of end users such as fisherfolk, farmers and other stakeholders in the agricultural and fishery value chains to improve their knowledge surrounding CCA as well as their adaptive capacity. Simultaneously, innovation has been mainstreamed into the EKMS hub by: i) ensuring the innovative tailoring of information to meet the context-specific needs of end users; and ii) contributing to user-friendly decision-making support tools to assist decision-makers and private sector actors in selecting appropriate SRDM approaches.

Agricultural livelihoods will be supported by introducing integrated farming systems (IFS) that merge agricultural and aquacultural activities to enable the simultaneous cultivation of vegetables and staple crops alongside small livestock and fish (Output 4.2). The introduction of innovative IFS approaches will shift agricultural livelihoods away from climate-sensitive practices, enabling farmers to produce a diverse range of agricultural products that can be sold year-round. This shift will enhance the climate resilience of agricultural livelihoods and contribute to greater

[266] The boundaries of the 'coastal zone' applied within each ICZM Plan will depend on, *inter alia*, the unique hydrology and geography of each county.

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adaptive capacity among beneficiaries. Moreover, IFS also reduces farmers' reliance on expensive and ecologically damaging agricultural inputs such as pesticides, fuel and fertilisers. Additional livelihood opportunities will be created by expanding agricultural value chains, including developing agro-inputs, agro-logistics, packaging, storage and aggregators. In particular, the fisheries value chain will be supported by introducing: i) safer and more efficient equipment; ii) upgrades to the fish drying and processing process to promote greater efficiency; and iii) refrigeration units to enable storage of fish and production of ice.

Furthermore, environmentally degradative practices such as sand mining — used to produce bricks for construction — will be addressed by introducing compressed stabilised earth blocks (CSEBs). CSEBs have been used in several countries, including Gambia and South Africa, as an alternative construction technique to decrease the use of sand mining (detail on the environmental impacts of sand mining has been elaborated on in Section II.2). The bricks produced using this technique are composed of ~10% sand and ~80% earth, and can therefore reduce the pressure on sand resources and associated coastal erosion. Importantly, the integration of socially and environmentally focussed interventions demonstrates the interdependence of these factors and the necessity for merging these interventions to achieve long-term sustainability.

Finally, the proposed project will promote innovations in the financial services sector by improving access to CCA finance for Liberian businesses. At present, access to credit in Liberia is limited, with only ~3% of Liberian adults and companies listed in the credit registry and able to access finance from formal financial institutions[267]. For MSMEs in particular, access to external capital in the form of credit, for example, is a necessary prerequisite for successful growth and long-term sustainability[268]. Liberia's services sector has accessed the majority of credit distribution from Liberian banks (~43% of loans), while the formal agricultural sector has obtained only ~4% of total loans[269], despite employing ~44% of the population[270]. In response, the project will facilitate improved access to finance in the agricultural sector[271] by engaging with financial institutions and insurance providers at the national, county and micro scale (Output 4.3). This collaboration with the private sector will address the considerable financial gap and encourage technology transfer[272] and livelihood diversification at the local level. Ultimately, these activities will improve the climate resilience of coastal community livelihoods and ensure the long-term sustainability of the proposed project.

Sustainability

Beyond its primary objective of maintaining environmental sustainability in the context of climate change in Sinoe County, the proposed project design will also ensure the institutional, social and economic sustainability of interventions and their impacts beyond the project lifespan. These project design elements — detailed below — will ensure the proposed interventions are maintained and continue to benefit target communities beyond the project's life cycle.

Institutional Sustainability

The proposed project comprises several interlinked activities to ensure the institutional sustainability of its interventions. Specifically, climate change risks and appropriate adaptation interventions — as identified in Output 3.1 — will be incorporated into Liberia's existing institutional framework. The integration of climate change risk considerations into new development plans will enable mainstreaming CCA into these planning tools, ensuring the sustainability of project interventions (Output 1.2). CCA will be incorporated into the institutional framework by

[267] World Bank Group. 2020. *Doing Business 2020: Economy Profile Liberia*.
[268] Dukuly M. 2012. Credit Participation and Access in postwar Economy: Evidence from Small Scale Enterprises in Liberia. [online] Available: https://www.econrsa.org/system/files/workshops/papers/2012/dukuly-credit-participation.pdf
[269] Central Bank of Liberia. 2016. Annual Report. [online] Available: https://www.cbl.org.lr/doc/2016AnnualReport.pdf
[270] World Bank Group. 2016. DataBank: Jobs. [online] Available: https://databank.worldbank.org/reports.aspx?source=jobs
[271] Specific agricultural enterprises will include Integrated Farming Systems, climate-resilient fisheries and their value chains.
[272] This will include, *inter alia,* agricultural technology that many smallholder farmers are unable to purchase as a result of limited access to credit.

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developing Integrated Coastal Zone Management (ICZM) plans for all coastal counties (Output 1.1). These planning tools will assist counties in addressing climate change threats to local livelihoods and infrastructure and contribute to incorporating CCA into future planning systems. In addition, CAPs will be developed across all coastal districts in Sinoe County, further assisting in mainstreaming CCA into Liberia's institutional framework (Output 2.3). These activities will be supported by building technical capacity for public sector stakeholders within county and district institutions to improve recipients' abilities to assess climate change risks and integrate them into county-level ICZM plans (Output 1.1) and County Resilience Plans (Output 1.2). Complementary awareness-raising initiatives will be implemented to strengthen the understanding of targeted private sector and community groups on SRDM standards, protocols and indicators (Output 3.3).

In addition to the abovementioned activities, climate change risk and information focal points will be developed and disseminated to the necessary stakeholders across all relevant coastal counties (Output 1.3). Under this output dedicated working groups will be established and trained within all coastal counties, further contributing to the sustainable integration of CCA priorities into Liberia's institutional framework. The establishment of working groups will be supported by developing Guidance Manuals designed to support the implementation of ICZM for distribution to relevant district staff in all coastal counties (Output 2.4).

The long-term maintenance and sustainability of on-the-ground infrastructure implemented by the project will be secured by commitments from partner institutions and the GoL. Specifically, memoranda of understanding (MoUs) will be signed between the Liberia Meteorological Service (LMS) and institutions housing and maintaining weather stations and other equipment used for the early warning systems under Output 2.1. Hard infrastructure under Output 3.2, including revetments and groynes in Greenville, will be maintained past the project's lifespan by the MME as detailed in the Operations and Maintenance Plan (Annex 13e). Restored mangrove and forest ecosystems within targeted sites in Sinoe (Output 3.2) will be maintained through agreements with NGOs or international organisations such as Conservation International, as well as through communities participating in community-based monitoring programmes.

Social Sustainability

The social sustainability of project interventions will primarily be ensured by emphasising stakeholder participation in the project design. For example, hybrid interventions designed under Output 3.1 to address climate change hazards will be developed in consultation with community stakeholders. Moreover, Output 2.3 will involve the development and implementation of a community-based monitoring programme to strengthen beneficiary communities' understanding of climate change impacts and appropriate adaptation interventions. The findings of this programme will be disseminated throughout other coastal counties, with a particular focus on, *inter alia*: i) appropriateness for diverse contexts; ii) effectiveness in addressing climate change hazards and impacts; iii) costs; and iv) sustainability. In addition, the CAPs (under Output 2.3) will be developed in a participatory manner and empower communities with knowledge about the livelihood impacts of observed and projected climate change — as well as other environmental and economic factors. Ultimately, this knowledge will enhance communities' control over developing the relevant adaptation interventions, resulting in strengthened ownership of — and support for — these action plans and ensuring they are contextually appropriate.

Component 4 of the proposed project will further contribute to the social sustainability of the project, specifically by introducing sustainable alternative livelihood strategies for beneficiary communities such as IFS and climate-resilient fisheries (Output 4.2). The long-term sustainability of these interventions will be enhanced by providing training on business identification, development and management combined with training programmes targeting Micro, Small and Medium Enterprises (MSMEs, Output 4.1). In conjunction, these initiatives will empower beneficiaries with the relevant knowledge required to develop and maintain sustainable nature-based livelihoods beyond the lifespan of the proposed project.

Economic Sustainability

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The best practices on adaptation solutions that will be piloted in Sinoe County, will be documented and disseminated to other coastal counties under Output 3.3. Adaptation best practices will be presented at workshops with private sector stakeholders from priority, climate-vulnerable value chains including agriculture, fisheries and construction, to facilitate the embedding of innovative adaptation technologies within private sector business models. The adoption and upscaling of these interventions within the private sector will be supported by demonstrating the business case for adopting adaptation interventions, thereby encouraging private businesses to invest in CCA and enhance the long-term sustainability of their operations. Ultimately, this will facilitate the economic sustainability of project interventions by engaging private sector actors along their value chains and facilitating the adoption and upscaling of such interventions beyond the project lifespan.

Component 4 will also contribute to the project's economic sustainability by providing training on business development skills to MSMEs — targeting women and the youth in particular (Output 4.1). This will improve beneficiaries' livelihoods and encourage their adoption of the climate-resilient technologies piloted in the proposed project, thereby facilitating their replication beyond the scope of the project's lifespan. Broker-matching between adaptation enterprises and national and local finance investors will additionally be facilitated under Output 4.1, which will further increase private sector investment in CCA. Output 4.2 will complement the business development training (Output 4.1) and the private sector engagement convened under Output 3.3 by identifying further opportunities for IFS, climate-resilient fisheries, compressed stabilised earth blocks (CSEBs) and their value chains to be developed.

The economic sustainability of these interventions will be supported by increasing access to finance and supporting technologies (Output 4.3). Access to finance in Liberia is low, and just ~36% of the population have access to financial services[273]. Limited availability of credit, particularly in rural areas, has been highlighted as a considerable barrier to social and entrepreneurial development in Liberia[274]. Financial institutions will be engaged during project implementation to increase the availability of micro-finance loans for adaptation-oriented enterprises in vulnerable coastal communities. This intervention, combined with private sector engagements outlined above, will ultimately improve the long-term viability of livelihoods and income diversification strategies.

Scalability

The development of the EKMS knowledge hub will generate the necessary information on best practices and lessons learned from experiences with ICZM and will be distributed to other coastal counties across Liberia (Output 2.2). This knowledge dissemination will provide the recipient counties with the information required to design and implement their own contextually responsive ICZM systems in the future. This process will be further supported by developing and distributing Guidance Manuals (Output 2.4) detailing methods for implementing ICZM. Experiences with integrating relevant climate change risks and adaptation priorities into County Resilience Plans under Output 1.2 will be documented by the EKMS knowledge hub and provide an entry point for other counties to replicate these interventions and build on identified best practices.

As detailed in the 'Economic Sustainability' sub-section above, private sector representatives and financial institutions have been identified as key stakeholders to facilitate the upscaling and replication of piloted interventions in other areas of Liberia. Private sector engagement will be achieved through five methods. First, workshops will be convened with private sector representatives from priority, climate-vulnerable value chains including agriculture, fisheries and construction, to demonstrate the business case for adopting adaptation interventions (Output 3.3). Presenting this business case will encourage the embedding of innovative adaptation technologies and climate-resilient value chains into private sector business models. Second, training on business development skills for MSMEs, focussing on climate-resilient businesses, will be presented under Output 4.1. This training will further encourage the adoption of innovative adaptation solutions by the private sector. Third, Output 4.1's training will be supported by improving linkages between village loan saving associations (VSLAs) and

[273] Central Bank of Liberia. 2020. National Financial Inclusion Strategy 2020–2024.

[274] African Development Bank Group. 2014. Impacting West Africa: Transforming People's lives in Liberia through Microfinance. [online] Available: https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Impacting_West_Africa-_Transforming_People%E2%80%99s_lives_in_Liberia_through_Microfinance_-_Issue_1.pdf

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microfinance institutions to facilitate improved access to finance for beneficiaries (Output 4.3). Fourth, additional opportunities for IFS, climate-resilient fisheries, CSEBs and their value chains to be developed will be identified under Output 4.2, to further complement the business development training (Output 4.1) and the private sector engagement convened under Output 3.3. Finally, the economic sustainability of these interventions will be supported through increased access to finance and supporting technologies (Output 4.3), ultimately improving the long-term viability of livelihoods and income diversification strategies. Combined, these interventions will position the private sector and financial institutions as key stakeholders for upscaling project interventions in other parts of Liberia.

V.

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VI. PROJECT RESULTS FRAMEWORK

This project will contribute to the following Sustainable Development Goal (s): Goal 1 — No poverty; Goal 5 — Gender equality; Goal 8 — Decent work and economic growth; Goal 11 — Sustainable cities and communities; and Goal 13 — Climate action.				
This project will contribute to the following country outcome: UNDAF: Outcome 2 — By 2024, Liberia has diversified and inclusive economic growth underpinned by investments in sustainable and environmentally friendly agriculture, food security, job creation and improved resilience to climate change and natural disasters.				
	Objective and Outcome Indicators (no more than a total of 20 indicators)	**Baseline**	**Mid-term Target**	**End of Project Target**
Project Objective To protect coastal communities and their assets from future climate change while enhancing their income streams through livelihood diversification by implementing sea and river defence and risk management approaches.	**Mandatory** Indicator 1: Number of direct project beneficiaries disaggregated by gender (individual people)	0	Total: 186,787 (92,370 males; 94,417 females) National-, county- and district-level officials and decision-makers receiving capacity training for incorporating coastal management into development plans: 250 (122 males, 128 females) 5,864 (2,974 males; 2,889 females) people protected through hybrid adaptation measures in Sinoe County consisting of: • Downtown-Mississippi – 2,939 (1,528 males; 1,411 females) • Sebeh – 2,925 (1,446 males; 1,478 females) Individuals receiving business identification, development and management training: 4,500 (1,125 males, 3,375 females) At least 10% of the population of coastal counties receiving improved access to climate risk early warning information: 186,787 (92,370 males; 94,417 females)	Total: 560,362 (277,110 males; 283,252 females) National-, county- and district-level officials and decision-makers receiving capacity training for incorporating coastal management into development plans: 500 (245 males, 255 females) 7,487 (3,827 males; 3,660 females) people protected through hybrid adaptation measures in Sinoe County consisting of: • Downtown-Mississippi – 2,939 (1,528 males; 1,411 females) • Sebeh – 2,925 (1,446 males; 1478 females) • Nanakru – 936 (475 males, 461 females) • Pungbor – 173 (97 males, 76 females) • Tournata – 87 (49 males, 38 females) • Bafu Bay – 428 (232 males, 196 females) Individuals who receive business identification, development and management training: 9,000 (2,250 males; 6,750 females) At least 30% of the population of coastal counties receiving improved access to climate risk early warning

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				males; 283,252 females)
	Indicator 2: Area of mangrove and forest restored and protected in Sinoe County through the project.	0	68 ha, including: • 52 ha in Downtown-Mississippi • 16 ha in Sebeh	260 ha, including: • 52 ha in Downtown-Mississippi • 16 ha in Sebeh • 16 ha in Nanakru • 3 ha in Pungbor • 11 ha in Bafu Bay • 162 ha in Tournata
Component 1	Institutional capacity strengthening for climate change adaptation planning in Liberia's coastal counties.			
Outcome 1 Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks.	Indicator 3: Change in the GEF Adaptation and Monitoring Assessment Tool (AMAT) capacity score for coastal county- and district-level planning institutions to consider climate change risks and adaptation into planning and budgeting processes. Details on the capacity score are included in the Monitoring Plan (Annex 5)	0	Each targeted institution progresses by at least one point in the capacity score index. (Max 10, Min 0)	Each targeted institution progresses by at least three points in the capacity score index. (Max 10, Min 0)
	Indicator 4: Number of plans developed to consider climate change risks and adaptation.	0	9 including: • 9 ICZM plans	13, including: • 9 ICZM plans • 1 SRDIM plan • 3 County Resilience Plans
Outputs to achieve Outcome 1	*Output 1.1.* County-level ICZM plans prepared for all coastal counties to address climate hazard risks on infrastructure, livelihoods and health, as well as to enable adaptation planning, monitoring, protection and the maintenance of sea and river defence. *Output 1.2.* Identified climate change risks and adaptation priorities incorporated into coastal County Resilience Plans as well as county and national planning and budgeting processes. *Output 1.3.* Institutional development planning capacity supported through the establishment and training of cross-sectoral climate change information and risk management focal points and working groups in all coastal counties.			
Component 2	Innovation, technologies and climate information introduced for coastal adaptation planning.			
Outcome 2 Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation.	Indicator 5: Number of hydrometeorological stations that improve climate monitoring and response planning procured and installed.	Six synoptic stations and 11 automatic weather stations.	Three synoptic stations and 20 automatic rainfall stations procured through the project.	Five synoptic stations and 40 automatic rainfall stations procured and installed through the project.
	Indicator 6: Number of Community Action Plans and Guidance Manuals developed and disseminated for improved response planning of district officials and communities.	0	Two Community Action Plans and 10 Guidance Manuals developed and disseminated.	Six Community Action Plans and 30 Guidance Manuals developed and disseminated
Outputs to achieve Outcome 2	*Output 2.1.* Coastal flood and erosion early warning and risk management systems supported to provide climate information, products and services that meet the needs of end users.			

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	Output 2.2. Existing EPA Environmental Knowledge Management System enhanced to support the collection and dissemination of lessons learned on sea and river defence based on Sinoe County adaptation solutions. *Output 2.3.* Community Action Plans developed for all coastal districts of Sinoe County. *Output 2.4.* Guidance Manuals for integrated coastal adaptation practices developed and disseminated to all coastal counties.			
Component 3	Solutions for reducing vulnerability to climate change-induced sea level rise and coastal erosion.			
Outcome 3 Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature based and engineering).	Indicator 7: Length of road and number of residential and non-residential buildings with reduced exposure to current and future coastal flooding and erosion in Greenville as a result of hybrid solutions.	0	0	At least 2 km of road in Downtown-Mississippi area and 0.5 km of road in Sebeh At least 400 buildings in Downtown-Mississippi and 70 in Sebeh.
Outputs to achieve Outcome 3	*Output 3.1.* Viable solutions to address climate vulnerabilities in Sinoe County developed and designed using multi-criteria and participatory processes for identifying, prioritising and planning adaptation and resilience solutions. *Output 3.2.* Coastal- and catchment-level adaptation solutions implemented to improve the resilience of communities to the impacts of climate change in Sinoe County. *Output 3.3.* Best practices on adaptation solutions documented and disseminated to other coastal counties for adoption and upscaling, including engagement with the private sector.			
Component 4	Livelihood diversification for climate resilience.			
Outcome 4 Gender-responsive options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties.	Indicator 8: Number of households receiving access to equipment and training that provide diversified climate-resilient livelihood options that are gender responsive.	0	140 households receiving training and equipment for diversified livelihood options.	480 households receiving training and equipment for diversified livelihood options.
Outputs to achieve Outcome 4	*Output 4.1.* Business identification, development and management training programmes designed and delivered to communities and Micro, Small and Medium Enterprises in coastal counties, targeting women and the youth. *Output 4.2.* Opportunities for integrated farming systems, fisheries, compressed stabilised earth blocks and their value chains created for coastal communities. *Output 4.3.* Access to finance and technologies to develop livelihood and income diversification enterprises of coastal livelihoods and resources facilitated in collaboration with national and county financial institutions.			

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VII. MONITORING AND EVALUATION (M&E) PLAN

The project results, corresponding indicators and mid-term and end-of-project targets in the project results framework will be monitored annually and evaluated periodically during project implementation. If baseline data for some of the results indicators is not yet available, it will be collected during the first year of project implementation. The Monitoring Plan included in Annex details the roles, responsibilities, and frequency of monitoring project results.

Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. The UNDP Country Office is responsible for ensuring full compliance with all UNDP project monitoring, quality assurance, risk management, and evaluation requirements.

Additional mandatory GEF-specific M&E requirements will be undertaken in accordance with the GEF Monitoring Policy and the GEF Evaluation Policy and other relevant GEF policies[275]. The costed M&E plan included below, and the Monitoring plan in Annex, will guide the GEF-specific M&E activities to be undertaken by this project.

In addition to these mandatory UNDP and GEF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Report.

Additional GEF monitoring and reporting requirements:

Inception Workshop and Report: A project inception workshop will be held within 60 days of project CEO endorsement, with the aim to:

a. Familiarize key stakeholders with the detailed project strategy and discuss any changes that may have taken place in the overall context since the project idea was initially conceptualized that may influence its strategy and implementation.
b. Discuss the roles and responsibilities of the project team, including reporting lines, stakeholder engagement strategies and conflict resolution mechanisms.
c. Review the results framework and monitoring plan.
d. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E; discuss the role of the GEF OFP and other stakeholders in project-level M&E.
e. Update and review responsibilities for monitoring project strategies, including the risk log; SESP report, Social and Environmental Management Framework and other safeguard requirements; project grievance mechanisms; gender strategy; knowledge management strategy, and other relevant management strategies.
f. Review financial reporting procedures and budget monitoring and other mandatory requirements and agree on the arrangements for the annual audit.
g. Plan and schedule Project Board meetings and finalize the first-year annual work plan. Finalize the TOR of the Project Board.
a. Formally launch the Project.

GEF Project Implementation Report (PIR):
The annual GEF PIR covering the reporting period July (previous year) to June (current year) will be completed for each year of project implementation. Any environmental and social risks and related management plans will be monitored regularly, and progress will be reported in the PIR. The PIR submitted to the GEF will be shared with the Project Board. The quality rating of the previous year's PIR will be used to inform the preparation of the subsequent PIR.

[275] See https://www.thegef.org/gef/policies_guidelines

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LDCF/SCCF Core Indicators:
The LDCF/SCCF Core indicators included as Annex 15 will be used to monitor global environmental benefits and will be updated for reporting to the GEF prior to MTR and TE. Note that the project team is responsible for updating the indicator status. The updated monitoring data should be shared with MTR/TE consultants prior to required evaluation missions, so these can be used for subsequent groundtruthing. The methodologies to be used in data collection have been defined by the GEF and are available on the GEF website.

Independent Mid-term Review (MTR):
The terms of reference, the review process and the final MTR report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC).

The evaluation will be 'independent, impartial and rigorous'. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project under review.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate.

The final MTR report and MTR TOR will be publicly available in English and will be posted on the UNDP ERC by 26 September 2025. A management response to MTR recommendations will be posted in the ERC within six weeks of the MTR report's completion.

Terminal Evaluation (TE):
An independent terminal evaluation (TE) will take place upon completion of all major project outputs and activities. The terms of reference, the evaluation process and the final TE report will follow the standard templates and guidance for GEF-financed projects available on the UNDP Evaluation Resource Center.

The evaluation will be 'independent, impartial and rigorous'. The evaluators that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Equally, the evaluators should not be in a position where there may be the possibility of future contracts regarding the project being evaluated.

The GEF Operational Focal Point and other stakeholders will be actively involved and consulted during the terminal evaluation process. Additional quality assurance support is available from the BPPS/GEF Directorate.

The final TE report and TE TOR will be publicly available in English and posted on the UNDP ERC by 26 March 2028. A management response to the TE recommendations will be posted to the ERC within six weeks of the TE report's completion.

Final Report:
The project's terminal GEF PIR along with the terminal evaluation (TE) report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

Agreement on intellectual property rights and use of logo on the project's deliverables and disclosure of information: To accord proper acknowledgement to the GEF for providing grant funding, the GEF logo will appear together with the UNDP logo on all promotional materials, other written materials like publications developed by the project, and project hardware. Any citation on publications regarding projects funded by the GEF will also accord proper acknowledgement to the GEF. Information will be disclosed in accordance with relevant policies notably the UNDP Disclosure Policy[276] and the GEF policy on public involvement[277].

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Table 11. M&E Plan and Budget.

Monitoring and Evaluation Plan and Budget: This M&E plan and budget provides a breakdown of costs for M&E activities to be led by the Project Management Unit during project implementation. These costs are included in Component 3 of the Results Framework and TBWP. For ease of reporting M&E costs, please include all costs reported in the M&E plan under the one technical component. The oversight and participation of the UNDP Country Office/Regional technical advisors/HQ Units are not included as these are covered by the GEF Fee.			
GEF M&E requirements	Primary responsibility	Indicative costs (USD)	Time frame
Inception Workshop and Report	UNDP Country Office, M&E Officer	2,500	Inception Workshop within 2 months of the First Disbursement
M&E of GEF core indicators and project results framework	Project Manager, M&E Officer	30,000 (5,000 per annum)	Annually and at mid-point and closure.
GEF Project Implementation Report (PIR)	Project Manager, UNDP Country Office, UNDP-GEF team and M&E Officer	21,000 (3,500 per annum)	Annually typically between June-August
Monitoring of Social and Environmental Safeguards Screening	Safeguards Officer, M&E Officer	24,000 (4,000 per annum)	On-going.
Monitoring of Stakeholder Engagement Plan	Project Manager, M&E Officer	12,500 (2,084 per annum)	On-going.
Monitoring of Gender Action Plan	Gender Officer, M&E Officer	12,500 (2,084 per annum)	On-going.
Supervision missions	UNDP Country Office, Project team and UNDP-GEF team	None	Annually
Independent Mid-term Review (MTR)	UNDP Country Office, Project team, UNDP-GEF team and independent consultants	45,200	26 September 2025
Independent Terminal Evaluation (TE)	UNDP Country Office, Project team, UNDP-GEF team and independent consultants	45,200	26 March 2028
TOTAL indicative COST		192,900 (~2%)	

VIII. GOVERNANCE AND MANAGEMENT ARRANGEMENTS

Section 1: Roles and responsibilities of the project's governance mechanism:

Implementing Partner: The Implementing Partner for this project is the Government of Liberia's Environmental Protection Agency (EPA).

The Implementing Partner is the entity to which the UNDP Administrator has entrusted the implementation of UNDP assistance specified in this signed project document along with the assumption of full responsibility and accountability for the effective use of UNDP resources and the delivery of outputs, as set forth in this document.

The Implementing Partner is responsible for executing this project. Specific tasks include:

[276] See http://www.undp.org/content/undp/en/home/operations/transparency/information_disclosurepolicy/
[277] See https://www.thegef.org/gef/policies_guidelines

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- Project planning, coordination, management, monitoring, evaluation, and reporting. This includes providing all required information and data necessary for timely, comprehensive, and evidence-based project reporting, including results and financial data, as necessary. The Implementing Partner will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used and generated by the project supports national systems.
- Overseeing the management of project risks as included in this project document and new risks that may emerge during project implementation.
- Procurement of goods and services, including human resources.
- Financial management, including overseeing financial expenditures against project budgets.
- Approving and signing the multiyear workplan.
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

Responsible Parties: The Responsible Parties are the entities to which UNDP has entrusted the responsibility for implementing specific project focal areas. These responsibilities differ per Responsible Party and project component.

The Ministry of Mines and Energy (MME) will first be responsible for implementing activities that support the development of coastal integrated coastal zone management (ICZM) plans and the pilot Sea and River Defence Investment Management (SRDIM) plan under Component 1. Second, the MME will be responsible for Output 2.4 of Component 2, which involves the development and dissemination of Guidance Manuals on adaptation practices to coastal districts. Finally, working with the EPA and relevant international organisations such as Conservation International (CI) who are able to provide technical expertise, a critical responsibility of the MME will be the development and implementation of hybrid adaptation solutions in Sinoe County under Component 3.

The Ministry of Commerce and Industry (MoCI) and the Ministry of Agriculture (MoA) will be responsible for outputs under Component 4. Specifically, the MoCI will be responsible for business training for entrepreneurs in vulnerable coastal communities (Output 4.1) and improved access to finance through micro-finance institutions under Output 4.3. The MoA will be responsible for activities that support the implementation of livelihood diversification — specifically relating to integrated farming systems, climate-resilient fishing practices and compressed stabilised earth block (CSEB) construction — under Output 4.2.

Project stakeholders and target groups: The composition of the Project Board will include Representative Beneficiaries to ensure that all target groups are represented in the highest governance structure of the project. Capacity-building and training programmes through Outcomes 1 and 2 will enable the Representative Beneficiaries of these groups to be informed about and engage in ICZM and sea and river defence and risk management (SRDRM) practices. This will enable the Representative Beneficiaries to provide the appropriate support to the Project Board while ensuring that the needs and rights of target groups are considered throughout project implementation.

UNDP: UNDP is accountable to the GEF for the implementation of this project. This includes overseeing project execution undertaken by the Implementing Partner to ensure that the project is being carried out in accordance with UNDP and GEF policies and procedures and the standards and provisions outlined in the Delegation of Authority (DOA) letter for this project. **The UNDP GEF Executive Coordinator, in consultation with UNDP Bureaus and the Implementing Partner, retains the right to revoke the project DOA, suspend or cancel this GEF project.** UNDP is responsible for the Project Assurance function in the project governance structure and presents to the Project Board and attends Project Board meetings as a non-voting member.

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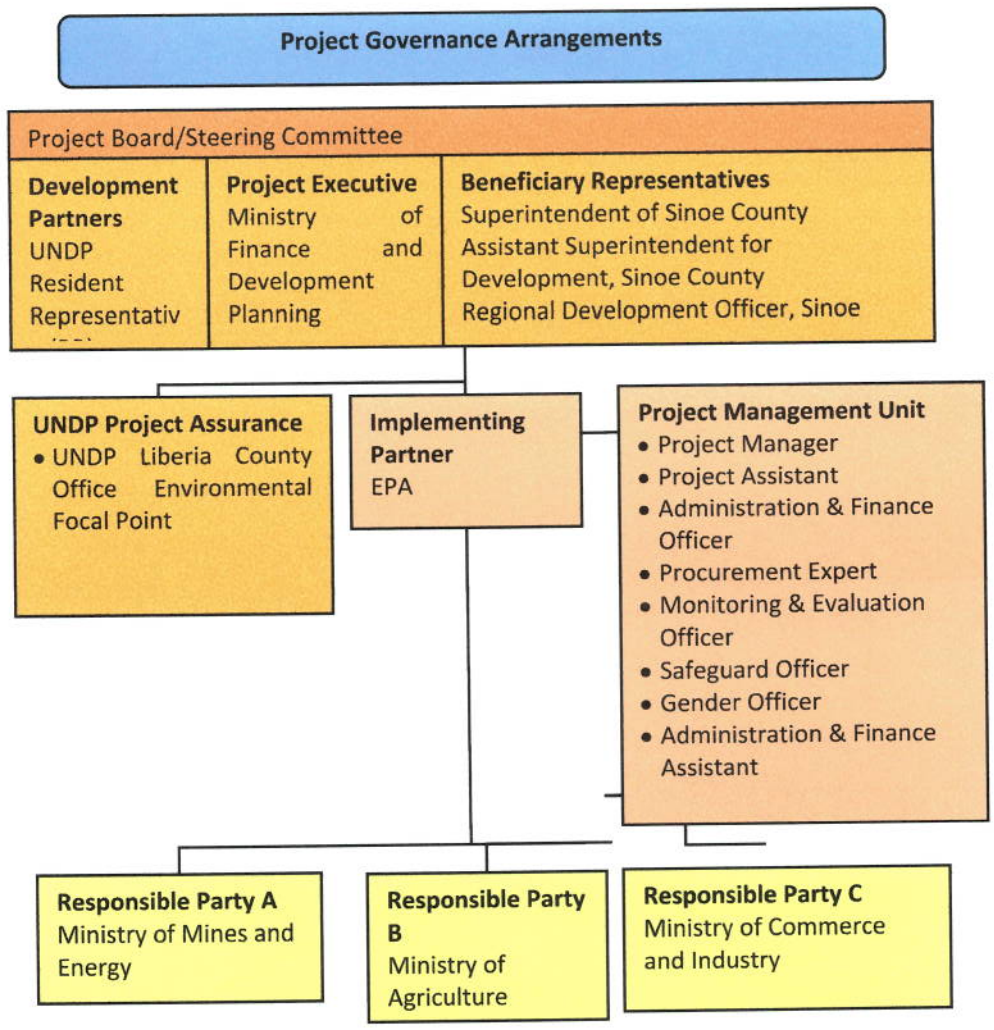
Section 2: Project organisation structure:



Second line of defense

- Regional Bureau oversees RR and Country Office
- BPPS NCE RTA oversees technical quality assurance and GEF compliance. BPPPS PTA oversees RTA function
- UNDP GEF Executive Coordinator and Regional Bureau Deputy Director can revoke DOA/cancel /suspend project or provide enhanced oversight

Figure 19. Project Organisation Structure.

The UNDP Resident Representative assumes full responsibility and accountability for oversight and quality assurance of this Project and ensures its timely implementation in compliance with the GEF-specific requirements and UNDP's Programme and Operations Policies and Procedures (POPP), its Financial Regulations and Rules and Internal Control Framework. A representative of the UNDP Country Office will assume the assurance role and will present assurance findings to the Project Board, and therefore attends Project Board meetings as a non-voting member.

Section 3: Segregation of duties and firewalls vis-à-vis UNDP representation on the project board:

As noted in the Minimum Fiduciary Standards for GEF Partner Agencies, in cases where a GEF Partner Agency (i.e. UNDP) carries out both implementation oversight and execution of a project, the GEF Partner Agency (i.e. UNDP) must separate its project implementation oversight and execution duties, and describe in the relevant project document a: 1) Satisfactory institutional arrangement for the separation of implementation oversight and

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executing functions in different departments of the GEF Partner Agency; and 2) Clear lines of responsibility, reporting and accountability within the GEF Partner Agency between the project implementation oversight and execution functions.

In this case, UNDP is only performing an implementation oversight role in the project vis-à-vis our role in the project board and in the project assurance function and therefore a full separation of project implementation oversight and execution duties has been assured.

Section 4: Roles and Responsiblities of the Project Organization Strucutre:

a) **Project Board:** All UNDP projects must be governed by a multi-stakeholder board or committee established to review performance based on monitoring and evaluation, and implementation issues to ensure quality delivery of results. The Project Board (also called the Project Steering Committee) is the most senior, dedicated oversight body for a project.

The two main (mandatory) roles of the project board are as follows:

1) **High-level oversight of the execution of the project by the Implementing Partner** (as explained in the "Provide Oversight" section of the POPP). This is the primary function of the project board and includes annual (and as-needed) assessments of any major risks to the project, and decisions/agreements on any management actions or remedial measures to address them effectively. The Project Board reviews evidence of project performance based on monitoring, evaluation and reporting, including progress reports, evaluations, risk logs and the combined delivery report. The Project Board is responsible for taking corrective action as needed to ensure the project achieves the desired results.
2) **Approval of strategic project execution decisions of the Implementing Partner** with a view to assess and manage risks, monitor and ensure the overall achievement of projected results and impacts and ensure long term sustainability of project execution decisions of the Implementing Partner (as explained in the "Manage Change" section of the POPP).

Requirements to serve on the Project Board:

- ✓ Agree to the Terms of Reference of the Board and the rules on protocols, quorum and minuting.
- ✓ Meet annually; at least once.
- ✓ Disclose any conflict of interest in performing the functions of a Project Board member and take all measures to avoid any real or perceived conflicts of interest. This disclosure must be documented and kept on record by UNDP.
- ✓ Discharge the functions of the Project Board in accordance with UNDP policies and procedures.
- ✓ Ensure highest levels of transparency and ensure Project Board meeting minutes are recorded and shared with project stakeholders.

Responsibilities of the Project Board:

- ✓ Consensus decision-making:
  - The project board provides overall guidance and direction to the project, ensuring it remains within any specified constraints, and provides overall oversight of project implementation.
  - Review project performance based on monitoring, evaluation and reporting, including progress reports, risk logs and the combined delivery report;
  - The project board is responsible for making management decisions by consensus.
  - In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.
  - In case consensus cannot be reached within the Board, the UNDP representative on the board will mediate to find consensus and, if this cannot be found, will take the final decision to ensure project implementation is not unduly delayed.
- ✓ Oversee project execution:

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- Agree on project manager's tolerances as required, within the parameters outlined in the project document, and provide direction and advice for exceptional situations when the project manager's tolerances are exceeded.
- Appraise annual work plans prepared by the Implementing Partner for the Project; review combined delivery reports prior to certification by the implementing partner.
- Address any high-level project issues as raised by the project manager and project assurance;
- Advise on major and minor amendments to the project within the parameters set by UNDP and the donor and refer such proposed major and minor amendments to the UNDP BPPS Nature, Climate and Energy Executive Coordinator (and the GEF, as required by GEF policies);
- Provide high-level direction and recommendations to the project management unit to ensure that the agreed deliverables are produced satisfactorily and according to plans.
- Track and monitor co-financed activities and realisation of co-financing amounts of this project.
- Approve the Inception Report, GEF annual project implementation reports, mid-term review and terminal evaluation reports.
- Ensure commitment of human resources to support project implementation, arbitrating any issues within the project.

✓ Risk Management:
- Provide guidance on evolving or materialized project risks and agree on possible mitigation and management actions to address specific risks.
- Review and update the project risk register and associated management plans based on the information prepared by the Implementing Partner. This includes risks related that can be directly managed by this project, as well as contextual risks that may affect project delivery or continued UNDP compliance and reputation but are outside of the control of the project. For example, social and environmental risks associated with co-financed activities or activities taking place in the project's area of influence that have implications for the project.
- Address project-level grievances.

✓ Coordination:
- Ensure coordination between various donor and government-funded projects and programmes.
- Ensure coordination with various government agencies and their participation in project activities.

Composition of the Project Board: The composition of the Project Board must include individuals assigned to the following three roles:

1. **Project Executive:** This is an individual who represents ownership of the project and chairs (or co-chairs) the Project Board. The Executive usually is the senior national counterpart for nationally implemented projects (typically from the same entity as the Implementing Partner), and it must be UNDP for projects that are direct implementation (DIM). In exceptional cases, two individuals from different entities can co-share this role and/or co-chair the Project Board. If the project executive co-chairs the project board with representatives of another category, it typically does so with a development partner representative. The Project Executive is: Samuel Tweh, Minister of Finance and Development Planning.
2. **Beneficiary Representative(s):** Individuals or groups representing the interests of those groups of stakeholders who will ultimately benefit from the project. Their primary function within the board is to ensure the realization of project results from the perspective of project beneficiaries. Often representatives from civil society, industry associations, or other government entities benefiting from the project can fulfil this role. There can be multiple beneficiary representatives in a Project Board. The Beneficiary representatives are: Lee Chea, the Superintendent of Sinoe County; Barbara Keah, the Assistant Superintendent for Development, Sinoe County; and William Miller, Regional Development Officer.
3. **Development Partner(s):** Individuals or groups representing the interests of the parties concerned that provide funding, strategic guidance and/or technical expertise to the project. The Development Partners are: Stephen Rodrigues, the Resident Representative of the UNDP; and the World Bank.

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b) **Project Assurance:** Project assurance is the responsibility of each project board member; however, UNDP has a distinct assurance role for all UNDP projects in carrying out objective and independent project oversight and monitoring functions. UNDP performs quality assurance and supports the Project Board (and Project Management Unit) by carrying out objective and independent project oversight and monitoring functions, including compliance with the risk management and social and environmental standards of UNDP. The Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. Project assurance is totally independent of project execution.

A designated representative of UNDP playing the project assurance role is expected to attend all board meetings and support board processes as a non-voting representative. It should be noted that while in certain cases UNDP's project assurance role across the project may encompass activities happening at several levels (e.g. global, regional), at least one UNDP representative playing that function must, as part of their duties, specifically attend board meeting and provide board members with the required documentation required to perform their duties. The UNDP representative playing the main project assurance function is/are: Moses Massah, *Environmental* Focal Point.

c) **Project Management – Execution of the Project:** The Project Manager (PM) (also called project coordinator) is the senior most representative of the Project Management Unit (PMU) and is responsible for the overall day-to-day management of the project on behalf of the Implementing Partner, including the mobilization of all project inputs, supervision over project staff, responsible parties, consultants and sub-contractors. The project manager typically presents key deliverables and documents to the board for their review and approval, including progress reports, annual work plans, adjustments to tolerance levels and risk registers.

A designated representative of the PMU is expected to attend all board meetings and support board processes as a non-voting representative.

The primary PMU representative attending board meetings is: *The Project Manager*

IX. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 20,405,930. This is financed through a LDCF grant of USD8,932,420 administered by UNDP, USD200,000 in cash co-financing to be administered by UNDP and additional support of USD1,700,000 in-kind from the Government of Liberia (GoL). UNDP, as the GEF Implementing Agency, is responsible for the oversight of the GEF resources and the in-kind co-financing transferred to UNDP bank account only. Additionally, parallel in-kind co-financing of USD1,500,000 will be provided by Conservation International through the project 'Conservation and sustainable use of Liberia's coastal natural capital', USD803,000 from the EPA through the Liberia CIS project, USD 3,430,000 from the UNDP project 'Livelihood and Employment Creation in Liberia' and USD3,840,510 from the UNDP MMCRP project.

Co-financing: The actual realization of project co-financing amounts will be monitored by the UNDP Country Office and the PMU on an annual basis in the GEF PIF and will be reported to the GEF during the mid-term review and terminal evaluation process as follows:

Table 12. Confirmed Co-financing.

Co-financing source	Co-financing type	Co-financing amount	Planned Co-financing Activities/Outputs	Risks	Risk Mitigation Measures
UNDP	Cash	USD200,000	• Project management costs, including supplies and equipment.	None	None
	In-kind	USD3,430,000	• Diversified livelihood interventions for	None	None

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			vulnerable communities • Increased access to finance for vulnerable women, men and the youth • Business management and livelihood training for women, the youth and people with disabilities		
	In-kind	USD3,840,510	• National ICZMP and ICZM mainstreaming • Strengthening of the EKMS • Awareness-raising on ICZM • Design of cold storage facilities to support climate-resilient fishing	None	None
Government of Liberia (GoL)	In-kind	USD500,000	• Includes office space, water and sanitation, electricity, technical support and administrative support for the project.	None	None
	In-kind	USD1,200,000	• Rocks for the construction of the revetments and groynes under Output 3.2.	None	None
	Public investment	USD803,000	• Staff training on technical services as well as instrument maintenance and calibration • Acquisition of new automatic weather stations and hydrological monitoring stations • Rehabilitation of damaged equipment and measuring instruments, including satellite receiving systems	Low-level engagement with the project. Risk – Low	None
Conservation International (CI)	In kind	USD1,500,000	• Natural capital accounting in ecosystems • Community incentives to conserve and sustainably manage natural capital in coastal ecosystems	Low-level engagement with the project. Risk – Low	Confirmation of co-finance support letter received

Budget Revision and Tolerance: As per UNDP POPP, the project board may agree with the project manager on a tolerance level for each detailed plan under the overall multi-year workplan. The agreed tolerance should be written in the project document or approved project board meeting minutes. It should normally not exceed 10 percent of the agreed annual budget at the activity level, but within the overall approved multi-year workplan at the activity level. Within the agreed tolerances, the project manager can operate without intervention from the project board. Restrictions apply as follows:

Should the following deviations occur, the Project Manager/IP through UNDP Country Office will seek the approval of the BPPS/NCE-VF team to ensure accurate reporting to the GEF. It is **strongly encouraged** to maintain the expenditures within the approved budget at the budgetary account and at the component level:

a) Budget reallocations must prove that the suggested changes in the budget will not lead to material changes in the results to be achieved by the project. A strong justification is required and will be approved

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on an exceptional basis. Budget re-allocations among the components (including PMC) of the approved Total Budget and Work Plans (TBWP) that represent a value greater than 10% of the total GEF grant.

b) Introduction of new outputs/activities (i.e. budget items) that were not part of the agreed project document and TBWP that represent a value greater than 5% of the total GEF grant. The new budget items must be eligible as per the GEF and UNDP policies.

c) Project management cost (PMC): budget under PMC component is capped and cannot be increased.

Any over expenditure incurred beyond the available GEF grant amount must be absorbed by non-GEF resources (e.g. UNDP TRAC or cash co-financing).

Project extensions: The UNDP Resident Representative and the UNDP-GEF Executive Coordinator must approve all project extension requests. Note that all extensions incur costs and the GEF project budget cannot be increased. A single extension may be granted on an exceptional basis and subject to the conditions and maximum durations set out in the UNDP POPP; the project management costs during the extension period must remain within the originally approved amount, and any increase in PMC costs will be covered by non-GEF resources; the additional UNDP oversight costs during the extension period must be covered by non-GEF resources, in accordance with UNDP's guidance set out in UNDP POPP.

Audit: The project will be audited as per UNDP Financial Regulations and Rules and applicable audit policies. Audit cycle and process must be discussed during the Inception workshop. If the Implementing Partner is an UN Agency, the project will be audited according to that Agencies applicable audit policies. The costs for audit cannot be included under M&E component and budget and must be included under PMC.

Project Closure: Project closure will be conducted as per UNDP requirements outlined in the UNDP POPP. All costs incurred to close the project must be included in the project closure budget and reported as final project commitments presented to the Project Board during the final project review. The only costs a project may incur following the final project review are those included in the project closure budget.

Operational completion: The project will be operationally completed when the last UNDP-financed inputs have been provided and the related activities have been completed. This includes the final clearance of the Terminal Evaluation Report (that will be available in English) and the corresponding management response, and the end-of-project review Project Board meeting. **Operational closure must happen at the end date calculated by the approved duration after the Project Document signature or at the revised operational closure date as approved in the project extension. Any expected activity after the operational date requires project extension approval.** The Implementing Partner through a Project Board decision will notify the UNDP Country Office when operational closure has been completed. At this time, the project should have completed the transfer or disposal of any equipment that is still the property of UNDP.

Transfer or disposal of assets: In consultation with the Implementing Partner and other parties of the project, UNDP is responsible for deciding on the transfer or other disposal of assets. Transfer or disposal of assets is recommended to be reviewed and endorsed by the project board following UNDP rules and regulations. Assets may be transferred to the government for project activities managed by a national institution at any time during the life of a project (it is strongly encouraged to be done before the operational closure date). In all cases of transfer, a transfer document must be prepared and kept on file[278]. The transfer should be done before Project Management Unit complete their assignments.

Financial completion (closure): The project will be financially closed when the following conditions have been met: a) the project is operationally completed or has been cancelled; b) the Implementing Partner has reported all

[278] See https://popp.undp.org/_layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PPM_Project%20Management_Closing.docx&action=default.

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financial transactions to UNDP; c) UNDP has closed the accounts for the project; d) UNDP and the Implementing Partner have certified a final Combined Delivery Report (which serves as final budget revision).

The project will be financially completed **within 6 months of operational closure or after the date of cancellation**. If Operational Closure is delayed for any justified and approved reason, the Country Office should do all efforts to Financially Close the project within 9 months after TE is completed. Between operational and financial closure, the implementing partner will identify and settle all financial obligations and prepare a final expenditure report. The UNDP Country Office will send the final signed closure documents including confirmation of final cumulative expenditure and unspent balance to the BPPS/NCE-VF Unit for confirmation before the project will be financially closed in Atlas by the UNDP Country Office.

Refund to GEF: Should a refund of unspent funds to the GEF be necessary, this will be managed directly by the BPPS/NCE-VF Directorate in New York. No action is required by the UNDP Country Office on the actual refund from UNDP project to the GEF Trustee.

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X. TOTAL BUDGET AND WORK PLAN

TOTAL BUDGET AND WORK PLAN			
Atlas[1] Proposal or Award ID:	00146390	Atlas Primary Output Project ID:	00133455
Atlas Proposal or Award Title:	Enhancing the resilience of vulnerable coastal communities in Sinoe County of Liberia		
Atlas Business Unit	LBR10		
Atlas Primary Output Project Title	Enhancing the resilience of vulnerable coastal communities in Sinoe County of Liberia		
UNDP-GEF PIMS No.	6470		
Implementing Partner	Environmental Protection Agency		

Atlas Activity (GEF Component)	Outcomes	Responsible Party/[1] (Atlas Implementing Agent)	Atlas Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Account Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Amount Year 6 (USD)	Total (USD)	*See Budget Note:*
Component 1. Institutional capacity strengthening for climate change adaptation planning in Liberia's coastal counties.	*Outcome 1. Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks.*	**EPA & MME**	**62160**	**LDCF**	71200	International Consultants	77,000	70,000	56,000	-	28,000	-	231,000	*1*
					71300	Local Consultants	20,400	20,400	15,000	-	6,600	-	62,400	*2*
					71800	Contractual Services – Individual by IP	8,400	8,400	14,400	8,400	8,400	-	48,000	*3*
					72100	Contractual Services-Companies	-	-	95,500	20,000	20,000	20,000	155,500	*4*
					71600	Travel	22,350	10,450	21,200	9,000	9,000	9,000	81,000	*5*
					74200	Audio Visual and Print Product Costs	-	-	9,400	-	-	-	9,400	*6*
					75700	Training, Workshops and Conferences	11,300	1,500	59,400	13,500	13,500	13,500	112,700	*7*
						Outcome 1 total	**139,450**	**110,750**	**270,900**	**50,900**	**85,500**	**42,500**	**700,000**	
Component 2	Outcome 2	EPA &	62160	LDCF	71200	International	-	84,000	-	-	-	112,000	196,000	*8*

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Innovation, technologies and climate information introduced for coastal adaptation planning.	*Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation.*	**MME**				Consultants								
					71300	Local Consultants	-	51,000	18,000	-	15,000	18,000	102,000	***9***
					71800	Contractual Services – Individual by IP	8,400	14,400	8,400	8,400	8,400	12,000	60,000	***10***
					72100	Contractual Services-Companies	-	-	-	-	-	1,500	1,500	***11***
					71600	Travel	-	28,700	26,400	-	4,000	27,400	86,500	***12***
					72800	Information Technology Equipment	-	250,000	250,000	-	-	-	500,000	***13***
					74200	Audio Visual and Print Product Costs	-	-	70,000	-	-	6,000	76,000	***14***
					75700	Training, Workshops and Conferences	-	33,000	31,500	-	-	13,500	78,000	***15***
						Outcome 2 total	**8,400**	**461,100**	**404,300**	**8,400**	**27,400**	**190,400**	**1,100,000**	
Component 3. Solutions for reducing vulnerability to climate change-induced sea level rise and coastal erosion.	*Outcome 3. Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature-based and engineering).*	**EPA & MME**	**62160**	**LDCF**	71200	International Consultants	168,000	42,000	14,000	14,000	49,000	28,000	315,000	***16***
					71300	Local Consultants	43,500	-	-	-	15,000	-	58,500	***17***
					71800	Contractual Services – Individual by IP	15,200	15,200	15,200	15,200	15,200	30,000	106,000	***18***
					72100	Contractual Services-Companies	-	140,000	140,000	140,000	160,000	162,000	742,000	***19***
					71600	Travel	23,200	-	-	-	16,200	28,200	67,600	***20***
					72200	Equipment and Furniture	-	-	-	-	48,000	48,000	96,000	***21***
					72300	Materials and Goods	-	112,825	112,825	112,825	-	-	338,475	***22***
					73400	Rental and Maintenance of Other	-	511,000	511,000	511,000	-	-	1,533,000	***23***

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					74200	Audio Visual and Print Product Costs	-	-	-	-	-	400	400	*24*
					74700	Transport, Shipping and handle	-	25,875	25,875	25,875	-	-	77,625	*25*
					75700	Training, Workshops and Conferences	3,000	2,300	-	-	56,300	18,900	80,500	*26*
					Total Outcome 3 sub-component		**252,900**	**849,200**	**818,900**	**818,900**	**359,700**	**315,500**	**3,415,100**	
					71200	International Consultants	-	-	28,000	-	-	28,000	56,000	*27*
					71300	Local Consultants	-	-	6,000	-	-	6,000	12,000	*28*
					71800	Contractual Services - Individual	16,667	16,667	16,667	16,667	16,666	16,666	100,000	*29*
					71600	Travel	1,000	-	8,200	-	-	8,200	17,400	*30*
					75700	Training, Workshops and Conferences	1,500	-	3,000	-	-	3,000	7,500	*31*
					Total M&E sub-component		**19,167**	**16,667**	**61,867**	**16,667**	**16,666**	**61,866**	**192,900**	
						Total Outcome 3	**272,067**	**865,867**	**880,767**	**835,567**	**376,366**	**377,366**	**3,608,000**	
Component 4. Livelihood diversification for climate resilience.	*Outcome 4. Gender-responsive options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties.*	**MoCI & MoA**	**62160**	**LDCF**	71200	International Consultants	-	**140,000**	**70,000**	-	-	-	**210,000**	*32*
					71300	Local Consultants	-	**48,000**	-	**27,000**	-	-	**75,000**	*33*
					71800	Contractual Services – Individual by IP	**21,600**	**39,600**	**30,600**	**42,600**	**60,900**	**21,000**	**216,300**	*34*
					72100	Contractual Services-Companies	-	**40,000**	**307,000**	**146,667**	**106,667**	**106,666**	**707,000**	*35*
					71600	Travel	-	**69,700**	**13,000**	**48,334**	**38,533**	**34,333**	**203,900**	*36*
					72200	Equipment and	-	-	-	**401,634**	**404,633**	**401,633**	**1,207,900**	*37*

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					75700	Training, Workshops and Conferences	-	**122,500**	**59,500**	**128,500**	**95,000**	**73,500**	**479,000**	***38***
Total Outcome 4							**21,600**	**459,800**	**480,100**	**794,735**	**705,733**	**637,132**	**3,099,100**	
Project Management Cost	*Project Management Cost*	**EPA**	**62160**	**LDCF**	71800	Contractual Services - Individual	56,887	56,887	56,887	56,887	56,886	56886	341,320	***39***
					71600	Travel	3,000	3,000	3,000	3,000	3,000	3,000	18,000	***40***
					72500	Supplies	1,000	1,000	1,000	1,000	1,000	1,000	6,000	***41***
					72100	Contractual Services-Companies	4,000	4,000	4,000	4,000	4,000	4,000	24,000	***42***
					73400	Rental & Maint of Other Equip	2,000	2,000	2,000	2,000	2,000	2,000	12,000	***43***
					72200	Equipment and Furniture	3,000	3,000	3,000	3,000	3,000	3,000	18,000	***44***
					72400	Communic & Audio Visual Equip	1,000	1,000	1,000	1,000	1,000	1,000	6,000	***45***
			sub-total GEF				**70,887**	**70,887**	**70,887**	**70,887**	**70,886**	**70,886**	**425,320**	
				UNDP	71800	Contractual Services - Individual	33,334	33,334	33,333	33,333	33,333	33,333	200,000	***46***
			sub-total UNDP				33,334	33,334	33,333	33,333	33,333	33,333	200,000	
Total Project Management							**104,221**	**104,221**	**104,220**	**104,220**	**104,219**	**104,219**	**625,320**	
SUB-TOTAL GEF							**512,404**	**1,968,404**	**2,106,954**	**1,760,489**	**1,265,885**	**1,318,284**	**8,932,420**	
SUB-TOTAL Donor							33,334	33,334	33,333	33,333	33,333	33,333	200,000	
PROJECT TOTAL							545,738	2,001,738	2,140,287	1,793,822	1,299,218	1,351,617	9,132,420	

Summary of Funds:

	Amount Year1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	Amount Year 6	Total
GEF	512,404	1,968,404	2,106,954	1,760,489	1,265,885	1,318,284	8,932,420

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UNDP	33,334	33,334	33,333	33,333	33,333	33,333	200,000
Government of Liberia (In-kind)	83,334	483,334	483,333	483,333	83,333	83,333	1,700,000
TOTAL	629,072	2,485,072	2,623,620	2,277,155	1,382,551	1,434,950	10,832,420

This amount includes only co-finance that contributes to project results. Co-finance that does not contribute to project results is included in Table above

Budget category	Comments	Value (USD)	Budget note number
Outcome 1			
International consultant	• International gender expert to give specialised gender-responsiveness training for the PMU, including the Gender Officer (USD7,000). • International specialist on ICZM for implementing Phase 1 - development of the 9 ICZM plans, and Phase 2 - update the ICZM plans three years after the original development (USD112,000; Activity 1.1.1). • International specialist on sea and river defence and risk management to lead the development of a SRDIMP (USD56,000; Activity 1.1.2) • Procurement of International expert development planning with a focus on SRDM and coastal adaptation to develop and lead training programmes (USD35,000; Activity 1.2.1). • International climate change and ICZM expert to develop and deliver training for working groups and focal points, based on information generated from the ICZM plans, CAPs and feasibility study (USD21,000; Activity 1.3.3).	231,000	1
Local consultant	• Two national consultants, including a national coastal specialist and national social and gender specialist to support the international consultant (USD33,000; Activity 1.1.1). • National consultant to support the IC in the development of a SRDIMP (USD14,400; Activity 1.1.2). • National gender expert to assist in developing gender action plans for each County Resilience Plan (USD9,000; Activity 1.2.3). • Procurement of national climate risk and SRDM specialist to assist in the development of knowledge products to be used by focal points and working groups (USD6,000; Activity 1.3.2).	62,400	2
Contractual services - individual	• Safeguards Officer to ensure safeguard principles are followed across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 34% and Outcome 4 @ 34% (USD21,000). • Gender Officer to ensure gender mainstreaming across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 22% and Outcome 4 @ 46% (USD21,000). • Individual service to evaluate and approach candidates for the coastal county working groups (USD6,000; Activity 1.3.1).	48,000	3
Contractual services - company	• Development planners in relevant sectors to draft changes to plans and budgeting processes (USD25,000; Activity 1.2.2). • Development decision-makers in relevant sectors to draft CRPs (USD30,500; Activity 1.2.3). • Company to design campaign and knowledge products in the first year and update annually (30 days for the first year and 10 days for the remaining 3 years) (USD40,000; Activity 1.3.3). • Working groups to host annual community meetings and workshops to raise awareness on climate risks (including gender considerations) and host radio programmes (USD60,000; Activity 1.3.4).	155,500	4
Travel	• Transportation for 50 participants to attend the training workshop @ USD20 per person (USD1,000; Outcome Project Management). • Car hire/domestic flights between and within counties for international and national consultants for the development of the ICZM plans (USD4,000; Activity 1.1.1). • International return flights for international consultant for the ICZM plans (USD6,600; Activity 1.1.1). • DSA for International and national consultants for site visits between all coastal counties for the ICZM plans (USD8,000; Activity 1.1.1)	81,000	5

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	• Transportation for 50 participants to attend the ICZM plans and SRDIMP Inception workshop @ USD20 per person (USD1,000; Activity 1.1.1). • Transportation for 50 participants to attend the working sessions on gender integration @ USD20 per person (USD2,000; Activity 1.1.1). • Car hire/domestic flights to Sinoe County for international and national consultant for the development of the SRDIMP (USD2,500; Activity 1.1.2). • International return flights for international consultant for the development of the SRDIMP (USD2,200; Activity 1.1.2). • DSA for international and national consultant for site visit to Sinoe County for the SRDIMP (USD4,500; Activity 1.1.2). • Transportation for 50 participants to attend the validation workshops @ USD20 per person (USD1,000; Activity 1.1.3). • International return flights for international consultant on development planning (USD2,200; Activity 1.2.1). • Car hire/domestic flights for international consultant to deliver training (USD1,400; Activity 1.2.1). • DSA for International consultant to deliver training (USD1,400; Activity 1.2.1). • Transportation for 100 participants to attend the training programme on incorporation of SRDM into plans and processes @ USD20 per person (USD2000; Activity 1.2.2). • Transportation for 100 participants to attend the updated plan and budgeting validation workshop @ USD20 per person (USD2000; Activity 1.2.2). • Transportation for 100 participants to attend the CRP validation workshops @ USD20 per person (USD6,000; Activity 1.2.3). • Car hire/domestic flights between and within counties to consult with working group candidates (USD1,000; Activity 1.3.1). • DSA while visiting coastal counties to consult with working group candidates (USD1,000; Activity 1.3.1). • Return flights for the IC to deliver training to focal points and working groups (USD2,200; Activity 1.3.3). • Transportation for 100 participants to attend the ToT programme for focal points and working groups @ USD20 per person (USD2,000; Activity 1.3.3). • Transportation for 50 participants to attend the private sector awareness-raising workshops @ USD20 per person (USD27,000; Activity 1.3.4).		
Audio visual and print product costs	• Printed knowledge products for use by the working groups for each coastal county (USD9,400; Activity 1.3.2) Costs include: i) USD3 per poster for 450 posters per year for 3 years (USD4,000) (50 posters per county per year); and ii) USD4 per brochure for 450 brochures per year for 3 years (USD5,400) (50 posters per county per year).	9,400	6
Training, workshops and conferences	• 2-day training workshops to build the capacity of key project implementation partners on project and UNDP safeguards-related topics (USD2,500; Outcome Project Management). • 2-day specialised training workshop for PMU on gender-responsiveness (USD2,300; Outcome Project Management). • Inception workshop for the ICZM and SRDIMP (USD1,500; Activity 1.1.1). • 2 two-day working sessions to ensure the integration of gender into ICZM plans, SRDIMP and the updating of national and county-level policies, plans and budgeting processes (USD5,000; Activity 1.1.1). • Validation workshop for the ICZM and SRDIMP (USD1,500; Activity 1.1.3). • 3-day training programme workshop for 100 participants for national and county-level planners and decision-makers on incorporating SRDM and coastal adaptation into plans and budgeting processes (USD10,500; Activity 1.2.1). • 2-day planning workshops for cross-sectoral updating of national and county-level plans and budgets (USD27,000; Activity 1.2.2). • 2-day planning workshops in each county developing CRPs with climate change risks and ICZM principles (USD6,900; Activity 1.2.3). • Validation workshop for government and country stakeholders to validate recommended updates to plans and budgeting processes (USD1,500; Activity 1.2.2). • Validation workshops for county stakeholders to validate CRPs (USD4,500; Activity 1.2.3). • 5-day TOT workshop for all focal points and working group participants (USD9,000; Activity 1.3.3). • 1-day awareness raising workshops for the private sector facilitated by the focal points and working groups on climate risks and SRDRM, including 1 workshop per county per year over 3 years (USD40,500; Activity 1.3.4).	112,700	7
Component 2			
International consultant	• International expert on decision tools to provide recommendations on the development of the decision support tool (USD21,000; Activity 2.2.3).	196,000	8

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	• Procurement of international community coastal adaptation specialist to develop CAPs (USD56,000; Activity 2.3.2). • Procurement of international community monitoring expert to design the participatory community monitoring framework (USD28,000; Activity 2.3.3). • International coastal adaptation specialist to collect district-specific information to inform the Guidance Manuals (USD42,000; Activity 2.4.1). • International coastal adaptation specialist to draft district-specific Guidance Manuals (USD49,000; Activity 2.4.2).		
Local consultant	• National climate change and EWS expert to design and deliver training on climate change and EWS to LMS staff (USD18,000; Activity 2.1.3). • Procurement of individual to collect data on SRDM lessons learned, including information generated from the project, in Liberia as a whole and in other countries (USD15,000; Activity 2.2.1). • Procurement of national coastal specialist to perform baseline study of coastal communities and their adaptation needs (USD18,000; Activity 2.3.1). • Procurement of national coastal adaptation specialist to assist in the development of the CAPs (USD15,000; Activity 2.3.2). • Procurement of national community monitoring expert to assist in the design the participatory community monitoring framework (USD6,000; Activity 2.3.3). • Procurement of a national coastal adaptation specialist to design and deliver training workshops on CAP implementation (USD12,000; Activity 2.3.5). • National coastal adaptation expert to assist in the collection of information to inform the Guidance Manuals (USD12,000; Activity 2.4.1). • National coastal adaptation expert to assist in drafting the Guidance Manuals (USD6,000; Activity 2.4.2).	102,000	9
Contractual services - individual	• Safeguards Officer to ensure safeguard principles are followed across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 34% and Outcome 4 @ 34% (USD21,000). • Gender Officer to ensure gender mainstreaming across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 22% and Outcome 4 @ 46% (USD21,000). • Individual to undertake a needs assessment of gaps in the Liberia CIS project (USD6,000; Activity 2.1.1). • Contractual services to update lessons learned and information on ICZM to EKMS (USD9,000; Activity 2.2.2). • Contractual services to incorporate decision support tool into EKMS, based on recommendations from the international consultant (USD3,000; Activity 2.2.3).	60,000	10
Contractual services - company	• Contractual services of firm to print and distribute Guidance Manuals (USD1,500; Activity 2.4.3).	1,500	11
Travel	• Car hire/domestic flights to coastal counties for the national consultant delivering training on climate change and EWS (USD4,200; Activity 2.1.1). • DSA for national consultant for site visits to coastal counties to deliver training on climate change and EWS (USD4,200; Activity 2.1.3). • Transportation for 50 participants to attend the training programme on climate change and EWS @ USD20 per person (USD18,000; Activity 2.1.3). • Car hire/domestic flights to coastal counties for the national consultant to collect data on SRDM lessons learned (USD2,000; Activity 2.2.1). • DSA for the national consultant to visit coastal counties to collect data on SRDM lessons learned (USD2,000; Activity 2.2.1). • Car hire/domestic flights between and within districts to consult with sample coastal communities (USD2,000; Activity 2.3.1). • DSA for the national consultant while visiting coastal districts (USD2,000; Activity 2.3.1). • International return flights for international consultant developing CAPs (USD2,200; Activity 2.3.2). • Car hire/domestic flights between and within Sinoe districts for international and national consultant while developing CAPs (USD1,500;	86,500	12

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	Activity 2.3.2). • DSA for international and national consultants developing CAPs while visiting Sinoe coastal districts (USD3,000; Activity 2.3.2). • Transportation for 50 participants to attend the CAPs validation workshops @ USD20 per person (USD6,000; Activity 2.3.4). • Transportation for 100 participants to attend the CAPs implementation training programme @ USD20 per person (USD12,000; Activity 2.3.5). • International return flights for international consultant when collecting district-specific information to inform the Guidance Manuals (USD2,200; Activity 2.4.1). • Car hire/domestic flights between and within districts for international and national consultants to consult district-specific information for the Guidance Manuals (USD4,000; Activity 2.4.1). • DSA while visiting coastal districts for international and national consultants to consult district-specific information for the Guidance Manuals (USD7,000; Activity 2.4.1). • International return flights for international consultant for attending Guidance Manual validation workshops (USD2,200; Activity 2.4.2). • Car hire/domestic flights between counties for international and national consultants hosting Guidance Manual validation workshops (USD1,500; Activity 2.4.2). • DSA while visiting coastal counties for international and national consultants hosting Guidance Manual validation workshops (USD1,500; Activity 2.4.2). • Transportation for 50 participants to attend the validation workshops @ USD20 per person (USD9,000; Activity 2.4.2).		
Information Technology equipment	• Synoptic weather stations, based on needs identified in Activity 2.1.1 (USD100,000; Activity 2.1.2). • Automatic rainfall stations, based on needs identified in Activity 2.1.1 (USD400,000; Activity 2.1.2).	500,000	13
Audio visual and print product costs	• Costs for the development of the information delivery system, including website development costs (USD10,000), radio programme costs (USD10,000), mobile weather app (USD30,000) etc (USD70,000; Activity 2.1.4). • Development and distribution of Guidance Manuals to district officials in all coastal districts (USD6,000; Activity 2.4.3). Costs include: i) USD8 each for 750 manuals (25 manuals per district).	76,000	14
Training, workshops and conferences	• 3-day training workshop on updated EWS for information services and end users (USD31,500; Activity 2.1.3). • 2-day workshop to ensure CAPs integrate gender considerations (USD3,000; Activity 2.3.2). • Validation workshops for community representatives and local authorities to validate CAPs (USD9,000; Activity 2.3.4). • 3-day training workshops for community representatives and local authorities on implementation of the CAPs (USD21,000; Activity 2.3.5). • Validation workshops for district officials to validate the Guidance Manuals (USD13,500; Activity 2.4.2).	78,000	15
Component 3			
Outcome 3 subcomponent			
International consultant	• International specialist on climate change and coastal adaptation to lead the vulnerability mapping exercise (USD49,000; Activity 3.1.1). • International specialist on climate change and coastal adaptation to lead the multi-criteria analysis (USD70,000; Activity 3.1.2). • International specialist on climate change and coastal adaptation to deliver recommendations during the validation workshop (USD7,000; Activity 3.1.3). • International social and environmental safeguard specialist to conduct project SESA/ESIA, including the development of the ESMP, GRM and LAP (USD42,000). • Independent international engineering expert for the appraisal of revetment and groyne construction works. The contract will be part-time with 60 days in year 2 and 20 days per year in years 3 and 4 (USD70,000; Activity 3.2.2). • International consultant to design and deliver training to participating communities on community-based monitoring systems (USD49,000; Activity 3.2.3). • International data collection specialist to develop technical methodologies for the collection best practices (USD14,000; Activity 3.3.1). • International expert on coastal adaptation best practices to validate best practices and provide recommendations (USD14,000; Activity 3.3.2).	315,000	16
Local consultant	• National consultant to support the international consultant in the vulnerability mapping exercise (USD12,000; Activity 3.1.1).	58,500	17

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	• National consultant to support the international consultant in the multi-criteria analysis (USD18,000; Activity 3.1.2). • National consultant to support the international consultant in delivering recommendations during the validation workshop (USD1,500; Activity 3.1.3). • Local livelihood specialist to assist in the project SESA and ESIA, including the development of the ESMP, GRM and LAP (USD12,000). • National consultant to assist the international consultant in designing and implementing training on community-based monitoring (USD15,000; Activity 3.2.3).		
Contractual services - individual	• Safeguards Officer to ensure safeguard principles are followed across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 34% and Outcome 4 @ 34% (USD46,000). • Gender Officer to ensure gender mainstreaming across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 22% and Outcome 4 @ 46% (USD30,000). • Contractual services to collate best practices into a report using the methodologies developed in Activity 3.3.1 (USD12,000; Activity 3.3.2). • Contractual services to facilitate workshops and present best practices to private sector entities (USD18,000; Activity 3.3.3).	106,000	18
Contractual services - company	• Technical services of international conservation organisation to implement restoration in Sinoe target areas @ USD1,000 per ha for 260 ha. The cost includes growing of indigenous seedlings and planting activities, as well as a 10% contingency cost (USD260,000; Activity 3.2.1). • Coastal Engineering firm to provide quality control and oversight on the development of the revetment and groyne construction plan, including a environmental and social management plan (ESMP) (USD200,000; Activity 3.2.2). • Contractual services for the excavation of the mini quarry to supply rocks for the revetments and groynes in Greenville and the construction of the two revetments and five groynes (USD220,000; Activity 3.2.2). • Technical services of international conservation organisation to implement community-based monitoring programme, based on participatory community monitoring system designed in the CAPs (USD60,000; Activity 3.2.3). • Contractual services of firm to print and distribute best practice reports (USD2,000; Activity 3.3.2).	742,000	19
Travel	• International return flights for international consultant for the vulnerability mapping exercise (USD2,200; Activity 3.1.1). • Car hire/domestic flights to Sinoe for the international and national consultants conducting the vulnerability mapping exercise (USD1,800; Activity 3.1.1). • DSA for the international and national consultants while visiting Sinoe for the vulnerability mapping exercise (USD1,800; Activity 3.1.1). • Transportation for 50 participants to attend the vulnerability mapping exercise and multi-criteria analysis inception workshop @ USD20 per person (USD1,000) (USD1,000; Activity 3.1.1). • International return flights for international consultant for the multi-criteria analysis (USD2,200; Activity 3.1.2). • Car hire/domestic flights to Sinoe for the international and national consultants for the multi-criteria analysis (USD2,000; Activity 3.1.2). • DSA for the international and national consultants while visiting Sinoe for the multi-criteria analysis (USD4,000; Activity 3.1.2). • International return flights for international consultant to attend the validation workshop (USD2,200; Activity 3.1.3). • Transportation for 50 participants to attend the validation workshop @ USD20 per person (USD1,000; Activity 3.1.3). • International return flights for international consultant to conduct SESA/ESIA (USD2,200). • Car hire/domestic flights for the international and national consultants for the SESA/ESIA (USD1,400). • DSA for the international and national consultants for the SESA/ESIA (USD1,400). • International return flights for international consultant to design and deliver training on community-based monitoring (USD2,200; Activity 3.2.3). • Car hire/domestic flights to Sinoe for the international and national consultants to deliver training on community-based monitoring (USD4,000; Activity 3.2.3). • DSA for the international and national consultants while visiting Sinoe for delivering training on community-based monitoring (USD4,000; Activity 3.2.3). • Transportation for 50 participants to attend the community-based monitoring training programme @ USD20 per person (USD6,000; Activity 3.2.3).	67,600	20

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	• International return flights for international consultant for international consultant validating best practices (USD2,200; Activity 3.3.2). • Car hire/domestic flights for the international consultant collating best practices (USD1,000; Activity 3.3.2). • DSA for the international consultant collating best practices (USD1,000; Activity 3.3.1). • Car hire/domestic flights between and within counties for facilitation of workshops delivering best practices to private sector entities (USD3,000; Activity 3.3.3). • DSA while visiting coastal districts for facilitation of workshops delivering best practices to private sector entities (USD3,000; Activity 3.3.1). • Transportation for 100 participants to attend the private sector workshop on best practices @ USD20 per person (USD18,000; Activity 3.3.1).		
Equipment and furniture	• Monitoring equipment for use in target communities for community-based monitoring. The cost includes GPS, office equipment (laptop), water quality testing kits, river gauges, invasive plant management equipment; biodiversity monitoring equipment (fish monitoring equipment, binoculars, camera traps, field guides etc.) (USD96,000; Activity 3.2.3).	96,000	21
Materials and goods	• Thick woven needle punched geo textile to prevent erosion of the revetments (USD300,000). The cost is for USD10,000 per 6X100 m roll. Since the 1,500 m of revetment will require a geomat width of 12 m, the total geo textile length is doubled to a total length of 3,000 m. PPE includes reflector jackets (USD505), safety boots (USD5,000) and rain suits (USD2,970) (Activity 3.2.2). Please see the Mini-quarry Cost Sheet in Annex 1 for further details. Information on best available practices for the selection of equipment is provided in Section IV.1 of the Prodoc under the description for Output 3.2.	338,475	22
Rental and maintenance of equipment	• Construction equipment for setting up a mini-quarry from which rocks for the revetments and groynes will be sourced. This includes 4 steel-bodied trucks (USD500 per 365 days each), 2 excavators (USD800 per 365 days each) and one front end loader (USD600 per 365 days) (USD1,533,000; Activity 3.2.2).	1,533,000	23
Audio visual and print product costs	• Printing for best practice reports (USD400; Activity 3.3.2).	400	24
Transport, shipping and handling	• Cost of fuel for rock transport from the mini-quarry to the sites in Greenville, estimated as USD12 for a round trip (USD77,625; Activity 3.2.2).	77,625	25
Training, workshops and conferences	• Inception workshop for the vulnerability mapping exercise and multi-criteria analysis (USD1,500; Activity 3.1.1). • Validation workshop for the vulnerability mapping exercise and multi-criteria analysis (USD1,500; Activity 3.1.3). • 1-day workshop on the GRM, conflict resolution, cultural sensitivities and SEA for hybrid coastal adaptation intervention implementers and labourers (USD4,600; Activity 3.2.1 and Activity 3.2.2). • 5-day training workshop for representatives of target communities on community-based monitoring (USD54,000; Activity 3.2.3). • 2-day workshop to engage with private sector entities on coastal adaptation best practices (USD18,900; Activity 3.3.3).	80,500	26
M&E subcomponent			
International consultant	• International consultant to conduct mid-term and terminal evaluations for all project interventions (USD56,000; Activity 3.2.4).	**56,000**	**27**
Local consultant	• National consultant to assist with mid-term and terminal evaluations (USD12,000; Activity 3.2.3).	**12,000**	**28**
Contractual services - individual	• M&E Officer to implement monitoring and evaluation tasks for project implementation, including facilitating the M&E Inception Workshop, monitoring of core indicators, project results and indicators from other plans (USD100,000; Activity 3.2.4)	**100,000**	**29**
Travel	• Transportation for 50 participants to attend the M&E inception workshop @ USD20 per person (USD1,000; Activity 3.2.4). • International return flights for international consultant conducting the MTR and TE (USD4,400; Activity 3.2.4). • Car hire/domestic flights for the international and national consultant conducting the MTR and TE (USD4,000; Activity 3.2.4). • DSA for the international and national consultants undertaking the MTR and TE (USD4,000; Activity 3.2.4). • Transportation for 50 participants to attend the MTR and TE inception and validation workshops @ USD20 per person (USD4,000; Activity 3.2.4).	**17,400**	**30**

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Training, workshops and conferences	• Inception workshop for the project's monitoring and evaluation (USD1,500; Activity 3.2.4). • Inception and validation workshops for the MTR and TE (USD6,000; Activity 3.2.4).	**7,500**	**31**
Component 4			
International consultant	• International consultant to develop business training programme (USD35,000; Activity 4.1.2). • International consultant to present business training during ToT programme (USD56,000; Activity 4.1.3). • Working with project partners and the private sector, develop curricula for training communities on sustainable fisheries, IFS, CSEBs and their values chains at the training facilities (USD42,000; Activity 4.2.2). • International livelihood and value chain specialist to lead the development of standards and codes of conduct for the selected livelihood options (USD28,000; Activity 4.2.3). • International inclusive finance specialist to assist in designing training on climate risk management financing for representatives of financial institutions (USD21,000; Activity 4.3.1). • International inclusive finance expert to design guidelines for financial institutions (USD28,000; Activity 4.3.2).	210,000	32
Local consultant	• Gender expert to assist in analysing gender-related information as part of the needs assessment (USD3,000; Activity 4.1.1). • National consultant to assist in developing a business training programme (USD9,000; Activity 4.1.2). • National consultant to assist in presenting the business training during the ToT programme (USD18,000; Activity 4.1.3). • Livelihood and value chain specialist to conduct a site-specific needs and costs assessment of equipment requirements for the identified livelihoods and to identify priority communities and champion households to receive equipment under Activity 4.2.4 (USD12,000; Activity 4.2.1). • National livelihood and value chain expert to assist with the development of standards and codes of conduct (USD6,000; Activity 4.2.3). • National inclusive finance specialist to undertake market studies on the target communities (USD12,000; Activity 4.3.3). • National inclusive finance expert to assist in the development of climate-responsive financial products (USD15,000; Activity 4.3.4).	75,000	33
Contractual services - individual	• Safeguards Officer to ensure safeguard principles are followed across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 34% and Outcome 4 @ 34% (USD46,000). • Gender Officer to ensure gender mainstreaming across project implementation for 5 years. Costed at USD134,000 divided across Outcome 1 @ 16%, Outcome 2 @ 16%, Outcome 3 @ 22% and Outcome 4 @ 46% (USD62,000). • Contractual services to undertake a needs assessment for the business training curriculum (USD12,000; Activity 4.1.1). • Individual to plan and facilitate the validation workshops (USD6,000; Activity 4.2.1). • Individual to assist with developing the training curricula and facilitate training and awareness workshops (USD72,000; Activity 4.2.2). • Contractual services of individual to identify champions within existing VSLAs (USD6,300; Activity 4.3.5). • Contractual service to deliver training on climate risk management inclusive finance (USD12,000; Activity 4.3.1).	216,300	34
Contractual services - company	• Contractual services for representatives trained under Activity 4.1.3 to facilitate and present training workshops for target communities (USD75,000; Activity 4.1.4). • Firm to construct/establish livelihood training and awareness facilities. Costs include the construction of the training hall, furniture and equipment, vehicle use, working capital, land and pre-operating expenses, costs will be divided up into initial construction and operation as well as maintenance in project year 3 (USD270,000) and operations across years 4, 5 and 6 (USD90,000) (USD540,000; Activity 4.2.2). • Project partners with experience in the livelihood activities to assist with the development of standards and codes of conduct (USD6,000; Activity 4.2.3). • Firm to assist in procuring and installing equipment or interventions related to livelihood options for participating households (USD50,000; Activity 4.2.4). • Contractual service to deliver training on climate risk management inclusive finance (USD9,000; Activity 4.3.1). • Contractual services to assist in the designing of guidelines and to implement these in coordination with financial institutions and communities. (USD12,000; Activity 4.3.2).	707,000	35

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	• Implementing partner institutions to assist in the development of climate responsive financial products (USD15,000; Activity 4.3.4).		
Travel	• Car hire/domestic flights between and within counties for individual undertaking business training needs assessment (USD2,000; Activity 4.1.1). • DSA while visiting coastal districts for individual undertaking business training needs assessment (USD2,000; Activity 4.1.1). • International return flights for international consultant presenting ToT business training programme (USD2,200; Activity 4.1.3). • Car hire/domestic flights between and within counties for international and national consultants presenting ToT business training programme (USD6,000; Activity 4.1.3). • DSA while visiting coastal counties for international and national consultants presenting ToT business training programme (USD11,500; Activity 4.1.3). • Transportation for 50 participants to attend the ToT business training @ USD20 per person (USD9,000; Activity 4.1.3). • Transportation for 50 participants to attend the business training @ USD20 per person (USD30,000; Activity 4.1.4). • Car hire/domestic flights between and within counties for national consultant conducting site-specific needs and costs assessment (USD2,000; Activity 4.2.1). • DSA while visiting coastal counties for national consultant conducting site-specific needs and costs assessment (USD2,000; Activity 4.2.1). • Transportation for 100 participants to attend the validation workshops @ USD20 per person (USD18,000; Activity 4.2.1). • Car hire/domestic flights between and within counties for firm to deliver livelihood training and awareness workshops (USD20,000; Activity 4.2.2). • DSA while visiting coastal counties for firm to deliver livelihood training and awareness workshops (USD20,000; Activity 4.2.2). • Transportation for 50 participants to attend the livelihood training and awareness workshops @ USD20 per person (USD63,000; Activity 4.2.2). • Car hire/domestic flights between and within counties for firm delivering training on climate risk management and inclusive finance (USD2,000; Activity 4.3.1). • DSA while visiting coastal counties for firm delivering training on climate risk management inclusive finance (USD2,000; Activity 4.3.1). • Transportation for 50 participants to attend the training workshop on incorporating climate risk management considerations into inclusive financing @ USD20 per person (USD1000; Activity 4.3.1). • Car hire/domestic flights between and within counties for firm implementing inclusive finance guidelines in coordination with financial institutions and communities (USD1,000; Activity 4.3.2). • DSA while visiting coastal counties for firm implementing inclusive finance guidelines in coordination with financial institutions and communities (USD1,000; Activity 4.3.2). • Transportation for 50 participants to attend the inclusive finance guidelines training workshop @ USD20 per person (USD1000; Activity 4.3.2). • Car hire/domestic flights between for the national consultant undertaking the market studies (USD2,000; Activity 4.3.3). • DSA for the national consultant undertaking the market studies (USD2,000; Activity 4.3.3). • Car hire/domestic flights to Grand Cape Mount to identify VSLA champions and deliver training (USD2,000; Activity 4.3.5). • DSA for the individual to identify VSLA champions and deliver training in Grand Cape Mount (USD2,000; Activity 4.3.5). • Transportation for 10 participants to attend the training workshop @ USD20 per person (USD200; Activity 4.3.5).	203,900	36
Equipment and furniture	• Equipment for identified livelihood options, including for: - IFS, consisting of cassava cuttings (USD15), fishponds (USD900), fishing nets (USD15), African catfish fingerlings (USD300), Nile tilapia fingerlings (USD177), lime (USD63), poultry house (USD59), feeding trough (USD500), water trough (USD221), chicks (USD100), feed (USD500) and vaccines (USD150); - fisheries, consisting of boat motors (USD2,846), fuel tanks (USD115), life jackets (USD216), sustainable fishing nets (USD256) and solar-powered refrigeration units (USD2730); and - CSEBs, consisting of production site costs (USD6,472), diameter wire mesh (USD40), wheelbarrows (USD100) and manual Auram Press (USD2,988). IFS costs include USD3,000 per household for 204 households (USD612,000); fisheries costs include USD2,079 per household for 202	1,207,900	37

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	households (USD6,163 shared across 4 households for a total of USD420,100); and CSEBs costs include USD2,400 per household for 72 households (USD9,600 shared across four households for a total of USD172,800) (Activity 4.2.4). Please see the Livelihood Options Cost Sheet in Annex 1 for further details. Information on best available practices for the selection of equipment is provided in Section IV.1 of the Prodoc under the description for Output 4.2.		
Training, workshops and conferences	• 5-day ToT workshop to train representatives of business collectives on delivering business training to target communities (USD49,500; Activity 4.1.3). • 5-day training workshop to train MSMES and entrepreneurs in target communities on business development (USD165,000; Activity 4.1.4). • Validation workshop for the site-specific needs and livelihood opportunities (USD13,500; Activity 4.2.1) • 3-day training workshops for the livelihood options, particularly for IFS and CSEBs. Workshops to be held three times a year per facility for 3 years (USD220,500; Activity 4.2.2). • 5-day training workshop on incorporating climate risk management considerations into inclusive financing (USD4,500; Activity 4.3.1). • 5-day training workshop on the guidelines targeting representatives of participating financial institutions (USD4,500; Activity 4.3.2). • 3-day training workshop for VSLA champions on agent banking and climate-responsive financial products (USD3,500; Activity 4.3.5). • 1-day community workshops for trained VSLA representatives to present climate-resilient financial products to target communities (USD18,000; Activity 4.3.5).	479,000	38
Project Management Costs			
Contractual services - Individual	• Project Manager to guide the overall project implementation over 6 years (USD130,000). • Project Assistant to assist the Project Manager with overall project implementation over 6 years (USD65,000). • Procurement Expert contract over 6 years (USD 85,000). • Administration and Finance Assistant contract over 6 years (USD61,320).	341,320	39
Travel	• Travel expenses for PMU for implementation and supervisions of project activities (USD18,000)	18,000	40
Supplies	• Stationary and office supplies (USD6,000)	6,000	41
Contractual services - Company	• Auditing firm for annual financial audits (USD24,000)	24,000	42
Rental & Maint of Other Equip	• Rental of 4 wheel drive vehicle to facilitate travel (USD12,000)	12,000	43
Equipment and Furniture	• General equipment and furniture for project management (USD18,000)	18,000	44
Communication and Audio Visual Equipment	• Procurement of communication materials (USD6,000)	6,000	45
Contractual services - individual	• Administration and Finance Officer contract over 6 years (USD104,000). • Chief Technical Advisor to provide technical backstopping and management support to the project over 6 years. (USD72,000). • Project driver for project management transport over 6 years (USD24,000).	200,000	46

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XI. LEGAL CONTEXT

71800	Contractual Services - Individual	56,887	56,887	56,887	56,887	56,886	56886	341,320

Option a. Where the country has signed the Standard Basic Assistance Agreement (SBAA)
This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of (country) and UNDP, signed on (date). All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by the Environmental Protection Agency ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations or UNDP concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

XII. RISK MANAGEMENT

Option a. Implementing Partner is a Government Entity (NIM)

1. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
   a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
   b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the Implementing Partner's obligations under this Project Document.

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.

4. The Implementing Partner acknowledges and agrees that UNDP will not tolerate sexual harassment and sexual exploitation and abuse of anyone by the Implementing Partner, and each of its responsible parties, their respective sub-recipients and other entities involved in Project implementation, either as contractors or subcontractors and their personnel, and any individuals performing services for them under the Project Document.
   (a) In the implementation of the activities under this Project Document, the Implementing Partner, and each of its sub-parties referred to above, shall comply with the standards of conduct set forth in the Secretary General's Bulletin ST/SGB/2003/13 of 9 October 2003, concerning "Special measures for protection from sexual exploitation and sexual abuse" ("SEA").

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(b) Moreover, and without limitation to the application of other regulations, rules, policies and procedures bearing upon the performance of the activities under this Project Document, in the implementation of activities, the Implementing Partner, and each of its sub-parties referred to above, shall not engage in any form of sexual harassment ("SH"). SH is defined as any unwelcome conduct of a sexual nature that might reasonably be expected or be perceived to cause offense or humiliation, when such conduct interferes with work, is made a condition of employment or creates an intimidating, hostile or offensive work environment.

5. a) In the performance of the activities under this Project Document, the Implementing Partner shall (with respect to its own activities), and shall require from its sub-parties referred to in paragraph 4 (with respect to their activities) that they, have minimum standards and procedures in place, or a plan to develop and/or improve such standards and procedures in order to be able to take effective preventive and investigative action. These should include: policies on sexual harassment and sexual exploitation and abuse; policies on whistleblowing/protection against retaliation; and complaints, disciplinary and investigative mechanisms. In line with this, the Implementing Partner will and will require that such sub-parties will take all appropriate measures to:
   i. Prevent its employees, agents or any other persons engaged to perform any services under this Project Document, from engaging in SH or SEA;
   ii. Offer employees and associated personnel training on prevention and response to SH and SEA, where the Implementing Partner and its sub-parties referred to in paragraph 4 have not put in place its own training regarding the prevention of SH and SEA, the Implementing Partner and its sub-parties may use the training material available at UNDP;
   iii. Report and monitor allegations of SH and SEA of which the Implementing Partner and its sub-parties referred to in paragraph 4 have been informed or have otherwise become aware, and status thereof;
   iv. Refer victims/survivors of SH and SEA to safe and confidential victim assistance; and
   v. Promptly and confidentially record and investigate any allegations credible enough to warrant an investigation of SH or SEA. The Implementing Partner shall advise UNDP of any such allegations received and investigations being conducted by itself or any of its sub-parties referred to in paragraph 4 with respect to their activities under the Project Document, and shall keep UNDP informed during the investigation by it or any of such sub-parties, to the extent that such notification (i) does not jeopardize the conduct of the investigation, including but not limited to the safety or security of persons, and/or (ii) is not in contravention of any laws applicable to it. Following the investigation, the Implementing Partner shall advise UNDP of any actions taken by it or any of the other entities further to the investigation.

   b) The Implementing Partner shall establish that it has complied with the foregoing, to the satisfaction of UNDP, when requested by UNDP or any party acting on its behalf to provide such confirmation. Failure of the Implementing Partner, and each of its sub-parties referred to in paragraph 4, to comply of the foregoing, as determined by UNDP, shall be considered grounds for suspension or termination of the Project.

6. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

7. The Implementing Partner shall: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

8. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

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9. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

10. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

11. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes in accordance with UNDP's regulations, rules, policies and procedures. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with the Implementing Partner to find a solution.

12. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

    Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

- UNDP shall be entitled to a refund from the Implementing Partner of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document. Such amount may be deducted by UNDP from any payment due to the Implementing Partner under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail the Implementing Partner's obligations under this Project Document.

  Where such funds have not been refunded to UNDP, the Implementing Partner agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to the Implementing Partner for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

  Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

14. Each contract issued by the Implementing Partner in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

15. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, the Government will ensure that the relevant national authorities shall actively

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investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

16. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, *mutatis mutandis*, in all sub-contracts or sub-agreements entered into further to this Project Document.

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XIII. MANDATORY ANNEXES

1. GEF Budget Template
2. GEF Execution Support Letter N/A
3. Project Map and geospatial coordinates of the project area
4. Multiyear Workplan
5. Monitoring Plan
6. Social and Environmental Screening Procedure (SESP)
7. UNDP Atlas Risk Register
8. Overview of technical consultancies/subcontracts
9. Stakeholder Engagement Plan
10. Environmental Social Management Framework (ESMF)
11. Gender Analysis and Gender Action Plan (GAP)
12. Procurement Plan – for first year of implementation especially
13. GEF focal area specific annexes

13.a Climate Change Risk Analysis
13.b Community and Livelihood Vulnerability Report
13.c Site Selection Report
13.d Adaptation Options Report
13.e Operation and Maintenance Plan
13.f Value Chain Report
13.g Strategy for Inclusive Finance and Private Sector Engagement

14. Additional agreements: such as cost-sharing agreements, project cooperation agreements signed with NGOs (where the NGO is designated as the "executing entity"), letters of financial commitments etc..
15. LDCF Core indicators
16. GEF Taxonomy
17. Partners Capacity Assessment Tool and HACT assessment
18. UNDP Project Quality Assurance Report (to be completed in UNDP online corporate planning system)
19. Signed LOA between UNDP and IP requesting UNDP Support Services N/A
20. Terms of Reference for Technical services
21. Co-financing letters
22. UNDP Audit checklist
23. Civil Works Authorisation
24. Baseline Analysis
25. Covid-19 Strategy

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Annex 1: GEF Budget Template

Please see attached as a separate annex

Annex 2: GEF execution support letter (N/A)

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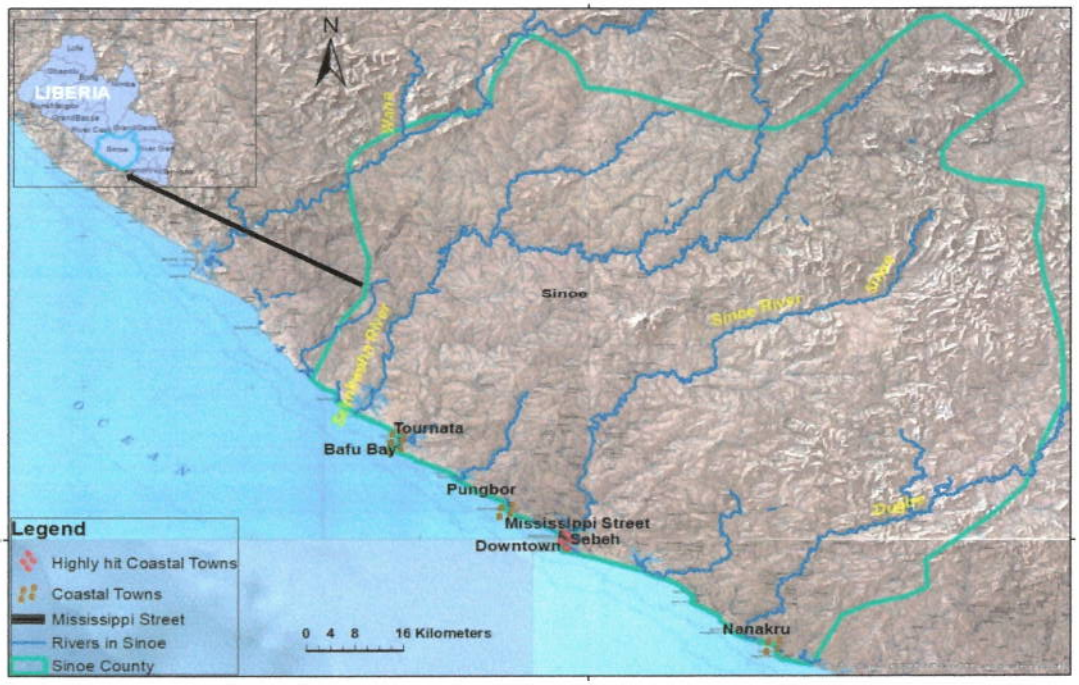
Annex 3: Project map and Geospatial Coordinates of project sites



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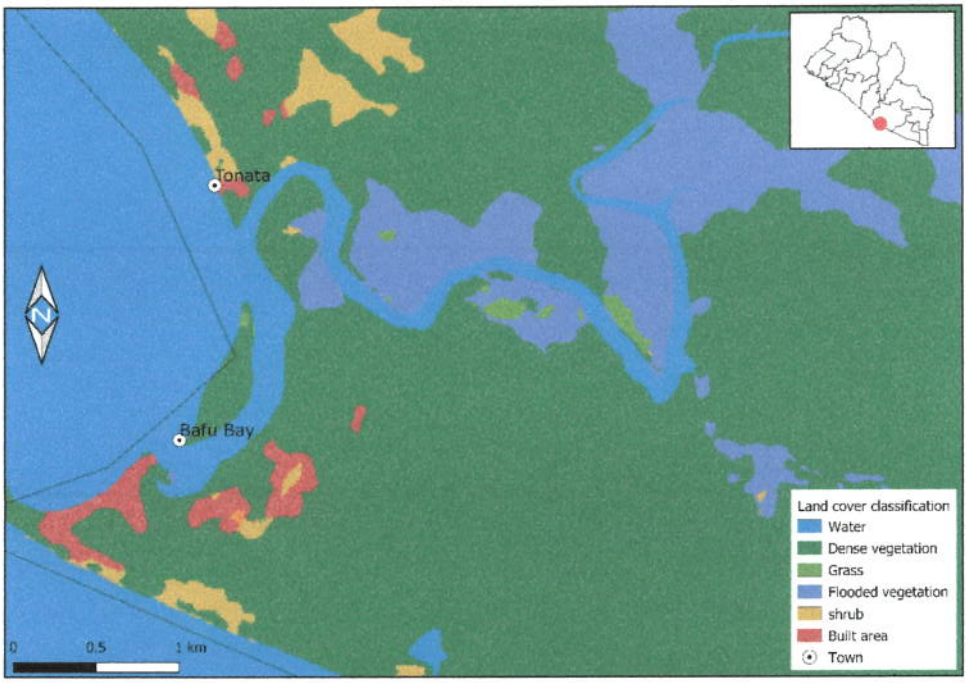
Tonata
Bafu Bay
N
0
0.5
1 km
Land cover classification
Water
Dense vegetation
Grass
Flooded vegetation
shrub
Built area
Town


Pungbor
N
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1 km
Land cover classification
Water
Dense vegetation
Grass
Flooded vegetation
shrub
Built area
Town

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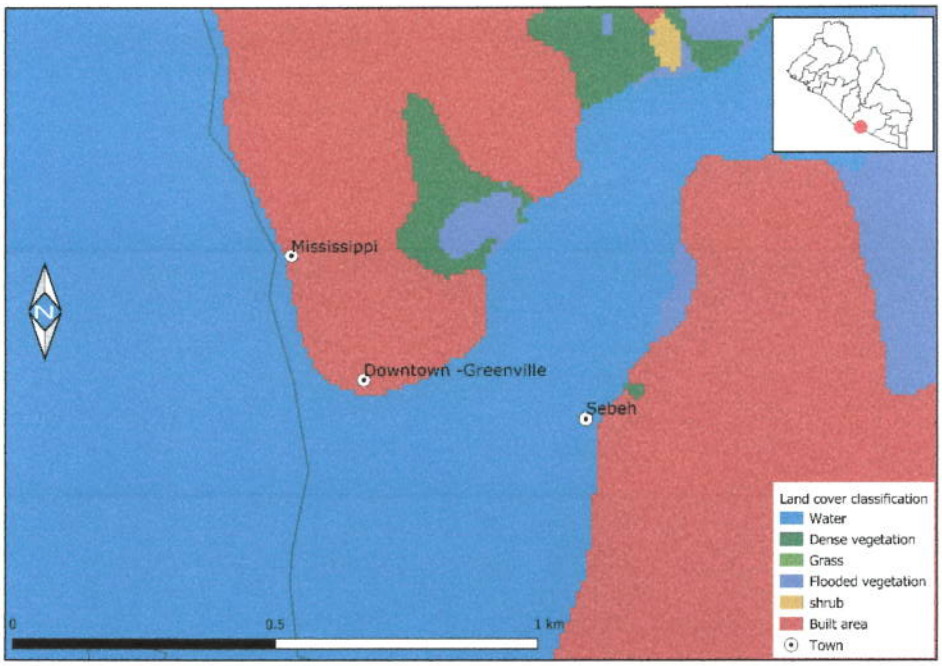

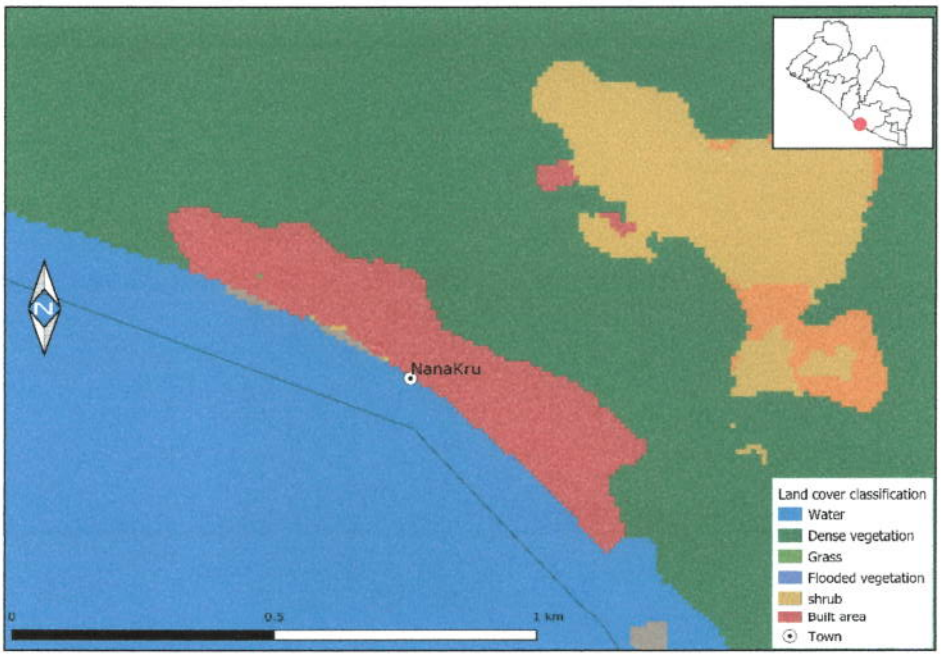

County	Community name	Longitude	Latitude
Sinoe	Tournata	-9.283802°	5.177191°
	Bafu Bay	-9.289861°	5.152091°
	Pungbor	-9.122458°	5.048611°
	Downtown-Mississippi (Greenville)	-9.036171°	4.999627°
	Sebeh (Greenville)	-9.032484°	4.998422°
	Nanakru	-8.727388°	4.829784°

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Annex 4: Multi Year Work Plan

Components	Outcomes	Outputs	Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Component 1. Institutional capacity strengthening for climate change adaptation planning in Liberia's coastal counties.	Outcome 1. Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks.	Output 1.1. County-level ICZM plans prepared for all coastal counties to address climate hazard risks on infrastructure, livelihoods and health, as well as to enable adaptation planning, monitoring, protection and the maintenance of sea and river defence.																								
		Output 1.2. Identified climate change risks and adaptation priorities incorporated into coastal County Resilience Plans as well as county and national planning and budgeting processes.																								
		Output 1.3. Institutional development planning capacity supported through the establishment and training of cross-sectoral climate change information and risk management focal points and working groups in all coastal counties.																								
Component 2. Innovation, technologies and climate information introduced for coastal adaptation planning.	Outcome 2. Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation.	Output 2.1. Coastal flood and erosion early warning and risk management systems supported to provide climate information, products and services that meet the needs of end users.																								
		Output 2.2. Existing EPA Environmental Knowledge Management System enhanced to support the collection and dissemination of lessons learned on sea and river defence based on Sinoe County adaptation solutions.																								
		Output 2.3. Community Action Plans developed for all coastal districts of Sinoe County.																								
		Output 2.4. Guidance Manuals for integrated coastal adaptation practices																								

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		developed and disseminated to all coastal counties.	
Component 3. Solutions for reducing vulnerability to climate change-induced sea level rise and coastal erosion.	Outcome 3. Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature-based and engineering).	Output 3.1. Viable solutions to address climate vulnerabilities in Sinoe County developed and designed using multi-criteria and participatory processes for identifying, prioritising and planning adaptation and resilience solutions.	
		Output 3.2. Coastal- and catchment-level adaptation solutions implemented to improve the resilience of communities to the impacts of climate change in Sinoe County.	
		Output 3.3. Best practices on adaptation solutions documented and disseminated to other coastal counties for adoption and upscaling, including engagement with the private sector.	
Component 4. Livelihood diversification for climate resilience.	Outcome 4. Gender-responsive options for climate-resilient income and livelihood diversification introduced to climate-vulnerable communities in coastal counties.	Output 4.1. Business identification, development and management training programmes designed and delivered to communities and Micro, Small and Medium Enterprises in coastal counties, targeting women and the youth.	
		Output 4.2. Opportunities for integrated farming systems, fisheries, compressed stabilised earth blocks and their value chains created for coastal communities.	
		Output 4.3. Access to finance and technologies to develop livelihood and income diversification enterprises of coastal livelihoods and resources facilitated in collaboration with national and county financial institutions.	

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Annex 5: Monitoring Plan

This Monitoring Plan as well as the M&E Plan and Budget in Section VI of this project document will guide monitoring and evaluation at the project level for the duration of project implementation.

Monitoring	Indicators	Targets	Description of indicators and targets	Data source/Collection Methods	Frequency	Responsible for data collection	Means of verification	Risks/Assumptions
Project Objective To protect coastal communities and their assets from future climate change while enhancing their income streams through livelihood diversification by implementing sea and river defence and risk management approaches.	**Mandatory** indicator 1: Number of direct project beneficiaries disaggregated by gender (individual people).	Total: Mid-term (MT) = 186,787 (92,370 males; 94,417 females) End of project target (ET) = 569,362 (277,110 males; 283,252 females).	The total number of direct beneficiaries (disaggregated by gender) consists of the breakdowns presented below. As most beneficiaries receive multiple benefits, the total number is a conservative value based on the activity that is delivered to the most beneficiaries (i.e. access to improved information on early warning) to avoid double counting. National, county and district level officials and decision-makers receiving capacity training for incorporating coastal management into development plans: MT = 250 (122 males, 128 females) ET = 500 (245 males, 255 females). These	Consultation process, survey of local communities, training workshop attendance registers.	Annually.	Project manager.	Survey report, national statistics report.	Assumptions: • Human resources trained through the project are retained in partner institutions. • Future climate change may be worse than predicted, resulting in adaptation interventions being less effective. • Livelihoods and value chains are accepted by coastal communities beyond the project's targeted recipients. • Population estimates for 2020 are accurate. • All training programme workshops will be fully attended. Risks: • Limited awareness and engagement with

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			values are based on the number of individuals that will be accommodated within capacity-building workshops. People protected through hybrid adaptation measures in Sinoe County: MT = 5,864 (2,974 males; 2,889 females) ET = 7,487 (3,827 males; 3,660 females). These values are based on the 2020 population estimates for the targeted communities within Sinoe County. Individuals receiving business identification, development and management training: MT = 4,500 (1,125 males; 3,375 females) ET = 9,000 (2,250 males; 6,750 females). These values are based on the number of beneficiaries that will be accommodated in business training programmes through the project.					communities and community leaders resulting in insufficient project buy-in. • Conflict or civil unrest may disrupt the delivery of interventions to beneficiaries. • Increased cases of Covid-19 may result in restrictions that delay or limit the delivery of interventions to beneficiaries.

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			Individuals receiving improved access to climate risk early warning information: MT = 186,787 (92,370 males; 94,417 females) ET = 560,362 (277,110 males; 283,252 females). These values represent 10% and 30% of the populations of all coastal counties for MT and ET, respectively, based on targets set by the Liberia CIS baseline project.					
	Indicator 2: Area of mangrove and forest restored and protected in Sinoe County through the project.	MT = 68 ha ET = 260 ha	This indicator includes natural mangrove or forest vegetation surrounding the target communities that would act as a protective barrier against future flooding and erosion. These areas will either be protected under the project or given active restoration, depending on their degree of degradation. Target values include: • 52 ha by MT and	GIS data, in-field surveys of project implementation area.	Annually.	Project manager, ME specialist.	Survey report.	Assumptions: • Future climate change may be worse than predicted, resulting in adaptation interventions being less effective. • Existing projects will adequately address baseline drivers. • Area measured using GIS resources includes degraded forests. Risks: • Extreme weather events may result in delays or damage to recently restored areas.

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			ET in Downtown-Mississippi • 16 ha by MT and ET in Sebeh • 0 ha by MT and 16 ha by ET in Nanakru • 0 ha by MT and 3 ha by ET in Pungbor • 0 ha by MT and 11 ha by ET in Bafu Bay • 0 ha by MT and 162 ha by ET in Tournata.					• Limited coordination with communities may result in limited buy-in for participatory community-based monitoring or restored ecosystems. • Conflict or civil unrest may disrupt the delivery of interventions to beneficiaries. • Findings and recommendations from the SESP not addressed, resulting in potential negative impacts on ecosystems.
Outcome 1: Strengthened capacity of all Liberian coastal counties' planning institutions to assess climate change risks and integrate into county development frameworks.	Indicator 3: Change in the GEF AMAT capacity score for coastal county and district level planning institutions to consider climate change risks and adaptation into planning and budgeting processes.	MT = Each targeted institution progresses by at least one point in the capacity score index (Max 10, Min 0). ET = Each targeted institution progresses by at least three points in the capacity score index. (Max 10, Min 0).	The indicator is based on five-step criteria of capacity assessment framework (expressed as questions): 1. Do the institutions have access to and do they make use of climate information in decision-making? 2. Are coastal climate change risks as well as appropriate adaptation strategies and measures integrated into relevant institutional processes and	UNDP-GEF capacity assessment scorecard – stakeholders are asked to complete the questionnaire before and after trainings.	Annually.	Project Manager/ME specialist.	Verified through scoring methodologies adapted from the GEFSec - AMAT (2014)[279].	Assumptions: • Human resources trained through the project are retained in partner institutions. • Planning recommendations are adopted by government agencies. Risks: • Limited project partner and stakeholder coordination may result in the ineffective delivery of capacity building. • Limited capacity of

[279] Adapted from TAMD (2013) and PPCR (2014) scorecard indicators

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			procedures? 3. Do the institutions have adequate resources to implement such processes and procedures? 4. Are there clear roles and responsibilities within the institutions, and effective partnerships outside the institution to address adaptation? 5. Are the institutions equipped to monitor, evaluate and learn from their adaptation actions?					the EPA to effectively coordinate and integrate county and district planners and decision-makers.
			Each question is answered with an assessment and score for the extent to which the associated criterion has been met: not at all (= 0), partially (= 1) or to a large extent/completely (= 2). An overall score is calculated, with a maximum score of 10 given five criteria. These five criteria will be reviewed and validated at inception phase of the project.					

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	Indicator 4: Number of plans developed or updated to take into account climate change risks and adaptation.	MT = 9 ET = 13	This target includes: • Nine ICZM plans by MT and ET • One SRDIM plan by ET • Three County Resilience Plans by ET	Developed plans.	Annually.	Project Manager.	Survey report.	Assumptions: • Human resources trained through the project are retained in partner institutions. • Planning recommendations are adopted by government agencies. Risks: • Limited project partner and stakeholder coordination may result in the ineffective delivery of capacity building.
Outcome 2: Innovative technologies — including response planning and communication mechanisms — introduced to support coastal adaptation.	Indicator 5: Procurement and installation of hydrometeorological stations that improve climate monitoring and response planning.	MT = three synoptic stations and 20 automatic rainfall stations. ET = five synoptic stations and 40 automatic rainfall stations.	Procurement of stations will build on the Liberia CIS project and assist in filling equipment capacity gaps. A detailed needs assessment will be undertaken at the beginning of Output 2.1 implementation to confirm needs.	The number of installed weather stations transmitting data.	Annually.	Project manager, ME specialist.	Survey report.	Assumptions: • Existing projects will adequately address baseline drivers. • State and non-state actors implement the project's existing strategy in the long term. Risks: • Limited impact baseline and co-finance support from the Liberia CIS project may result in delays and reduced effectiveness of these interventions. • Limited operations and maintenance of equipment after the

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								project's lifespan.
	Indicator 6: Improved response planning of district officials and communities through the development of Community Action Plans and Guidance Manuals.	Community Action Plans (CAPs) developed and disseminated: MT = two ET = six Guidance Manuals developed and disseminated: MT = 10 ET = 30	The number of CAPs is based on the number of coastal districts in Sinoe County, while the number of Guidance Manuals represents the total number of coastal districts in Liberia.	Developed CAPs and Guidance Manuals	Annually	Project Manager	Survey report	Assumptions: • Human resources trained through the project are retained in partner institutions. • Planning recommendations are adopted by government agencies. Risks: • Limited project partner and stakeholder coordination may result in the ineffective delivery of capacity building. • Limited capacity of the EPA to effectively coordinate and integrate county and district planners and decision-makers.
Outcome 3: Reduced vulnerability of Sinoe County coastal communities to climate-induced sea level rise impacts through hybrid solutions (nature-based and engineering).	Indicator 7: Length of road and number of residential and non-residential buildings with reduced exposure to current and future coastal flooding and erosion in Greenville as a result of hybrid solutions.	MT = 0 ET = At least 2.5 km of road and 470 buildings	Target values are based on conservative estimates using geo-spatial maps. Values include: • At least 2 km of road in Downtown-Mississippi area and 0.5 km of road in Sebeh • At least 400 buildings in Downtown-Mississippi and 70	GIS data, site visits, in-field surveys of project implementation area.	Annually.	Project Manager/ME specialist.	Survey report.	Assumptions: • Future climate change may be worse than predicted, resulting in adaptation interventions being less effective. • Existing projects will adequately address baseline drivers. Risks: • Extreme weather events may result in delays or damage to

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			in Sebeh.					hard infrastructure before completion. • Conflict or civil unrest may disrupt the delivery of interventions to beneficiaries. • Increased cases of Covid-19 may result in restrictions that delay or limit the delivery of interventions to beneficiaries. • Non-delivery of co-financing through rocks for the construction of hard infrastructure could jeopardise implementation. • Limited long-term operations and maintenance of coastal adaptation interventions. • Findings and recommendations from the SESP not addressed, resulting in potential negative impacts on ecosystems.
Outcome 4: Gender-responsive options for climate-resilient income and livelihood diversification introduced to	Indicator 8: Number of households receiving access to equipment and training that provide diversified climate-resilient livelihood options	Households receiving training and equipment for diversified livelihood options: MT = 140 ET = 480	This value represents households supported by training and equipment for livelihood options targeted by the project. The value is broken up	Community surveys.	Annually.	Project Manager/ME specialist.	Survey report.	Assumptions: • Livelihoods and value chains are accepted by coastal communities beyond the project's targeted recipients.

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climate-vulnerable communities in coastal counties.	that are gender responsive.		approximately as 42% for households with access to integrated farming systems, 43% for more climate-resilient fishing value chains and 15% for compressed stabilised earth blocks.					Risks: • Limited coordination with communities may result in limited buy-in for introduced livelihoods. • Conflict or civil unrest may disrupt the delivery of interventions to beneficiaries. • Increased cases of Covid-19 may result in restrictions that delay or limit the delivery of interventions to beneficiaries. • Insufficient incorporation of gender sensitivity and responsiveness into the implementation of project activities. • Increased gender-based violence inadvertently linked to project interventions. • Findings and recommendations from the SESP not addressed, resulting in potential negative impacts on ecosystems.
Environmental and Social risks and management plans	N/A	N/A	Updated SESP and management plans, including a Strategic Environmental and Social Assessment	Consultation with stakeholders – government officials and communities.	Annually.	Project Coordinator, M&E specialist.	Updated SESP and management plans.	

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			(SESA), Environmental and Social Impact Assessment (ESIA), Environmental and Social Management Plan (ESMP) and Livelihood Action Plan (LAP).					
Gender Action Plan	N/A	N/A	Updated GAP.	Consultation with stakeholders – government officials and communities.	Annually.	Project Coordinator, M&E specialist.	Updated GAP.	

1.2.

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Annex 6: UNDP Social and Environmental Screening Procedure (SESP)

Please see attached as a separate annex

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Annex 7: UNDP Risk Register

#	Description	Risk Category	Impact & Probability	Risk Treatment / Management Measures	Risk Owner
1	Extreme weather events such as storm surges or heavy storms during project implementation may result in delays and damage to project intervention assets, including planted seedlings for restoration and engineered infrastructure before completion. Additionally, it may result in the unsuccessful implementation of sustainable livelihood options and other adverse effects on local communities.	Social and Environmental	Extreme weather events may result in delays and damage to project intervention assets, including planted seedlings for restoration and engineered infrastructure before completion. In addition, these events may result in the unsuccessful implementation of sustainable livelihood options and other adverse effects on local communities. I = 3 P = 2 Moderate.	Assessments and consultations during the PPG phase included a thorough inventory of potential, site-specific hazards, including information provided by local communities and climate experts. Project implementation activities will be scheduled to avoid coinciding with periods of the year when extreme weather events are more prevalent. Provision will be made in workplans and budgets to consider weather-related interruptions to ensure that the project remains on schedule. Project interventions are designed to address the impacts of future climate change and to be resilient to climate change hazards.	EPA, MME.
2	Low human and institutional capacity to implement climate change adaptation projects — particularly at the county level.	Operational	Limited capacity may result in delays to project implementation or interventions not being designed, implemented or monitored correctly. This has the potential to result in reduced project success. I = 2 P = 2	The Implementation Partner and Responsible Parties have some experience on project implementation from recent and existing related baseline projects. The proposed project consists of outputs with strong institutional capacity-building elements at the national, county and district levels that are designed to promote intervention	UNDP, EPA.

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			Low.	effectiveness and sustainability. The above capacity-building elements include the development of ICZM plans, County Resilience Plans and district level Guidance Manuals which will be used to inform county and district level officials (Outputs 1.1, 1.2, 2.4). Institutional capacity in Sinoe County for ICZM, risk management and climate adaptation will also be developed under Output 1.2 and 2.1. Finally, iterative lessons learned and best practices on ICZM, risk management, climate adaptation and livelihoods will be disseminated to coastal county institutions through focal points as well as working groups, knowledge hubs, best practice collection and training (Outputs 1.3, 2.1, 3.3 and 4.1).	
3	Limited awareness and engagement with community leaders and local level development practitioners can potentially result in insufficient buy-in and ownership of project interventions by local communities and officials.	Social	Reduced buy-in may result in insufficient influence of the project on local and regional climate-planning processes and limit the mainstreaming of adaptation interventions. I = 2 P = 3 Low.	Local awareness raising and stakeholder engagement were undertaken during the PPG phase and will continue throughout project implementation. Awareness raising will focus on climate risks, sustainable livelihood opportunities and adaptation options. Specifically, awareness raising will be implemented through a number of project outputs, including: i) the development of county and local level plans and Guidance Manuals Outputs 1.1,	EPA.

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				1.2, 2.3 and 2.4; ii) local engagement through focal points and working groups (Output 1.3); iii) an accessible knowledge hub with information on lessons learned (Output 2.2); and iv) training on business identification, development and management for local entrepreneurs, with a focus on climate-resilient livelihood options. In addition to the above, the project will also disseminate information during implementation through regular publications of project newsletters and other media (for example, videos for community screenings), which will enhance awareness of the project and its interventions and improve engagement with local communities.	
4	Political complications such as changes in political leadership or corruption at a national or county level have the potential to delay or limit the implementation of project interventions by halting institutional progress.	Political	Political complications have the potential to delay or limit the implementation of project interventions by halting institutional progress. I = 4 P = 3 Moderate.	The GoL has indicated a strong commitment to the proposed project, which will ensure strong institutional governance of the project and limit the potential of the ineffective implementation of project interventions.	UNDP, GoL.
5	Conflict or civil unrest in or around project target sites have the potential to delay the on-the-ground implementation of project interventions and jeopardise the safety of stakeholders and local communities.	Safety and security	This has the potential to delay the on-the-ground implementation of project interventions and jeopardise the safety of stakeholders and local	The majority of on-the-ground interventions will be undertaken in Sinoe County, which — because of its relative isolation — is unlikely to experience civil unrest. The potential for unrest	EPA, GoL.

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			communities. I = 3 P = 1 Low.	will be closely monitored before in-field activities to ensure the security of project implementers.	
6	Limited project partner and stakeholder coordination can result in project delays, non-participation of stakeholders and communities and the ineffective implementation of interventions.	Operational	Limited coordination may result in project delays, non-participation of stakeholders and communities, and the ineffective implementation of interventions. I = 2 P = 3 Low.	Project management arrangements have been explicitly made during the PPG phase. To ensure coordination is effective in the long-term, one project manager, county and local community-level site officers, finance experts and one coastal expert will be competitively procured during project implementation to ensure coordination between the Implementing Partner, project partners and stakeholders.	EPA.
7	Limited capacity within the Environment Protection Agency (EPA) to effectively engage, coordinate and integrate district and county planning and investments into national and adaptation processes.	Operational	This has the potential to result in project delays or the ineffective implementation of interventions. I = 2 P = 3 Low.	The proposed project will strengthen the coordination capacity of the EPA while also building the capacity of other project partners including the agriculture, fisheries, mines and energy sectors to be involved in the integration. This will be done by adding adaptation planning into national plans and processes under Output 1.2. County-level capacity also will be built through the project to ensure that adaptation planning is driven through a bottom-up approach and is county specific. This will be achieved through county- and district-level plans and Guidance Manuals (Outputs 1.1, 1.2 and 2.4) as well as the strengthening of the EKMS knowledge hub which will	UNDP, EPA.

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				disseminate lessons learned and best practices to all coastal counties (Output 2.2). Additionally, focal points and working groups (Output 2.3) will be capacitated to contribute to national adaptation planning.	
8	Limited response by financial institutions to invest in adaptation-orientated livelihoods. has the potential to reduce access to finance for entrepreneurs and Micro, Small and Medium Enterprises (MSMES) in vulnerable targeted communities, resulting in the possible failure of livelihood options and interventions under Outcome 4.	Financial.	This has the potential to reduce access to finance for entrepreneurs and MSMES in vulnerable targeted communities, resulting in the possible failure of livelihood options and interventions under Outcome 4. I = 3 P = 3 Moderate.	The project will have a strong focus on engagement with the private sector and finance institutions throughout the planning and implementation process. Specifically, the proposed project will work with these institutions to identify solutions to climate change impacts while providing business and investment opportunities within climate-vulnerable sectors, building on existing access to finance projects and initiatives.	EPA, MoCI.
9	Increased cases of Covid-19 in Liberia may threaten the health of communities and project implementers. This may also result in an increase in restrictions to activities and movement within project target areas, resulting in delays to the implementation of interventions.	Safety and Security.	The current Covid-19 pandemic may threaten the health of communities and project implementers. This may also result in an increase in restrictions to activities and movement within project target areas, resulting in delays to the implementation of interventions. I = 2 P = 4 Moderate.	A Covid-19 Strategy has been developed during the PPG stage that outlines risks and contingencies to mitigate against Covid-19 risks to project implementation. The Stakeholder Engagement Plan details safety protocols related to stakeholder engagement during project implementation. Additionally, provisions have been made in the project workplan to ensure the project remains on schedule.	EPA.
10	Failure to commit to and provide co-financing — potentially as a result of needing to prioritise funds towards Covid-19 recovery.	Financial.	Project interventions dependent on co-financing funding could be	UNDP and GoL have committed to providing in-kind co-financing for the project, including the	UNDP, GoL.

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			compromised resulting in certain activities not taking place. I = 3 P = 3 Moderate.	costing for rock materials which have been verified by GoL and UNDP.	
11	Limited long-term operations and maintenance of coastal adaptation interventions.	Operational.	This could jeopardise the long-term sustainability and effectiveness of adaptation interventions beyond the project's lifespan and reduce benefits to vulnerable communities. I = 2 P = 4 Moderate.	An operations and maintenance plan has been developed during the PPG stage, which will be refined in the early stages of implementation once interventions are verified under Output 3.1. GoL has indicated commitments to provide resources for the continued maintenance of hard interventions beyond the project's lifespan.	UNDP, GoL.
12	Insufficient incorporation of gender sensitivity and responsiveness into the implementation of project activities.	Social and Environmental.	The project may have adverse impacts on gender equality — for example, increased income by women resulting in gender-based violence — which would jeopardise the project's objective of adopting a gender-responsive approach. I = 4 P = 2 Moderate.	A Gender Analysis and Action Plan has been developed which has advised project interventions during the PPG stage and will be implemented during the project to ensure gender equality is incorporated into all activities. A Gender Officer will be included in the PMU to ensure all gender-related aspects of the project are implemented sufficiently. The project has strong gender-responsive outputs that account for the specific vulnerabilities of women and other disadvantaged groups. This includes awareness-raising which will include information on specific climate change challenges women experience (Output 1.3) and	EPA, MoCI, MoA.

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				gender-responsive Community Action Plans (Output 2.3). Specifically, Outcome 4 has a strong gender focus through business training, livelihood options and access to finance that prioritise women and youth groups.	
13	Findings and recommendations of Social Environment Screening Procedure (SESP) risks not followed-up on and addressed.	Social and Environmental.	The SESP rating for the project is High, indicating that the insufficient implementation of mitigation measures to the identified social and environmental risks could result in maladaptation and negative impacts on ecosystems and communities. I = 4 P = 2 Moderate.	A Project Safeguard Officer will be included in the PMU to ensure safeguards compliance. The SESP will be updated iteratively throughout the project implementation cycle to ensure all risks are tracked and updated. Additionally, safeguard documents including a Strategic Environmental and Social Assessment (SESA), full Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) will be developed before relevant on-the-ground interventions are initiated. Stakeholder engagement will follow the Stakeholder Engagement Plan to ensure any stakeholder concerns regarding the project are acknowledged. Additionally, a Grievance Redress Mechanism has been developed which will be used to receive and address from external stakeholders regarding project interventions.	EPA, UNDP.
14	Community initiatives led by individuals can potentially fail if the individual moves to another town.	Operational	By funding projects led by individuals, there is a risk of failure or short-lived	When providing funding to community initiatives, the project implementing agencies will	EPA, GoL

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			project, particularly if the individual does not have strong ties with the community. I = 3 P = 3 Moderate	favour the initiatives that are led by existing associations, cooperatives over the ones that are submitted by individuals or newly-formed associations. Project activities implemented through existing community associations have a higher chance of success, because even if individuals move away from the project's intervention sites, the association remains in the community and project activities be continued by new members.	

1.3.

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Annex 8: Overview of Project Staff and Technical Consultancies

Consultant	Time Input	Tasks, Inputs and Outputs
For Project Management		
Local / National contracting		
Project Manager Rate: USD2,083/month Budget note: 39	72 months / over 6 years	The Project Manager (PM), together with the Lead Technical Advisor will be responsible for the overall management of the project, including the mobilisation of all project inputs, supervision over project staff, consultants and sub-contractors. Duties and responsibilities • Manage the overall conduct of the project. • Plan the activities of the project and monitor progress against the approved workplan. • Execute activities by managing personnel, goods and services, training and low-value grants, including drafting the terms of reference and work specifications, and overseeing all contractors' work. • Monitor events as determined in the project monitoring plan, and update the plan as required. • Provide support for completion of assessments required by UNDP, spot checks and audits. • Manage requests for the provision of UNDP financial resources through funding advances, direct payments or reimbursement using the FACE form. • Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports. • Monitor progress, watch for plan deviations and make course corrections when needed within Project Board-agreed tolerances to achieve results. • Ensure that changes are controlled and problems addressed. • Perform regular progress reporting to the Project Board as agreed with the board, including measures to address challenges and opportunities. • Prepare and submit financial reports to UNDP on a quarterly basis. • Manage and monitor the project risks – including social and environmental risks – initially identified and submit new risks to the Project Board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log. • Capture lessons learned during project implementation. • Prepare revisions to the multi-year workplan, as needed, as well as annual and quarterly plans if required. • Prepare the Inception Report no later than one month after the Inception Workshop. • Ensure that the indicators included in the project results framework are monitored annually in advance of the GEF PIR submission deadline so that progress can be reported in the GEF PIR; • Prepare the GEF PIR; • Assess major and minor amendments to the project within the parameters set by UNDP-GEF; • Monitor implementation plans including the Gender Action Plan, Stakeholder Engagement Plan, and any environmental and social management plans; • Monitor and track progress against the GEF Core Indicators; • Support the Mid-term review and Terminal Evaluation process; and

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		• Add technical tasks as necessary.
Project Assistant Rate: US833/month Budget note: 39	72 months / over 6 years	Under the guidance and supervision of the Project Manager, the Project Assistant will carry out the following tasks: • Assist the Project Manager in day-to-day management and oversight of project activities; • Assist the M&E officer in matters related to M&E and knowledge resources management; • Assist in the preparation of progress reports; • Ensure all project documentation (progress reports, consulting and other technical reports, minutes of meetings, etc.) are properly maintained in hard and electronic copies in an efficient and readily accessible filing system, for when required by Project Board/Steering Committee, Technical Advisory Committee (TAC), UNDP, project consultants and other PMU staff; and • Provide PMU-related administrative and logistical assistance.
Project Administration and Finance Officer Rate: USD1,444/month Budget note: 46	72 months / over 6 years	Duties and Responsibilities • Keep records of project funds and expenditures, and ensure all project-related financial documentation are well maintained and readily available when required by the Project Manager; • Review project expenditures and ensure that project funds are used in compliance with the Project Document and GoL financial rules and procedures; • Validate and certify FACE forms before submission to UNDP; • Provide necessary financial information as and when required for project management decisions; • Provide necessary financial information during project audit(s); • Review annual budgets and project expenditure reports, and notify the Project Manager if there are any discrepancies or issues; • Consolidate financial progress reports submitted by the responsible parties for implementation of project activities; and • Liaise and follow up with the responsible parties for implementing project activities in matters related to project funds and financial progress reports.
Project Administration and Finance Assistant Rate: USD694/month Budget note: 39	72 months / over 6 years	Assist the Project Administration and Finance Officer in their duties, including: • Support the record keeping of project funds and expenditures; • Assist in the review of project expenditures and ensure that project funds are used in compliance with the Project Document and GoL financial rules and procedures; • Assist with validating and certifying FACE forms before submission to UNDP; • Assist with providing necessary financial information as and when required for project management decisions; • Assist with providing necessary financial information during project audit(s); • Support the review of annual budgets and project expenditure reports; and • Assist with consolidating financial progress reports submitted by the responsible parties for implementation of project activities.
Project management technical assistance		
Chief Technical Advisor	72 months / over 6 years	The Chief Technical Advisor will be responsible for providing overall technical backstopping and management support to the Project, including:

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Rate: USD1,000/month Budget note: 46		• Support the overall management of the project; • Supervise and coordinate the production of project outputs, as per the project document; • Mobilise all project inputs in accordance with UNDP procedures for nationally executed projects; • Supervise and coordinate the work of all implementing partners, project staff, consultants and sub-contractors; • Support the recruitment and selection of project personnel and contractors as needed, especially with a view to the large infrastructure investments made by this project; • Oversee and ensure timely submission of the Inception Report, Combined Project Implementation Review/Annual Project Report (PIR/APR), Technical reports, quarterly financial reports, and other reports as may be required by UNDP, GEF and other oversight agencies; • Assist in the reporting of project progress to the Project Board/Steering Committee, and ensure the fulfilment of Steering Committee directives. • Oversee the exchange and sharing of experiences and lessons learned with relevant actors nationally and internationally; • Address key communication requirements and support the development and implementation of a project communication plan; and • Oversee the timely and effective implementation of all components of the project.
Project Monitoring and Evaluation (M&E) Officer Rate: USD1,389/month Budget note: 29	72 months / over 6 years	Duties and Responsibilities • Monitor project progress and participate in the production of progress reports ensuring that they meet the necessary reporting requirements and standards; • Ensure project's M&E meets the requirements of the Government, the UNDP Country Office, and UNDP-GEF; develop project-specific M&E tools as necessary; • Oversee and ensure the implementation of the project's M&E plan, including periodic appraisal of the Project's Theory of Change and Results Framework with reference to actual and potential project progress and results; • Oversee/develop/coordinate the implementation of the stakeholder engagement plan; • Oversee and guide the design of surveys/ assessments commissioned for monitoring and evaluating project results; • Facilitate mid-term and terminal evaluations of the project; including management responses; • Facilitate annual reviews of the project and produce analytical reports from these annual reviews, including learning and other knowledge management products; • Support project site M&E and learning missions; and • Visit project sites as and when required to appraise project progress on the ground and validate written progress reports.
Project Gender Officer Rate: USD2,233/month Budget note: 3, 10, 18, 34	60 months / over 5 years	Duties and Responsibilities • Monitor progress in implementation of the project Gender Action Plan ensuring that targets are fully met and the reporting requirements are fulfilled; • Monitor progress in development/implementation of the project ESMP/ESMF ensuring that UNDPs SES policy is fully met and the reporting requirements are fulfilled; • Oversee/develop/coordinate implementation of all gender- and safeguard-related work; • Review the Gender Action Plan annually, and update and revise corresponding management plans as necessary; and

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		• Ensure social and environmental grievances are managed effectively and transparently; • Review the SESP annually, and update and revise corresponding risk log; mitigation/management plans as necessary; • Ensure full disclosure with concerned stakeholders; • Ensure environmental and social risks are identified, avoided, mitigated and managed throughout project implementation; and • Work with the M&E officer to ensure reporting, monitoring and evaluation fully address the gender and safeguard concerns of the project.
Project Safeguards Officer Rate: US2,233/month Budget note: 3, 10, 18, 34	60 months / 5 years	Duties and Responsibilities • Monitor progress in development/implementation of the project ESMP/ESMF ensuring that UNDPs SES policy is fully met and the reporting requirements are fulfilled; • Oversee/develop/coordinate implementation of all g safeguard-related work; • Ensure social and environmental grievances are managed effectively and transparently; • Review the SESP annually, and update and revise corresponding risk log; mitigation/management plans as necessary; • Ensure full disclosure with concerned stakeholders; • Ensure environmental and social risks are identified, avoided, mitigated and managed throughout project implementation; and • Work with the M&E officer to ensure reporting, monitoring and evaluation fully address the safeguard issues of the project.
Project Procurement Officer Rate: USD1,129/month Budget note: 39	72 months / 6 years	Duties and Responsibilities • Ensure compliance of procurement activities with UN/UNDP rules, regulations, policies and strategies; implementation of the effective internal control; • Prepare procurement plans and implement their monitoring. • Organise procurement processes including preparation and conduct of RFQs, ITBs or RFPs, receipt of quotations, bids or proposals, their evaluation, negotiation of certain conditions of contracts in full compliance with UNDP rules and regulations. • Preparation of Purchase Orders (PO) and contracts; • Implement the internal control system which ensures that purchase orders are duly prepared and dispatched. • Ensure timely corrective actions on POs with budget check errors and other problems. • Present reports on procurement. • Ensure implementation of sourcing strategy. • Ensure proper Control of UNDP/GEF supported-project assets focusing • Ensure organisation of logistical services focusing on achievement of: i) organisation of travel including purchase of tickets, DSA calculation, PO preparation; ii) vehicle maintenance; and iii) conference facilities arrangements. • Ensure facilitation of knowledge building and knowledge sharing focusing on: i) organisation of trainings for projects staff on procurement; ii) synthesis of lessons learned and best practices in procurement; and iii) contributions to knowledge networks and communities of practice.
For Technical Assistance		
Local / National contracting		

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Outcome 1		
Coastal Specialist Rate: US$300/day Budget note: 2	55 days / 2 years	The national consultant will support the international consultant on: • Developing nine integrated coastal zone management plans (ICZMP) • Updating nine ICZMP three years after the development of the plans. Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) ICZMPs; and ii) updated ICZMPs
Sea and River Defence Investment Management Specialist Rate: US$300/day Budget note: 2	48 days / 1 year	The national consultant will support the international consultant on: • Developing a Sea and River Defence Investment Management Plan (SRDIMP) Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) a SRDIMP.
National gender expert Rate: US$300/day Budget note: 2	85 days / 1 year	• Assist in developing gender action plans for each CRPs Inputs: GEF financing resources + support of TWG for Component 1 Outputs: three gender action plans, representing one for each CRP.
Human Resources Specialist Rate: US$300/day Budget note: 3	20 days / 1 year	• Evaluate candidates for the coastal county working groups • Approach candidates for the coastal county working groups Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) evaluation report of candidates for coastal working groups; and ii) establishment of coastal county working groups.
Sea and River Defence Management Specialist Rate: US$300/day Budget note: 2	20 days / 1 year	• Assist in developing awareness-raising knowledge products Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) awareness-raising knowledge products related to climate change and sea and river defence management (SRDM).
Outcome 2		
Climate Information Services Analyst Rate: US$300/day	20 days / 1 year	• Undertake needs assessment of gaps in the Liberia CIS project Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) report of county-level needs gaps in the Liberia CIS project.

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Budget note: 9		
Early Warning Systems Expert Rate: US$300/day Budget note: 9	60 days / 1 year	• Design training programme on climate change and early-warning systems (EWS) to LMS staff • Deliver training on EWS to information services and end users Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) training programme on EWS; and ii) report on training delivered
Data Collection Specialist Rate: US$300/day Budget note: 9	50 days / 1 year	• Collect data on SRDM lessons learned including information generated from the project, in Liberia as a whole and in other countries Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) report on local, national and international lessons learned on SRDM
Coastal Adaptation Specialist Rate: US$300/day Budget note: 9	190 days / 2 years	The national consultant will support the international consultant on: • Development of Coastal adaptation Plans (CAPs) for all coastal districts in Sinoe County (Activity 2.3.2). • Collecting district-specific information to inform Guidance Manuals (Activity 2.4.1) • Drafting district-specific Guidance Manuals (Activity 2.4.2) Additional responsibilities include: • Performing a baseline study of coastal communities and their adaptation needs (Activity 2.3.1) • Designing a training workshop programme on implementation of CAPs (Activity 2.3.5) • Delivering a training workshop on implementing CAPs (Activity 2.3.5) Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) report on baseline of coastal communities and their adaptation needs; ii) six CAPs; iii) training workshop programme on the implementation of CAPs; iv) report on training workshop delivered; v) report on district-specific information collected for all 30 districts; and vi) 30 district-specific Guidance Manuals
Community Monitoring Expert Rate: US$300/day Budget note: 9	20 days / 1 year	The national consultant will support the international consultant on: • Designing a framework for participatory community monitoring of ecosystems and their services Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) participatory community monitoring framework
Outcome 3		
Climate Change and Coastal Adaptation Specialist	105 days / 1 year	The national consultant will support the international consultant on: • Performing a mapping exercise of the vulnerable assets, livelihoods and ecosystems in Sinoe County • Performing a multi-criteria analysis (MCA) to select site-specific, viable nature-based and engineered adaptation solutions

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Rate: US$300/day Budget note: 17		• Delivering recommendations of adaptation solutions during the validation workshop Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) climate vulnerability map of vulnerable assets, livelihoods and ecosystems in Sinoe County; ii) report on site-specific, viable nature-based and engineered adaptation solutions; iii) report on recommendations on adaptation solutions; and iv) report on validation workshop.
Livelihood specialist Rate: US$300/day Budget note: 17	40 days / 1 year	• Assist the international consultant with conducting the ESIA • Develop the Environment and Social Management Plan (ESMP), Livelihood Action Plan (Lap) and Grievance Redress Mechanism (GRM) Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) ESIA report; ii) project ESMP; iii) LAP; iv) GRM framework
Community-based Monitoring Systems Specialist Rate US$300/day Budget note: 17	50 days / 1 year	The national consultant will support the international consultant on: • Designing training programme on community-based monitoring systems • Implementing training on community-based monitoring systems Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) training programme on community-based monitoring systems; and ii) report of training on community-based monitoring systems
Project Evaluation Specialist Rate: US$300/day Budget note: 28	40 days / 2 years	The national consultant will support the international consultant on: • Conducting the project mid-term review (MTR) • Conducting the project terminal evaluation (TE) Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) MTR report; and ii) TE report
Outcome 4		
National gender expert Budget note: 33	10 days / 1 years	• Assist in analysing gender-related information as part of the business training needs assessment • Provide recommendations for ensuring that the business training is gender-responsive and address gender-specific needs Inputs: GEF financing resources + support of TWG for Component 4 Outputs: report on assessed business training needs and recommendations
Business Identification, Development and Management Specialist Rate: US$300/day Budget note: 33	90 days / 1 year	The national consultant will support the international consultant on: • Designing training programme on business identification, development and management • Conducting trainings on business identification, development and management Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) training programme on business identification, development and management; and ii) report on training conducted

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Livelihood and Value Chain Specialist Rate: US$300/day Budget note: 33	60 days / 1 year	The national consultant will assist the international consultant on: • Developing standards and codes of conduct for identified livelihoods Additional responsibilities include: • Conduct a site-specific needs and costs assessment of equipment requirements for the identified livelihoods • Identify priority communities and champion households to receive equipment Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) report on needs and cost assessment of equipment requirements for identified livelihoods; ii) report on identified communities and champion households to receive equipment; and iii) standards and codes of conduct for identified livelihoods
Inclusive Finance Specialist Rate: US$300/day Budget note: 33	90 days / 1 year	• Undertake market studies of the target communities • Assist in the development of climate-resilient financial products Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) two market studies on the target communities; and ii) report and description of the recommended climate-resilient financial products.
International / Regional and global contracting		
Outcome 1		
Gender expert Rate: US$700/day Budget note: 1	10 days / 1 years	• Deliver specialised gender-responsiveness training to the PMU, including to the Gender Officer Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) training workshop on gender responsiveness
Coastal Specialist Rate: US$700/day Budget note: 1	160 days / 2 years	• Develop nine integrated coastal zone management plans (ICZMP) • Update nine ICZMP them three years after the development of the plans. Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) ICZMPs; and ii) updates ICZMPs
Sea and River Defence Investment Management Specialist Rate: US$700/day	80 days / 1 year	• Develop a Sea and River Defence Investment Management Plan (SRDIMP) Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) a SRDIMP.

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Budget note: 1		
Coastal Development Planning Specialist Rate: US$700/day Budget note: 1	50 days / 1 year	• Design technical training on climate change risks, coastal adaptation, sea and river defence management and ICZM principles • Host technical training on climate change risks, coastal adaptation, sea and river defence management and ICZM principles Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) technical training programme on climate change risks, coastal adaptation, sea and river defence management and ICZM principles; and ii) two reports on training conducted for national and county-level planners and decision-makers.
Climate Change and ICZM Expert Rate: US$700/day Budget note: 1	30 days / 1 year	• Develop training of trainers programme based on information generated from the ICZM plans, CAPs and feasibility study • Deliver training for working groups Inputs: GEF financing resources + support of TWG for Component 1 Outputs: i) training of trainers programme; and ii) report on training conducted for working groups
Outcome 2		
Climate Change Adaptation and Risk Management Specialist Rate: US$700/day Budget note: 8	30 days / 1 year	• Provide recommendations on the development of appropriate decision-making support tools on adaptation options and risk management Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) report on recommendations on the development of decision-making support tools for county and district level planners and private sector actors
Climate Change Adaptation Specialist Rate: US$700/day Budget note: 8	210 days / 1 year	• Develop CAPs for all coastal districts in Sinoe County • Collect district-specific information to inform Guidance Manuals • Drafting district-specific Guidance Manuals Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) six CAPS; ii) report on district-specific information collected for all 30 districts; and iii) 30 district-specific Guidance Manuals
Community Monitoring Expert Rate: US$700/day Budget note: 8	40 days / 1 year	• Designing a framework for participatory community monitoring of ecosystems and their services Inputs: GEF financing resources + support of TWG for Component 2 Outputs: i) participatory community monitoring framework
Outcome 3		
Climate Change and Coastal Adaptation	180 days / 1 year	• Perform a mapping exercise of the vulnerable assets, livelihoods and ecosystems in Sinoe County • Perform a multi-criteria analysis (MCA) to select site-specific, viable nature-based and engineered adaptation solutions

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Specialist Rate: US$700/day Budget note: 16		• Deliver recommendations of adaptation solutions during the validation workshop Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) climate vulnerability map of vulnerable assets, livelihoods and ecosystems in Sinoe County; ii) report on site-specific, viable nature-based and engineered adaptation solutions; iii) report on recommendations on adaptation solutions; and iv) report on validation workshop.
Social and Environmental Safeguard Specialist Rate: US$700/day Budget note: 16	60 days / 1 year	• Conduct the project SESA • Conduct the project ESIA • Develop the Environment and Social Management Plan (ESMP), Livelihood Action Plan (Lap) and Grievance Redress Mechanism (GRM) Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) SESA report; ii) ESIA report; iii) project ESMP; iv) LAP; v) GRM
Engineering Expert Rate: US$700/day Budget note: 16	100 days / 3 years	• Appraise construction works of revetment and groynes Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) appraisal report of revetment and groynes construction in years two, three, four and five, respectively.
Community-based Monitoring Systems Expert Rate: US$700/day Budget note: 16	70 days / 1 year	• Design training programme on community-based monitoring systems • Implement training on community-based monitoring systems Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) training programme on community-based monitoring systems; and ii) report of training on community-based monitoring systems
Project Evaluation Expert Rate: US$700/day Budget note: 27	80 days / 2 years	• Conduct the project mid-term review (MTR) • Conduct the project terminal evaluation (TE) Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) MTR report; and ii) TE report
Data Collection Specialist Rate: US$700/day Budget note: 16	20 days / 1 year	• Develop report on technical methodologies for collecting best practices Inputs: GEF financing resources + support of TWG for Component 3 Outputs: i) report on technical methodologies for collecting best practices Activity 3.3.1 International data collection specialist to develop report technical methodologies for collection best practices.
Coastal Adaptation Best Practices Specialist	20 days / 1 year	• Validate best practices and provide recommendations Inputs: GEF financing resources + support of TWG for Component 3

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Rate: US$700/day Budget note: 16		Outputs: i) report on best practice recommendations
Outcome 4		
Business Identification, Development and Management Expert Rate: US$700/day Budget note: 32	130 days / 1 year	• Design training programme on business identification, development and management • Conduct trainings on business identification, development and management Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) training programme on business identification, development and management; and ii) report on training conducted
Climate-resilient Business Development Expert Rate: US$700/day Budget note: 32	60 days / 1 year	• Develop training curricula for communities on sustainable fisheries, IFS, CSEBs and their values chains Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) training curricula on sustainable fisheries, IFS, CSEBs and their value chains
Livelihood and Value Chain Specialist Rate: US$700/day Budget note: 32	40 days / 1 year	• Developing standards and codes of conduct for identified livelihoods Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) standards and codes of conduct for identified livelihoods
Inclusive Finance Specialist Rate: US$700/day Budget note: 32	70 days / 2 years	• Assist in designing training on climate risk management financing for representatives of financial institutions • Design sector-wide guidelines for financial institutions to integrate climate change risks and vulnerability assessments in decision making Inputs: GEF financing resources + support of TWG for Component 4 Outputs: i) training programme on climate risk management financing; and iii) guidelines on integrating climate change risks and vulnerability assessments in decision-making

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Annex 9: Stakeholder Engagement Plan

Please see attached as a separate annex

Annex 10: Environmental Social Management Framework (ESMF) and other SES frameworks/plans if required

Please see attached as a separate annex

Annex 11: Gender Analysis and Gender Action Plan

Please see attached as a separate annex

Annex 12: Procurement Plan

Please see attached as a separate annex

Annex 13: GEF focal area specific annexes (e.g. METT, GHG calculations, target landscape profile, feasibility study, other technical reports)

Please see attached as a separate annexes

Annex 14: Additional agreements: such as cost sharing agreements, project cooperation agreements signed with NGOs (where the NGO is designated as the "executing entity"), letters of financial commitments etc..

Please see attached as a separate annexes

Annex 15: GEF Core indicators

A separate Excel LDCF Core Indicator sheet is also included

Table 13. Core indicators for the LDCF and the SCCF (2018-2022)

Climate Change Adaptation Strategy Objective		**Corresponding Core indicator**	**Sex-disaggregated?**
1	*Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation*	**Number of direct beneficiaries**[280] Total: 570,969 (288,951 males; 282,018 females) 7,487 (3,827 males, 3,660 females) people protected through hybrid adaptation measures in Sinoe County consisting of: • Downtown-Mississippi – 2,939 (1,528 males, 1,411 females) • Sebeh – 2,925 (1,446 males, 1478 females) • Nanakru – 936 (475 males, 461 females)	**Yes**

[280] This is a GCF Board-approved indicator.

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		• Pungbor – 173 (97 males, 76 females) • Tournata – 87 (49 males, 38 females) • Bafu Bay – 428 (232 males, 196 females) 560,362 (277,110 males; 283,252 females) with improved access to improved climate information systems Individuals receiving improved access to climate risk early warning information: 560,362 (283,252 males, 277,110 females)	
2		**Area of land under climate-resilient management (ha)** 830 ha in total, including: 204 ha of agricultural land through climate-resilient IFS. 264 ha of urban landscape, including: • 192 ha in Downtown-Mississippi • 72 ha in Sebeh 362 ha of rural landscape, including: • 38 ha in Nanakru • 7 ha in Pungbor • 17 ha in Bafu Bay • 300 ha in Tournata	**n/a**
3	*Mainstream climate change adaptation and resilience for systemic impact*	**Number of policies, plans or development frameworks that mainstream climate resilience** 19, including: • 9 Integrated Coastal Management plans • 1 Sea and River Defence Investment Management Plan • 3 County Resilience Plans • 6 Community Action Plans	**n/a**
4	*Foster enabling conditions for effective and integrated climate change adaptation*	**Number of people with enhanced capacity to identify climate risk and/or engage in adaptation measures** Total: 13,590 (4,499 males; 9,091 females), including: 500 (245 males; 255 females) National, county and district level line ministry officials receiving capacity training for incorporating coastal management into development plans: 500 (245 males; 255 females)	**Yes**

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		400 (196 males; 204 females) community association members receiving training in the implementation of CAPs and community-based monitoring 600 (294 males; 306 females) extension officers trained as working group representatives to deliver climate change awareness raising, delivering business training or as VSLA champions 450 (220 males; 230 females) for hydrometeorological observers, forecasters and climatological technicians on the updated EWS system. 11,640 (3,544 males; 8,096 females) small business holders and entrepreneurs on business management and climate-resilient livelihoods.	

2) META INFORMATION

To be entered at PIF stage. No subsequent re-entry needed unless changes are made

Table 14. Required meta-data for LDCF and SCCF project submissions

LDCF √ SCCF Challenge Window ☐ SCCF Incentive for adaptation/resilience mainstreaming ☐

This project involves at least one SIDS[281] ☐

This project involves at least one fragile state √

This is a multi-trust fund project ☐

A gender analysis will be undertaken for this project √

This project will provide direct adaptation benefits to the private sector √

This project is exclusively related to the formulation and/or implementation of a NAP[282] ☐

This project has an urban focus ☐

This project covers the following sector(s):

Food and agriculture	☐	20 %
Natural resources management	☐	10%
Coastal zone management	☐	40%
Water resources management	☐	%
Disaster risk management	☐	30%
Other infrastructure	☐	%
Health	☐	%
Other	☐	% *Please specify* ☐

This project targets the following climate change exacerbated/introduced challenges:

[281] Small Island Developing State.

[282] National Adaptation Plan.

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Sea level rise ∨	Change in mean temperature ☐	Natural hazards ∨	Land degradation ☐	
Coastal and/or coral reef degradation ∨	Groundwater quality/quantity ☐			

3) INDICATOR FRAMEWORK

To be submitted at CEO Endorsement[283], Mid-Term and Terminal Evaluation stages

OBJECTIVE 1: REDUCE VULNERABILITY AND INCREASE RESILIENCE THROUGH INNOVATION AND TECHNOLOGY TRANSFER FOR CLIMATE CHANGE ADAPTATION

Outcome 1.1 Technologies and innovative solutions piloted or deployed to reduce climate-related risks and/or enhance resilience

Output 1.1.1 **Physical assets or infrastructure made more resilient to climate variability and change**

Choose as relevant	*Enter number*		
Km of road			
Ha of agricultural land			**Core Indicator 2**
No. of irrigation/water structures (e.g., tanks/ponds)			
No. of public buildings			
No. of Fishery or aquaculture ponds			
No. of ports			
Km of riverbank protection		Briefly describe:	
Km of coastal protection	13	Briefly describe:	Coastal protection through hybrid interventions including restoration of ecosystems and engineered revetments and groynes
Km of stormwater drainage			
Ha of surface permeability and green space			
Other		Briefly describe, with measurement unit	

No. of direct beneficiaries*	M	3,827	F	3,660	Total	7,487	**Core Indicator 1**
No. of indirect beneficiaries	M		F		Total		

*Please only put numbers for direct beneficiaries[284] of the climate-resilient physical assets.

Output 1.1.2 **Livelihoods and sources of income of vulnerable populations diversified and/or strengthened**

Choose as relevant	*Enter activity description*
∨ Agriculture	Integrated farming systems
☐ Pastoralism / dairy	

[283] For CEO Endorsements for which the first-time submission is occurring in GEF-7.

[284] Guidance on direct beneficiaries to be provided.

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√ Fisheries/aquaculture	Through IFS and improved fisheries equipment and practices
☐ No. of public buildings	
☐ Cottage industry	
☐ Beekeeping	
√ Agro-processing	Through improved and more sustainable value chains and processes
√ Enhanced access to markets	Livelihood diversification and creation of value-chain opportunities
☐ Tourism or ecotourism	
☐ Reduced supply chain disruption	
☐ Enhanced access to employment	
☐ Other	

No. of direct beneficiaries*	M	1,294	F	1,346	Total	2,640	**Core Indicator 1**
No. of indirect beneficiaries	M	448,290	F	298,860	Total	747,150	

Note: At MTR and TE stages, please discuss how beneficiaries' incomes (and other aspects of socio-economic wellbeing contributing to enhanced resilience) improved as a result of the above interventions.

Output 1.1.3 **Vulnerability to climatic hazards is reduced through new or improved early warning systems (EWS) or climate information systems**

This project expands access to EWS √ If ticked, select hazard(s) as relevant, below.

Flood √ Severe storm √ Extreme temperature ☐ Other ☐ describe

No. of people reached by EWS, i.e., No. of direct beneficiaries	M	277,110	F	283,252	Total	560,362	**Core Indicator 1**

This project expands access to products and services providing climate information in climate-sensitive sectors √ If ticked, select as relevant, below.

Temperature √ Rainfall √ Drought ☐ Crop pest or disease ☐ Human disease vectors ☐

Other ☐ if Other, please describe

No. of people receiving access to climate information	M	277,110	F	283,252	Total	560,362	**Core Indicator 1**

How is the climate information being conveyed to users?

Mobile phone apps √ Community radio √ Extension services ☐ Television ☐

Leaflets √ Other ☐

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Output 1.1.4 **Vulnerability ecosystems and natural resource assets strengthened in response to climate change impacts**				
Type of natural ecosystem	Coastal and forest	No., unit	260	hectares

Outcome 1.2 Innovative financial instruments and investment models enabled or introduced to enhance climate resilience		
Output 1.2.1 **Innovation incubators and/or accelerators introduced or strengthened**		
If applicable, please select ☐ *How many adaptation technologies were introduced?*	3	
No. of entrepreneurs supported	480	

Please describe in the box below (i) how the incubator/accelerator fosters innovation, and (ii) its potential to enhance climate resilience.

Compressed stabilised earth blocks (CSEBs): technologies for the construction of CSEBs (including brick presses) replace existing brick making techniques that are more expensive, use more cement and cause beach degradation through higher beach sand demands. This technique assists in increasing coastal resilience to climate change by reducing beach degradation and providing cheaper brick construction alternatives.

Integrated Farming Systems (IFS): Compared with subsistence farming of monoculture crops, IFS increases the efficiency of farmlands by allowing multiple crops or livestock to be farmed together that are additionally designed to support each other. This increases income security by reducing dependence on one income stream, while climate-resilient techniques such as the construction of dykes make the system less vulnerable to climate change hazards.

Fisheries boat motors and preservation technologies: Boat motors combined with life jackets increase the safety of traditional canoe boats to increasingly hazardous ocean storms, while fish preservation technologies such as fish drying and cold storage units reduce fish losses, thereby making the sector more sustainable and increase income security.

Output 1.2.2 **Financial instruments to enhance climate resilience developed**

PPP models ☐ *Cooperatives* ☐ *Microfinance* √ *Risk insurance* ☐ *Other* ☐

If Other, please describe:

OBJECTIVE 2: MAINSTREAMING CLIMATE CHANGE ADAPTATION AND RESILIENCE FOR SYSTEMIC IMPACT

Outcome 2.1 Strengthened cross-sectoral mechanisms to mainstream climate adaptation and resilience

Output 2.1.1 **Development/sector policies and plans integrate adaptation considerations**

Total number of policies/plans that will mainstream climate resilience	19	**Core Indicator 3**

Enter number and name(s) of plans/policies supported in each relevant category[285] *:*

Regional

[285] Some of the policy/plans may be unknown at CEO Endorsement Request stage.

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National		
Sub-national	13	County Resilience Plans, ICZM plans, Sea and River Defence Investment Management plan
Local	6	Community Action Plans
Sectoral[286]		

Did the plan/policy result in adjustments to laws or legal frameworks, or in regulatory reform?
Y ☐ N ✓ *if yes, please discuss:*

OBJECTIVE 3: FOSTER ENABLING CONDITIONS FOR EFFECTIVE AND INTEGRATED CLIMATE CHANGE ADAPTATION							
Outcome 3.2 Institutional and human capacities strengthened to identify and implement adaptation measures							
Output 3.2.1 **Number of people trained or made aware of climate change impacts and appropriate adaptation responses**							
No. of institutions							
No. of Farmer Association, Water User Associations, or other community groups							
No. of people at line ministries	M	245	F	255	Total	500	
Community members	M	196	F	204	Total	400	
No. of extension service officers	M	294	F	306	Total	600	
No. of hydromet and disaster risk management agency staff	M	220	F	230	Total	450	
No. of small business owners	M	3,544	F	8,096	Total	11,640	
No. of schoolchildren, university students or teachers	M		F		Total		
Other (specify)							
Total no. of people trained[287]	M	4,499	F	9.091	**Total**	13,590	**Core Indicator 4**

[286] Overlap is likely across the Sectoral and other categories.
[287] This figure does not contribute to Core Indicator 1 (no. of direct beneficiaries).

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Annex 16: GEF 7 Taxonomy

Level 1	Level 2	Level 3	Level 4
☒Influencing models			
	☒Transform policy and regulatory environments		
	☒Strengthen institutional capacity and decision-making		
	☐Convene multi-stakeholder alliances		
	☐Demonstrate innovative approaches		
	☒Deploy innovative financial instruments		
☒**Stakeholders**			
	☐Indigenous Peoples		
	☒**Private Sector**		
		☐Capital providers	
		☒Financial intermediaries and market facilitators	
		☐Large corporations	
		☒SMEs	
		☒Individuals/Entrepreneurs	
		☐Non-Grant Pilot	
		☐Project Reflow	
	☒**Beneficiaries**		
	☒Local Communities		
	☐**Civil Society**		
		☐Community Based Organization	
		☐Non-Governmental Organization	
		☐Academia	
		☐Trade Unions and Workers Unions	
	☒Type of Engagement		
		☒Information Dissemination	
		☐Partnership	
		☒Consultation	
		☒Participation	
	☒**Communications**		

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		Awareness Raising	
		☐ Education	
		☐ Public Campaigns	
		☐ Behavior Change	
☒ Capacity, Knowledge and Research			
	☐ Enabling Activities		
	☐ Capacity Development		
	☒ Knowledge Generation and Exchange		
	☐ Targeted Research		
	☐ **Learning**		
		☐ Theory of Change	
		☐ Adaptive Management	
		☐ Indicators to Measure Change	
	☐ **Innovation**		
	☒ Knowledge and Learning		
		☒ Knowledge Management	
		☐ Innovation	
		☒ Capacity Development	
		☐ Learning	
	☐ Stakeholder Engagement Plan		
☒ **Gender Equality**			
	☒ Gender Mainstreaming		
		☒ Beneficiaries	
		☐ Women groups	
		☐ Sex-disaggregated indicators	
		☐ Gender-sensitive indicators	
	☒ Gender results areas		
		☐ Access and control over natural resources	
		☐ Participation and leadership	
		☒ Access to benefits and services	
		☒ Capacity development	
		☐ Awareness raising	
		☐ Knowledge generation	
☒ Focal Areas/Theme			

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	Integrated Programs		
		☐ Commodity Supply Chains (Good Growth Partnership)	
			☐ Sustainable Commodities Production
			☐ Deforestation-free Sourcing
			☐ Financial Screening Tools
			☐ High Conservation Value Forests
			☐ High Carbon Stocks Forests
			☐ Soybean Supply Chain
			☐ Oil Palm Supply Chain
			☐ Beef Supply Chain
			☐ Smallholder Farmers
			☐ Adaptive Management
		☐ Food Security in Sub-Sahara Africa	
			☐ Resilience (climate and shocks)
			☐ Sustainable Production Systems
			☐ Agroecosystems
			☐ Land and Soil Health
			☐ Diversified Farming
			☐ Integrated Land and Water Management
			☐ Smallholder Farming
			☐ Small and Medium Enterprises
			☐ Crop Genetic Diversity
			☐ Food Value Chains
			☐ Gender Dimensions
			☐ Multi-stakeholder Platforms
		☐ Food Systems, Land Use and Restoration	
			☐ Sustainable Food Systems
			☐ Landscape Restoration
			☐ Sustainable Commodity Production
			☐ Comprehensive Land Use Planning
			☐ Integrated Landscapes

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			Food Value Chains
			☐ Deforestation-free Sourcing
			☐ Smallholder Farmers
		☐ Sustainable Cities	
			☐ Integrated urban planning
			☐ Urban sustainability framework
			☐ Transport and Mobility
			☐ Buildings
			☐ Municipal waste management
			☐ Green space
			☐ Urban Biodiversity
			☐ Urban Food Systems
			☐ Energy efficiency
			☐ Municipal Financing
			☐ Global Platform for Sustainable Cities
			☐ Urban Resilience
	☐ **Biodiversity**		
		☐ Protected Areas and Landscapes	
			☐ Terrestrial Protected Areas
			☐ Coastal and Marine Protected Areas
			☐ Productive Landscapes
			☐ Productive Seascapes
			☐ Community Based Natural Resource Management
		☐ Mainstreaming	
			☐ Extractive Industries (oil, gas, mining)
			☐ Forestry (Including HCVF and REDD+)
			☐ Tourism
			☐ Agriculture & agrobiodiversity
			☐ Fisheries
			☐ Infrastructure
			☐ Certification (National Standards)

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			Certification (International Standards)
		☐ Species	
			☐ Illegal Wildlife Trade
			☐ Threatened Species
			☐ Wildlife for Sustainable Development
			☐ Crop Wild Relatives
			☐ Plant Genetic Resources
			☐ Animal Genetic Resources
			☐ Livestock Wild Relatives
			☐ Invasive Alien Species (IAS)
		☐ Biomes	
			☐ Mangroves
			☐ Coral Reefs
			☐ Sea Grasses
			☐ Wetlands
			☐ Rivers
			☐ Lakes
			☐ Tropical Rain Forests
			☐ Tropical Dry Forests
			☐ Temperate Forests
			☐ Grasslands
			☐ Paramo
			☐ Desert
		☐ Financial and Accounting	
			☐ Payment for Ecosystem Services
			☐ Natural Capital Assessment and Accounting
			☐ Conservation Trust Funds
			☐ Conservation Finance
		☐ Supplementary Protocol to the CBD	
			☐ Biosafety
			☐ Access to Genetic Resources Benefit Sharing

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	Forests		
		☐ Forest and Landscape Restoration	
			☐ REDD/REDD+
		☐ Forest	
			☐ Amazon
			☐ Congo
			☐ Drylands
	☐ **Land Degradation**		
		☐ Sustainable Land Management	
			☐ Restoration and Rehabilitation of Degraded Lands
			☐ Ecosystem Approach
			☐ Integrated and Cross-sectoral approach
			☐ Community-Based NRM
			☐ Sustainable Livelihoods
			☐ Income Generating Activities
			☐ Sustainable Agriculture
			☐ Sustainable Pasture Management
			☐ Sustainable Forest/Woodland Management
			☐ Improved Soil and Water Management Techniques
			☐ Sustainable Fire Management
			☐ Drought Mitigation/Early Warning
		☐ Land Degradation Neutrality	
			☐ Land Productivity
			☐ Land Cover and Land cover change
			☐ Carbon stocks above or below ground
		☐ Food Security	
	☐ International Waters		
		☐ Ship	
		☐ Coastal	
		☐ Freshwater	
			☐ Aquifer

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			River Basin
			☐ Lake Basin
		☐ Learning	
		☐ Fisheries	
		☐ Persistent toxic substances	
		☐ SIDS : Small Island Dev States	
		☐ Targeted Research	
		☐ Pollution	
			☐ Persistent toxic substances
			☐ Plastics
			☐ Nutrient pollution from all sectors except wastewater
			☐ Nutrient pollution from Wastewater
		☐ Transboundary Diagnostic Analysis and Strategic Action Plan preparation	
		☐ Strategic Action Plan Implementation	
		☐ Areas Beyond National Jurisdiction	
		☐ Large Marine Ecosystems	
		☐ Private Sector	
		☐ Aquaculture	
		☐ Marine Protected Area	
		☐ Biomes	
			☐ Mangrove
			☐ Coral Reefs
			☐ Seagrasses
			☐ Polar Ecosystems
			☐ Constructed Wetlands
	☐ Chemicals and Waste		
		☐ Mercury	
		☐ Artisanal and Scale Gold Mining	
		☐ Coal Fired Power Plants	
		☐ Coal Fired Industrial Boilers	
		☐ Cement	

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		Non-Ferrous Metals Production	
		☐ Ozone	
		☐ Persistent Organic Pollutants	
		☐ Unintentional Persistent Organic Pollutants	
		☐ Sound Management of chemicals and Waste	
		☐ Waste Management	
			☐ Hazardous Waste Management
			☐ Industrial Waste
			☐ e-Waste
		☐ Emissions	
		☐ Disposal	
		☐ New Persistent Organic Pollutants	
		☐ Polychlorinated Biphenyls	
		☐ Plastics	
		☐ Eco-Efficiency	
		☐ Pesticides	
		☐ DDT - Vector Management	
		☐ DDT - Other	
		☐ Industrial Emissions	
		☐ Open Burning	
		☐ Best Available Technology / Best Environmental Practices	
		☐ Green Chemistry	
	☒ **Climate Change**		
		☒ Climate Change Adaptation	
			☐ Climate Finance
			☒ Least Developed Countries
			☐ Small Island Developing States
			☒ Disaster Risk Management
			☒ Sea-level rise
			☒ Climate Resilience
			☒ Climate information
			☒ Ecosystem-based Adaptation

			Adaptation Tech Transfer
			☐ National Adaptation Programme of Action
			☐ National Adaptation Plan
			☐ Mainstreaming Adaptation
			☒ Private Sector
			☐ Innovation
			☐ Complementarity
			☐ Community-based Adaptation
			☒ Livelihoods
		☐ Climate Change Mitigation	
			☐ Agriculture, Forestry, and other Land Use
			☐ Energy Efficiency
			☐ Sustainable Urban Systems and Transport
			☐ Technology Transfer
			☐ Renewable Energy
			☐ Financing
			☐ Enabling Activities
		☐ Technology Transfer	
			☐ Poznan Strategic Programme on Technology Transfer
			☐ Climate Technology Centre & Network (CTCN)
			☐ Endogenous technology
			☐ Technology Needs Assessment
			☐ Adaptation Tech Transfer
		☐ United Nations Framework on Climate Change	☐ Nationally Determined Contribution
	☒ Rio Markers		
		☐ Paris Agreement	
		☒ Sustainable Development Goals	
		☒ Climate Change Mitigation 0	
		☐ Climate Change Mitigation 1	
		☐ Climate Change Mitigation 2	

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		Climate Change Adaptation 0	
		☐ Climate Change Adaptation 1	
		☒ Climate Change Adaptation 2	

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