ADAPTATION FUND

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT INFORMATION

Title of Project/Programme:	Replicating Resilient Water Supply Systems Project in St. Lucia (Re-Water St. Lucia)
Country:	Saint Lucia
Thematic Focal Area:	Water Management
Type of Implementing Entity:	Regional Implementing EntityRegional Implementing Entity
Implementing Entity: (CCCCC)	Caribbean Community Climate Change Centre
Executing Entities: (UNOPS)	United Nations Office for Project Services
Amount of Financing Requested:	10 million (in U.S Dollars Equivalent)

Project Formulation Grant Request (available to NIEs only): Yes ☐ No ☒

Amount of Requested financing for PFG: (in U.S Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

NOTE: LOEs should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☐ This concept has been submitted before

☒ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

Please note that concept note documents should not exceed 50 pages, Including annexes.

Project/Programme Background and Context:

Environment Context

Saint Lucia is a Small Island Developing State located in the Lesser Antilles in the Eastern Caribbean. As a tropical island, the climate is predominantly warm and wet. Saint Lucia is of volcanic origin with mountainous topography featuring steep slopes and limited coastline areas. The steep terrain highlights the rivers which flow from the central range into the Caribbean Sea and the Atlantic Ocean. These fast-flowing rivers are significant to the island's ecology and its freshwater resources. The island's mountainous terrain is one of its most distinguishing features with its highest point, Mount Gimie, at 3,117 feet. The country has a total land area of approximately 616 km^2 (238 square miles) with a tropical maritime climate and is located within the Atlantic hurricane belt. Saint Lucia's weather is characterized by a rainy season from May to August and a dry season from January to April. In addition to this, the island has an annual mean temperature of 25.6 ^oC and an annual mean rainfall of 2,330 mm[1].

Saint Lucia faces a multitude of hazards due to its composition and geographical location, as highlighted in a USAID study. These hazards encompass earthquakes, hurricanes, tsunamis, landslides, volcanic activity, flooding, and drought. Moreover, being situated within the Atlantic hurricane belt makes it susceptible to severe meteorological events. Recent research indicates a noticeable surge in the intensity and frequency of high rainfall events, tropical disturbances, and hurricanes[2]. These environmental challenges, coupled with shifting global climatic patterns, emphasize the pressing need for focused attention on disaster preparedness, infrastructure resilience, and community awareness on the island.

Economic and Social Context

Saint Lucia, classified as a middle-income country with a small, open economy, heavily relies on tourism, banana production, and manufacturing. Tourism accounts for about 65% of its GDP. Despite economic challenges, such as a 24.4% GDP contraction in 2020 due to COVID-19, the nation displayed resilience with a 12.2% GDP growth in 2021. However, Saint Lucia faces significant exposure to climate change impacts, given its small size, location in a disaster-prone region, and reliance on climate-sensitive sectors. Failure to adapt to climate change could result in substantial economic losses.

The population of 179,857 is mostly of African descent, with minority East Indian and European populations. With a high Human Development Index of 0.72 (2020), Saint Lucia boasts high life expectancy, education, and per capita income levels. However, poverty remains a concern, with a 25% poverty rate over the past thirty years, especially among children, youth, and female-headed households.

The water sector's accessibility and reliability are crucial for low-income households, particularly given the island's vulnerability to climate-induced events. Inconsistent water access affects health, agriculture, food security, and gender disparities. As was quoted by WASCO's Operations Manager (Senior) in 2016, Hurricane Tomas 2010 as well as torrential rains in succeeding years and destructive human activity all significantly contributed to the unreliable water supply of communities such as Micoud. Currently installed treatment equipment was and continues to be unable to withstand the increased amount of turbidity caused by these factors, thus resulting in constant shutdowns and unavailability of water. The 2016 poverty assessment further highlighted the reliability of a frequent water supply in rural areas as compared to urban areas, with Micoud households having the lowest recorded full-week water supply rate (19%). According to the most recent poverty assessment of Saint Lucia, Micoud population size stands at 16,284, with the highest concentration of indigence at 27.4% and the second highest concentration of the non-indigent poor

[1] USAID. 2021. Saint Lucia Resilience Profile.
[2] Government of Saint Lucia. 2020. Medium Term Development Strategy 2020-2023

(15.9%).

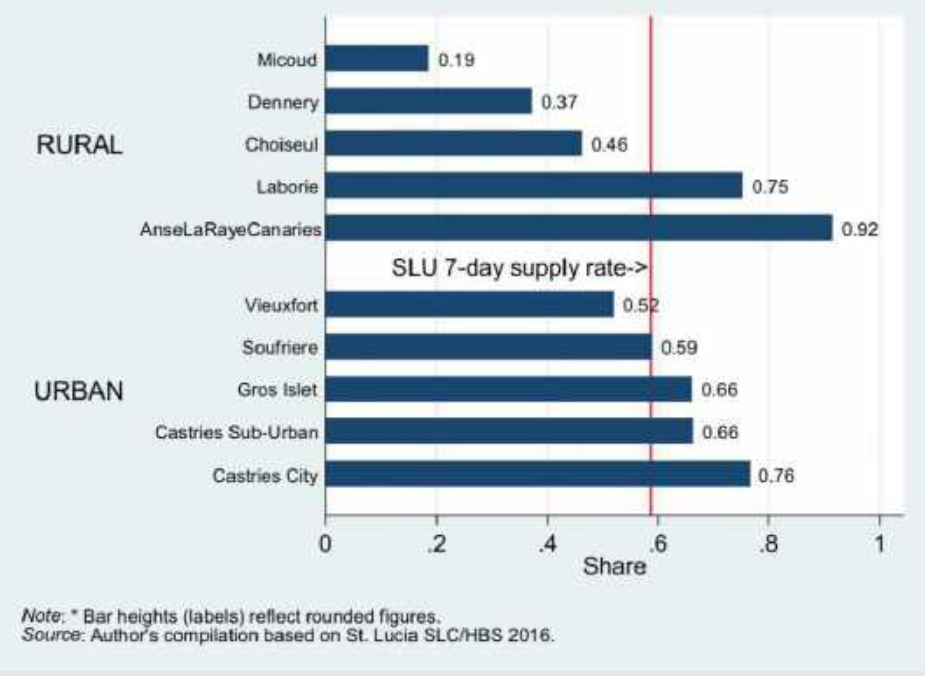


Figure 1: Seven day water availability rate, by locality and district

Access to water is shaped by socio-economic factors, location and types of use. Access to rainwater for households may be limited by socio-economic standing of persons and their ability to pay for tanks to store potable water. In rural communities, where there is no pipe-borne water, households may utilize a rudimentary system for water collection such as a metal drum and piping from their roof (Montoute, 2020, pers. comms.) Post-disaster, men, women and vulnerable groups such as the elderly would be affected differently due to their water requirements. Water shortages may affect women first due to their domestic responsibilities, particularly in rural areas. After Hurricane Tomas in 2010, water disruptions forced women and children to collect water for washing and bathing from the upper parts of rivers, such as the Petite River and Grande River, near the Anse La Raye village which correlated with skin infections and rashes (Montoute and Cashman, 2015). Single female-headed households may be especially affected during these periods as women fetching water with children are less like to carry large amounts of water and are at increased security risks. Implications of lack of water during these periods can affect personal hygiene of women and use of water in agriculture (Medoza, 2019)[3]

Development Context

Saint Lucia has experienced development initiatives, such as the Saint Lucia Disaster Vulnerability Reduction Project, aimed at addressing challenges like flooding in vulnerable communities like Micoud. The island faces environmental issues like coastal erosion and habitat destruction due to anthropogenic pressures, but national efforts promote sustainable development and habitat protection.

The Government of Saint Lucia (GoSL) recognizes the challenges that climate change poses to its population, natural resources and economy, and has taken considerable measures to identify and address, to the extent possible, current and future climate risks at the policy and operational level. Today, various sectoral policies address climate change and a wide range of interventions have been designed or

[3] Report of the Gender-based Climate Resilience Analysis for Saint Lucia- Engender 2021

established as adaptation measures, often facilitated or supported by international donors.

In 2015, cognizant of the global shift towards a sustainable development agenda which emphasizes People, Planet, Prosperity, Peace and Partnership, Saint Lucia embarked on the process of crafting a new set of development pillars that embody and localize this new global policy paradigm. As a result, using the Sustainable Development Goals framework as its anchor, seven (7) strategic development pillars were systematically developed for the country to support its medium and long-term socio economic growth aspiration.

1. Building Productive Capacity and Expanding Growth Opportunities
2. Building Strong Institutions that are a platform for growth and development
3. Infrastructure, Connectivity, Energy - Key for Growth and Competitiveness
4. Adaptation for Environmental Sustainability, Climate Change & Disaster Vulnerability
5. Social Transformation, Building Social Resilience and Social Capital
6. Enhancing Labour Force through Education, Training and Workforce Development Saint Lucia's Seven National Development Pillars
7. Health and Wellness

The aligning of the development agenda to the SDGs allows for the integration of the associated targets and indicators into the monitoring and evaluation framework of the Medium Term Development Strategy 2020- 2023 (MTDS) which will assist Saint Lucia in the periodic reporting on the progress through various mediums such as the Voluntary National Review Report (VNR) process, inter alia. It will also allow for a fair comparison of Saint Lucia's development progress against the international community.[4]

In 2018, a Regional Strategic Action Plan (RSAP)5 was developed and endorsed by the Ministers responsible for water in the Caribbean region, Saint Lucia included. The RSAP mentions six main pillars on which climate resilience in the water sector in the Caribbean is built, namely, (i) water sector governance, (ii) decision support, (iii) water resources management, (iv) research, development and innovation, (v) provision of water services, and (vi) capacity building and public sensitization. In keeping with the RSAP and its strategy to mainstream climate resilience into its operations, the Government of Saint Lucia aims to launch a targeted effort to identify and mobilise funding to support the planning, development and implementation of critical short to medium term projects. As such, the Government of Saint Lucia is seeking the support of the Adaptation Fund with respect to the implementation of the proposed project.

To facilitate effective mid and long-term climate adaptation planning and to enable the integration of climate change adaptation considerations into all relevant policies and programmes and into development planning, Saint Lucia initiated its National Adaptation Plan (NAP) process in 2017. Through the NAP process, efforts to address critical climate change-related risks and development priorities will take place in an integrated and coordinated manner, utilizing existing and future synergies. The NAP process is expected to reduce existing vulnerabilities by building adaptive capacity and resilience in all sectors and at all levels of society

The Government of Saint Lucia has formulated development visions, plans, and policies to guide sustainable development, with the latest being the 2020-2023 Medium Term Development Strategy (MTDS). This strategy builds on previous plans and emphasizes six key result areas: citizen security, education, health, agriculture, infrastructure, and tourism. It also integrates cross-cutting priorities such as climate change resilience, productivity, competitiveness, and gender mainstreaming, recognizing fiscal constraints and debt limitations[6].

[4] Saint Lucia's National Adaptation Plan (NAP) 2018–2028

5 The 2020-2023 Medium Term Development Strategy, entitled "Economic Growth on the A.R.I.S.E. – Nou Tout Ansanm", is a clarion call for collective action to drive Saint Lucia's development agenda. It seeks to accentuate the interconnected nature of development planning by ensuring economic, social and environmental considerations are incorporated and mainstreamed into Saint Lucia's national planning framework.

[6] Medium Term Development Strategy 2020 - 2023 of St. Lucia

Figure 2: Graphic of Saint Lucia's key result areas' objectives

Water Sector Context

Within the MTDS, the water sector is highlighted under the climate change and disaster risk cross-cutting area as one of the critical systems severely impacted by climate change and climate variability. The strategy lays out key challenges faced by the water sector such as aged and damaged infrastructure, increased population and settlement expansion, poor wastewater management, and- most relevant to this concept note- the adverse impacts of natural events such as hurricanes and droughts.

Further, the Saint Lucia National Adaptation Plan (NAP) 2018-2028, pinpoints the water sector as the first of eight priority areas (water, agriculture, fisheries, infrastructure and spatial planning, natural resource management, education, and health- ranked in that order) for adaptation action. These areas were chosen and prioritized through an extensive process of stakeholder consultations, literature reviews, and planning sessions. Within the NAP, 70 adaptation measures were stipulated for the water sector across 4 outcome areas (see below). The measures proposed aim to protect freshwater resources, ensure needed water supply, and protect lives, health, and property.

- Outcome 1: Enhanced enabling environment and improved behaviour for water-related climate adaptation action
- Outcome 2: Increased water access, availability and quality
- Outcome 3: Increased water efficiency and conservation
- Outcome 4: Strengthened preparedness to climate variability and extremes

From 2018 to 2021, the Department of Sustainable Development (DSD) in Saint Lucia evaluated the National Adaptation Plan (NAP) implementation through a 3-year progress report. The key achievement during this period was the development and adoption of the Sectoral Adaptation Strategy and Action Plan for the Water Sector (Water SASAP) 2018-2028. The Water SASAP provides integrated outputs for project planning and design, supported by project concept notes aligned with its goals. It aims to guide decision-making for development and climate change adaptation in Saint Lucia's water sector, focusing on policy makers and managers.

Saint Lucia's primary adaptation goal for its water sector, as outlined in the SASAP, is to implement effective adaptation actions across all sectors and levels of society to safeguard water resources and services under a changing climate.

Four key projects were carried out based on the progress report: Vieux Fort Water Supply Development Project; Dennery North Water Supply Redevelopment Project

These projects aimed to enhance climate resilience and ensure a steady water supply through the construction of water storage facilities.

1. Supporting Water Conservation and Use of Rainwater Harvesting in Saint Lucia
2. Water Policy Update for Saint Lucia

The adaptation measures under the NAP outcomes fall under the mandates of three key water stakeholders

1. Water Resource Management Agency (WRMA)- responsible for the protection and allocation of water resources.
2. Forestry Department - oversees watershed management.
3. Water and Sewerage Company Inc. (WASCO) - the sole water utility in Saint Lucia, mandated to supply water and provide wastewater services.

WASCO, established by the Water and Sewerage Act 2008, is a private company wholly owned by the Government of Saint Lucia (GOSL). Despite its mandate, WASCO has faced numerous challenges in providing adequate water supply and sewerage services due to various constraints.

Saint Lucia depends solely on surface water to meet to its water requirements. Rainfall is both spatially and temporally distributed, with annual values ranging from 1524 mm in the northwest and south-east, to more than 3048 mm in the mountainous interior. The island's freshwater needs are supplied via an integrated network of river intakes, treatment plants, transmission pipelines and distribution systems, under the operation and control of WASCO. Approximately 73,365 customer accounts are served by the system, distributed between the northern and southern networks as well as residential, commercial and institutional customer bases. This system serves a population of 179,857 persons as well as visitors to the island through cruise and land-based tourism[7].

The island is divided into thirty-seven watersheds (Figure 1.2.1), seven of which (Marquis, Dennery, Roseau/Millet, Soufriere, Woodlands/Grace, Troumassee, Desruisseaux/ Canelles and Patience/Fond), are classified as major sources of surface water. In 1995, a new water supply system was developed to serve the northern half of the island. The nucleus of this system is the John Compton Dam and Millet Reservoir, with a total capacity of 3.182 M cubic meters. Water production is approximately 18.9 M cubic metres per year; however, according to the Saint Lucia Sectoral Adaptation Plan for Water (Water SASAP Annex 3), this figure is actually closer to 16.55 M cubic metres per year, due to water losses in the distribution system. Dry season water production island-wide is estimated to be at least 25% less than during the wet season by at least 3.182 M cubic meters. Significant investments are being made to improve the raw water transmission and treatment facilities between the Dam and the consumer bases in the north[8].

Saint Lucia's public water supply has in recent years been severely impacted by pressures of increased demand due to increasing socio-economic development, destruction of upper watersheds, increasing exploitation of the rivers and wetlands, and an inefficient, inadequate and aging water distribution network. Low river base flows experienced during the dry season and high turbidity during the rainy months, combine to significantly constrain the ability of WASCO to meet the current demand for water island wide. These challenges are outlined below:

- Deteriorating Infrastructure: One of the pivotal challenges obstructing the water sector is the state of its existing infrastructure. Many parts of the water supply and management systems have been in place for decades, leading to wear and tear that compromises their efficiency and resilience. These aged infrastructures are less able to cope with the increasing demands and stressors of a changing climate.
- Population Growth and Urban Expansion: The dynamics of population growth, coupled with rapid settlement expansion, have compounded the pressures on the water sector. As more people rely on existing water systems, the infrastructure, which is already under strain, faces heightened

[7] Saint Lucia Water Sector Adaptation Strategy and Action Plan (Water SASAP) 2018-2028.
[8] Saint Lucia Water Sector Adaptation Strategy and Action Plan (Water SASAP) 2018-2028, Annex 3

demands, leading to shortages and inefficiencies.

- Wastewater Management: Proper wastewater management is crucial to prevent waterborne diseases, maintain a clean water supply, and protect natural water bodies from pollution. Current practices, however, fall short of ensuring sustainable wastewater treatment and disposal.
- Impacts of Natural Disasters: Hurricanes can cause extensive damage to water infrastructure, disrupt services, and contaminate water sources whereas droughts, intensified by changing rainfall patterns associated with climate change, can drastically reduce water availability, affecting both households and industries.

A current assessment of water available for public water supply estimates an approximate yield of 18.9 million cubic metres per year (MCM/yr.) while net production is presently estimated at 16.55 MCM/yr. High losses ranging from 47-55% in unaccounted-for-water (UFW) reflect an aging system that is not climate resilient. WASCO has instituted an aggressive programme, including metering and a strengthened maintenance programme, aimed at reducing levels of leakage and unaccounted for water. WASCO's role is highly supported by the line ministries at the Government of Saint Lucia including the Water Resources Management Agency (WRMA). This project will be implemented in collaboration with these agencies including the St. Lucia Development Bank to ensure that impact of the project activities extend to all stakeholders.

The replacement of infrastructure and ongoing improvements to water and wastewater operations have only been possible through the mobilization of limited resources, primarily via levies, loans, and grants accessed through government channels. However, these resources remain insufficient to meet the country's growing water management needs. Notably, ongoing readiness efforts are significantly enhancing the capacity of the Water and Sewerage Company Inc. (WASCO) to address current environmental and developmental challenges. These efforts are multifaceted, focusing on infrastructure upgrades, capacity building for climate adaptation, and public education and awareness initiatives. In supporting the modernization of the treatment distribution systems with climate-resilient technologies these initiatives help WASCO manage the increased risk posed by climate change. Additionally, strengthening WASCO's ability to provide reliable and sustainable water services in the face of climate change and rising demand.

Adaptation needs and Barriers

A major aim of this project is to assist WASCO in overcoming several barriers to the provision of adequate water services identified in the Water SASAP 2018, and WASCO CRVA (2022). Included among these barriers are the following:

a. **Limited access to grant financing:** the cost of ongoing investment in resilient infrastructure and water resources management in the wake of climate change impacts has been significant. Since WASCO is a state-owned company, mobilization of financial resources has been a challenge due to fiscal vulnerability and limited fiscal space of the government in the mobilization of financing to implement its NDC. In addition, the WRMA and associated government departments are financially constrained and not able to implement the required technical solutions to support the sector.
b. **Limited institutional capacity in the water utility company to respond to climate change:** the staff is ill equipped to adequately respond to climate change impacts and this has weakened WASCO's capacity over the years. WASCO will be supported and strengthened in the implementation of this project as well as through a readiness initiative that would be a precursor to this project.
c. **Inadequate development of climate resilient water supply systems to ensure safe and reliable water supply:** WASCO does not have adequate capacity to accurately assess vulnerabilities to climate change and to plan and implement appropriate resilience measures. In addition, the WRMA has limited technical and financial resources to support the design and implementation of climate change resilient policies and strategies.
d. **Limited communication and public awareness of water supply issues relating to climate**

change: communication and public awareness has been and continues to be inadequate to address key issues of the water sector in relation to climate impacts and the need for the general public to be aware and contribute to adaptation measures.

Climate Context

Temperature

Located in the Caribbean's Windward Islands, Saint Lucia experience a warm tropical climate that is largely moderated by the surrounding marine environment and prevailing northeast trade winds. The surrounding Atlantic Ocean and Caribbean Sea have sea surface temperatures that are generally stable, averaging around 26.7°C. Consequently, the climate is characterized by warm air temperatures averaging near 27°C, rarely rising above 32°C or falling below 21°C. However, the island's mountainous topography, particularly in the more rugged interior, can cause temperature variations between high and low-lying regions of between 2°C and 5°C.

Although average air surface temperatures do not vary much on an annual basis, there has been a notable increase in recent years consistent with broader regional and global trends. Specifically, there has been an increase by around 0.7°C since 1960, at an average rate of 0.16°C per decade and is projected to continue rising. Mean annual temperatures in Saint Lucia are projected to increase (relative to a 1961-1990 baseline) by 0.78-1.35°C in the 2020s; 1.34-2.28°C by the 2050s; and 1.78-3.38°C by the end of the century, with the most significant warming expected to occur in the dry season.

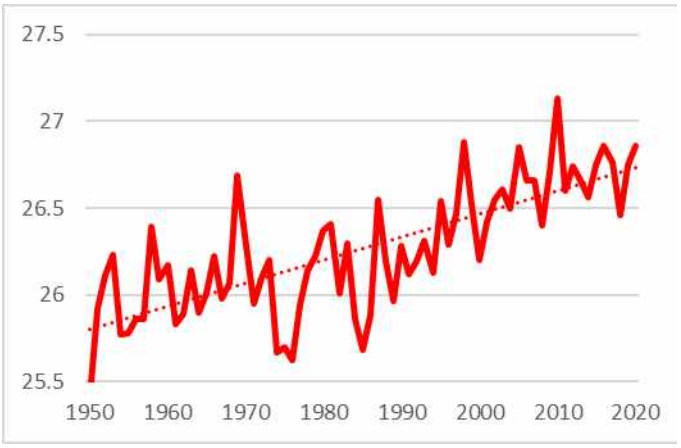


Figure 1 Annual mean temperature

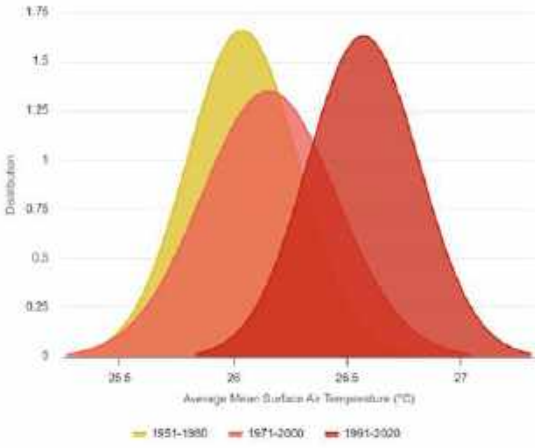


Figure 2 Change in temperature distribution

Additionally, there is a clear change in the temperature distribution, with a higher peak suggesting that temperatures have become more concentrated around the new higher mean, indicating less variability and more consistently higher temperatures. This means higher temperatures are occurring more frequently, and the climate is experiencing warmer conditions more regularly. Concomitant with this trend will be an increased frequency of temperature extremes, including very hot days and nights, a decrease in very cold days and nights, and an increase in consecutive hot and dry days. Projections across all models indicate that as even under the best-case scenarios, the island of St. Lucia will be a significantly warmer island than at present, with the magnitude of projected changes greater than the magnitude of change seen over the last century (Fig 3).

Precipitation

In St. Lucia, precipitation patterns are characterized by two distinct seasons: the wet and dry seasons. During the wet season, the volume of rainfall is primarily determined by the frequency and intensity of

tropical disturbances, such as waves, depressions, storms, and hurricanes. These tropical systems contribute significantly to the total rainfall, often bringing heavy, sustained precipitation. In contrast, the dry season's rainfall mainly originates from mid-latitude systems, including troughs, frontal troughs, and jet streams, which intermittently intrude into the region. The timing of these systems is random, resulting in considerable variability in rainfall distribution during the dry season. While tropical disturbances in the wet season occur with a relatively predictable frequency of about every four days, mid-latitude systems in the dry season lead to more unpredictable and uneven rainfall patterns.

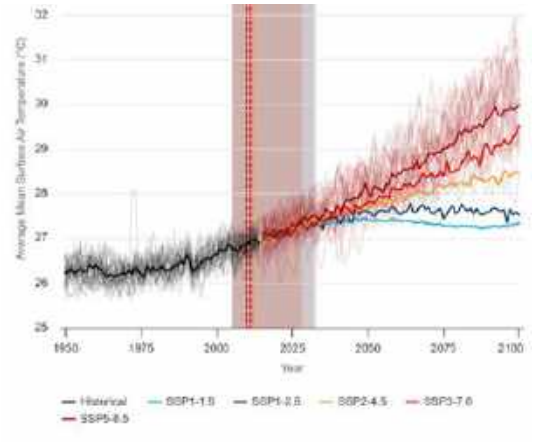


Figure 3 Projected temperature increases[9] distribution

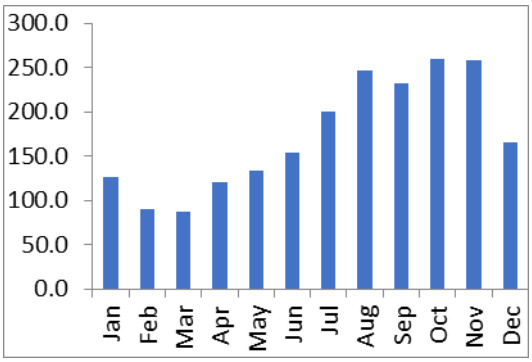


Figure 4 Average monthly rainfall

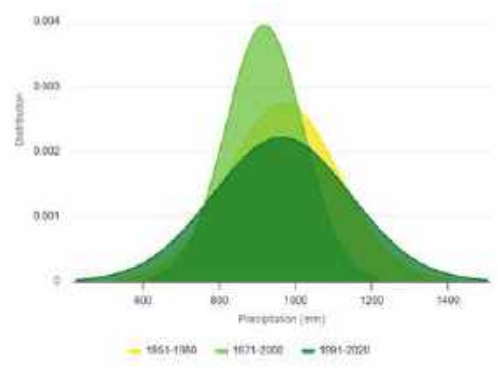


Figure 5 Change in precipitation distribution

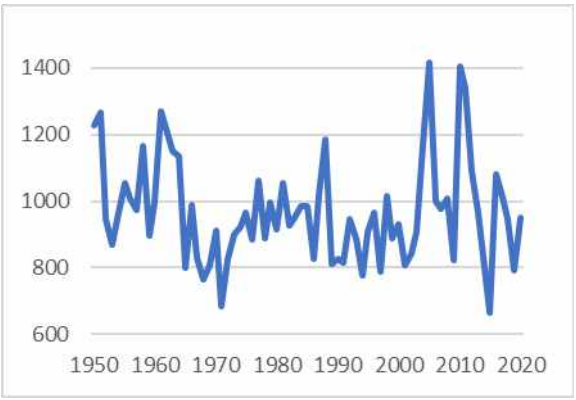


Figure 6 Annual average precipitation

Additionally, St. Lucia's mountainous terrain exerts a significant orographic influence on precipitation. The island's rugged interior receives substantially higher rainfall compared to its coastal regions due to orographic lifting. Here, moist air is forced to ascend over the mountains, cooling and condensing to produce enhanced precipitation. This effect results in pronounced geographic variation in rainfall, with coastal regions averaging around 1000 mm annually, while the elevated interior can experience over 3000 mm of rainfall per year. This substantial variation underscores the impact of the island's topography on its precipitation patterns, contributing to the overall variability in rainfall across St. Lucia. In addition to large spatial variability in rainfall, the average annual rainfall varies significantly from year to year. Annual rainfall in St. Lucia has ranged from as low as 664 mm in 1971 to 1416 mm in 2005 and has become notably more capricious in the 2000s. Similarly, the annual number of wet days has varied significantly over time, ranging from 129 to 191 days per year. The frequency of days with extreme rainfall, defined as days with

[9] World Bank Climate Knowledge Portal

precipitation over the 99th percentile, also shows significant annual variation, ranging from 1 day per year to 7 days. The annual maximum number of consecutive wet days has declined significantly, from an average of 31 days between 1950-1980 to an average of 23 days between 1990-2020. Conversely, the annual maximum number of consecutive dry days has increased over time, from an average of 8 days between 1950-1980 to an average of 12 days between 1990-2020. However, it is important to note that these values are highly variable, reflecting the complex and changing nature of St. Lucia's climate. Understanding these changing patterns is crucial for developing effective adaptation and mitigation strategies to address the challenges posed by climate variability and change.

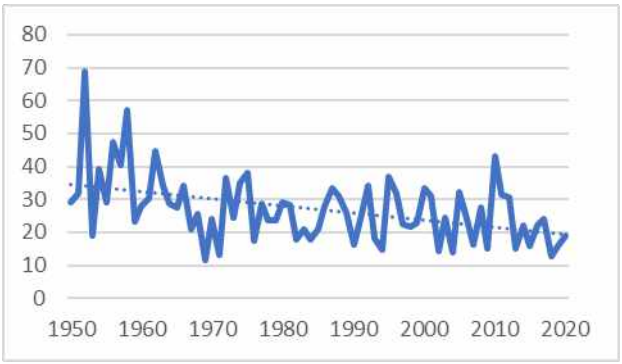


Figure 6 Annual number of wet days

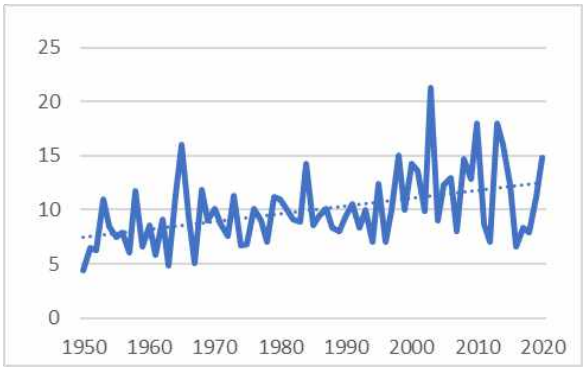


Figure 7 Annual number of dry day

Between the periods 1971-2000 and 1990-2020, there has also been a notable change in the distribution of precipitation. The graph for 1971-2000 shows a higher peak, indicating that precipitation amounts were more concentrated around a certain value, reflecting stable and predictable weather patterns with fewer extreme events. In contrast, the 1990-2020 graph displays a lower peak, suggesting a wider spread of precipitation amounts and increased variability. This change points to more frequent extreme weather events, such as heavy rainfall and droughts, likely driven by climate change.

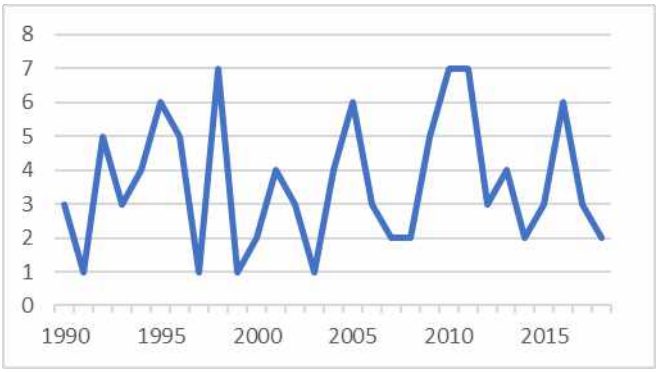


Figure 8 Annual number of days with precipitation above the 99 percentile

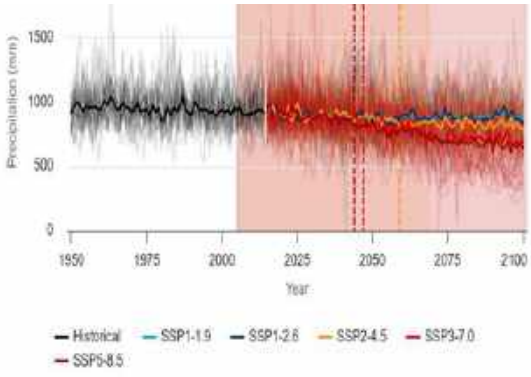


Figure 9 Projected changes in annual precipitation[10]

Meanwhile, model projections related to changes in annual average precipitation vary significantly, but consistently point toward a drying trend. The range of projected changes (relative to a 1961-1990 baseline) is: between -20.15% and +4.09% in the 2020s; between -35.15% and +3.53% in the 2050s; and between -46.19% and -13.74% by the end of the century. In addition to these overall drying trends, available modelling efforts indicate that St. Lucia will likely continue to experience an increase in the frequency and intensity of extreme precipitation events. These shifts in precipitation patterns highlight the need for

[10] World Bank Climate Knowledge Portal

adaptive measures in water resource management, and infrastructure planning to cope with the heightened unpredictability and extremity of weather events.

Tropical Cyclones

Although Saint Lucia has historically been spared from the most severe hurricane destruction, tropical cyclones remain a significant threat to the island nation. The island's location in the North Atlantic hurricane belt exposes it to these powerful storms with alarming regularity. Recent years have seen several tropical cyclones and hurricanes pass close to Saint Lucia, highlighting the increasing vulnerability of the island. This trend is concerning as the frequency and intensity of these storms are on the rise. For instance, Hurricane Allen devastated the agricultural sector and claimed nine lives in 1980, while Hurricane Tomas in 2010 caused significant damage, claiming seven lives and severely impacting the island's cocoa crops. With the likelihood of more frequent and intense hurricanes, Saint Lucia faces an urgent need to enhance its preparedness and response strategies to minimize the adverse effects of these natural disasters.

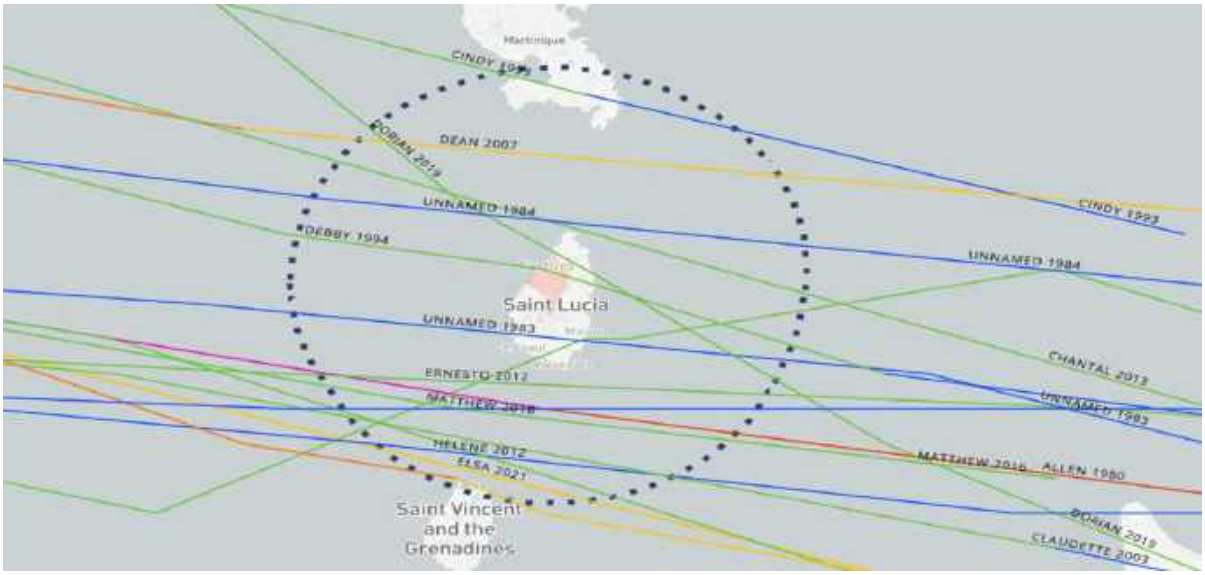


Figure 10 No. of storms passing within 60 nautical miles of Saint lucia between 1980 -2022[11]

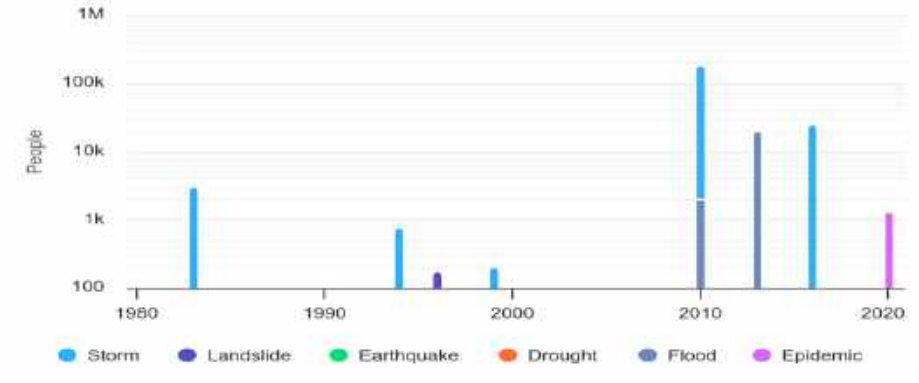


Figure 11 No.of people affected by extreme events[12]

Projections regarding hurricanes are marked by considerable uncertainty, but regional projections align with the findings of the IPCC Special Report on Extremes (2012). By the latter half of the century, tropical cyclone precipitation rates are expected to increase by up to 30% within 100 km of storm centers, and about 10%

[11] World Bank Climate Knowledge Portal
[12] World Bank Climate Knowledge Portal

at radii of 200 km or more. Maximum sustained wind speeds are projected to rise by 2-11% by the end of the century. Additionally, the frequency of Category 4 and 5 hurricanes in the Atlantic is anticipated to increase by 25-30%, with storms likely to become 2-11% stronger in terms of maximum wind speeds and potentially more frequent. These changes underscore the need for enhanced preparedness and adaptation measures to address the heightened risks and impacts of increasingly severe tropical cyclones on Saint Lucia.

The Saint Lucia Water Sector Adaptation Strategy and Action Plan (Water SASAP) comprehensively outlines the risks posed to the country's water resources due to the impacts of climate change and proposes strategic measures to address them. The Water SASAP identifies key risks such as increased variability in precipitation patterns leading to more frequent and severe droughts and floods, rising temperatures resulting in higher evaporation rates, sea-level rise causing saltwater intrusion into freshwater aquifers, and heightened extreme weather events damaging water infrastructure. These climate-induced challenges threaten water availability, quality, and the reliability of supply, which are critical for the island's socio-economic development and the well-being of its population.

To resolve these risks, the Water SASAP proposes a multifaceted approach focused on enhancing the resilience and sustainability of the water sector. The plan emphasizes the modernization and climate-proofing of water infrastructure to withstand extreme weather events, including upgrading treatment plants and distribution networks. It advocates for the diversification of water sources through the promotion of rainwater harvesting and the protection of watersheds to maintain natural water regulation functions. The strategy also highlights the importance of improving water resource management by strengthening institutional capacities, updating policies and legislation, and fostering inter-agency coordination. Additionally, it underscores the need for public education and awareness campaigns to promote water conservation and efficient usage practices among communities. By implementing these measures, the Water SASAP aims to secure a reliable and safe water supply for Saint Lucia, ensuring that the water sector can adapt to and withstand the ongoing and future impacts of climate change.

Climate Rationale

The community of Micoud, located on the southeastern coast of Saint Lucia, is one of the island's eleven districts. It offers a diverse landscape, blending coastal areas and interior terrains shaped by the island's volcanic origins. Micoud stretches along the eastern coastline, encompassing a significant portion of Saint Lucia's eastern shores. Its terrain features flat coastal areas and undulating hills further inland. The largest river in the district, the Micoud River, winds through the landscape before emptying into the Atlantic Ocean. According to the 2010 census, the district had a population of 16,284 people, reflecting slight growth from the 16,143 recorded in 2002.

Micoud is a growing community expected to experience increased housing and development projects aimed at economic growth. The district has the largest watershed on the island, making it highly vulnerable to climate change impacts, and there is an immediate need for climate action. The water sector's accessibility and reliability are crucial for low-income households, particularly given the island's vulnerability to climate-induced events. Inconsistent water access affects health, agriculture, food security, and exacerbates gender disparities. According to the most recent poverty assessment, Micoud has the highest concentration of indigence at 27.4% and the second-highest concentration of the non-indigent poor at 15.9%.

The water supply challenges in Micoud have been exacerbated by natural disasters and human activities. Hurricane Tomas in 2010, followed by subsequent torrential rains, significantly damaged the island’s water supply infrastructure, particularly in communities like Micoud. The current water treatment equipment in Micoud struggles to handle the increased turbidity caused by these events, resulting in frequent shutdowns and water shortages. The 2016 poverty assessment highlighted the reliability issues of water supply in rural areas, with Micoud households recording the lowest full-week water supply rate at just 19%.

The plant was first constructed during the 1980s using a slow sand filtration system. With deteriorating water quality caused by increasing turbidity and changing land-use, WASCO introduced prefiltration over a

decade ago. In the current system, water is abstracted via intakes and then pumped or gravity-fed through transmission lines to treatment plants, where it is filtered and chlorinated before being stored and distributed to consumers via water mains. This system largely relies on gravity-fed, low-energy transmission lines that require minimal maintenance. However, several challenges exist, including high levels of turbidity in raw water sources, damage to pumping stations and transmission lines, and power outages affecting pumping stations.

Addressing the issue of turbidity with upgraded facilities, if not energy-efficient, may lead to higher operational costs, which could be passed on to vulnerable consumers. To prevent this, any upgrades to the treatment facilities must incorporate energy-efficient technologies to ensure that the cost of addressing climate-related challenges does not increase the financial burden on consumers. There are approximately 1000 customers, comprising residential and commercial customers connected to this water supply system. The current capacity of the plant is approximately 250,000 GPD. WASCO provides service to customers in a non-discriminatory manner by law which includes schools, businesses etc. Over the last few decades, the water treatment system has experienced increased pressures from higher levels of turbidity caused by high rainfall events which forces shutdowns. Likewise, during seasons of drought, water must be rationed because of extremely low supplies. Developments in the supply of this water supply system are facing approval delays on account of unavailable supply. An upgrade of the treatment facility to support higher treatment capacities of up to 1 million gallons per day is being considered. This would, apart from facilitating increased water supplies to customers, facilitate the availability of water under higher levels of turbidity than what is presently possible

In addition to these challenges, landslides present a significant environmental concern in Micoud, particularly during heavy rainfall. These events lead to elevated sedimentation levels in surface water, causing temporary halts in water abstraction and disrupting regular water supply. If not adequately managed, these disruptions pose potential health risks. Rising temperatures further compound these issues by reducing soil moisture, increasing evaporation rates, and leading to further erosion and sedimentation at surface water intakes.

Over the years, Saint Lucia has undertaken development projects to address the increasing rainfall intensity and other climate-induced challenges. The Saint Lucia Disaster Vulnerability Reduction Project, for example, included the construction of drains in Micoud to reduce flooding and build resilience in vulnerable communities. Like other parts of Saint Lucia, Micoud also faces challenges related to environmental conservation, including coastal erosion, habitat destruction, and tourism pressures. National efforts have been made to promote sustainable development and protect critical habitats, but more targeted interventions are needed.

The operational expenses of water treatment facilities in Micoud have been significantly impacted by climate change. Increased energy consumption, chemical usage, and maintenance costs are some of the challenges faced by these facilities. Rising temperatures contribute to heightened evaporation rates, diminishing water availability for consumption and agriculture, and posing challenges to water infrastructure and quality. A study on drinking-water safety in Micoud identified hazards such as intake blockages during heavy rainfall and microbial contamination, emphasizing the need for comprehensive risk management strategies to address climate change impacts[13].

The observed alteration in precipitation patterns due to climate change has led to an unpredictable hydrological cycle, resulting in erratic streamflow patterns across the island. This unpredictability has caused more frequent water supply disruptions and reduced water quality, significantly affecting access to potable water. One of the most critical issues faced by WASCO is sedimentation at surface water intakes due to increased runoff during extreme rainfall events. Extended dry periods, another consequence of climate change, have resulted in reduced vegetative cover, leaving more loose soil available for erosion

[13]gwp-c-perspectives-paper---impact-of-land-use-change-on-water-resources-availability-and-water-quality-in-saint-lucia.pdf

during heavy rains. Additionally, increased evaporation rates lower surface water levels, concentrating sediment loads and exacerbating the problem. This issue is particularly acute in Micoud, where the current treatment equipment cannot withstand the increased turbidity, resulting in constant shutdowns and unavailability of water for the entire community. This continues to pose a significant health risk.

To address these challenges, the project aims to develop integrated water resources management plans focused on reducing erosion and sedimentation. It also targets improvements in the water treatment process and water quality monitoring. Enhancing water treatment infrastructure will help manage the increased sediment load and ensure the provision of clean water. Upgraded water quality monitoring systems will provide timely data to respond effectively to changes in water conditions, ensuring that the water supply remains safe and reliable.

In addition to the issues related to sediment loads, the increase in the number of major hurricanes, coupled with more frequent and intense flooding, has caused significant damage to water infrastructure in Micoud. This has led to high repair and replacement costs, deteriorating water quality through increased erosion and sedimentation, and clogged water intakes near the treatment plant. To compound this issue, Micoud's water infrastructure is solely dependent on grid-tied power generation from fossil fuels, which has proven to be unreliable during and after extreme weather events. Therefore, to enhance the resilience of the water treatment system, this project will upgrade existing infrastructure and introduce renewable energy alternatives at the treatment plant. Introducing technologies that could handle higher levels of turbidity and allow for automatic shortage of the system when the turbidity levels reach a certain threshold. This treatment process when compared to the existing method requires more energy and, in an effort, to build resilience to the water supply system and protection of the vulnerable population with increased cost renewable energy will be integrated. By strengthening the infrastructure and incorporating alternative energy sources, the plant will remain operational even after significant extreme weather events. Additionally, upgrades to the Micoud water treatment and supply systems, along with enhanced water storage infrastructure, will ensure a more reliable and safe water supply for the community amidst the growing impacts of climate change. As part of the upgrade, a water tank will be installed at the water treatment facility to add redundancy, ensuring that in times of exceptional circumstances, the most vulnerable have uninterrupted access to water. Further, to address inconsistent water access, a significant issue amongst, particularly for vulnerable households and low-income family's rainwater harvesting systems integrated with subsidized water filtration and purification units will be provided. The installation of a water storage tank provides a critical safeguard against the impacts of climate change, such as droughts and flooding, which can disrupt the regular water supply. By ensuring a reliable and consistent supply of water, this activity directly contributes to the health, well-being, and resilience of the community, particularly for those who are most vulnerable to the adverse effects of water scarcity. This is especially important during emergencies when access to clean water is crucial for survival and maintaining public health

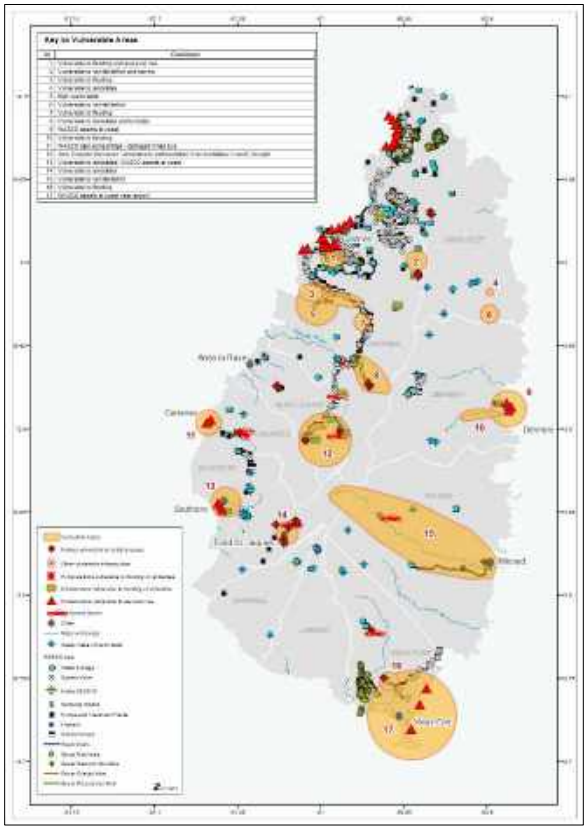


Figure 12Source: WASCO Climate Risk and Vulnerability Assessment (CRVA 2022)

Furthermore, the project will implement education and awareness programs to optimize water usage, which will help maintain adequate water levels in reservoirs. By promoting water conservation practices, the project will help maintain the functionality of water infrastructure and ensure the availability of clean water even during adverse weather conditions. The project will also optimize the distribution of potable water and reduce water loss, ensuring that water is efficiently and equitably distributed throughout the community. These measures are crucial in adapting to the heightened unpredictability and extremity of weather events driven by climate change.

Project/Programme Objectives:

The primary objective is to enhance climate resilience in the water sector by ensuring secure, reliable, and safe water access through climate-smart infrastructure improvements, capacity building, and comprehensive public education. The project emphasizes direct support for vulnerable groups, including the installation of integrated water accessibility systems and adaptive measures. It also focuses on capturing and disseminating lessons learned to strengthen adaptive capacity. All project components are designed to empower stakeholders and communities to effectively respond to climate change impacts on water

Component 1: Building resilience into the water supply infrastructure and systems.

The water infrastructure in Micoud, Saint Lucia, faces significant challenges, including inadequate storage capacity, inefficient pumping systems, susceptibility to extreme weather events, persistent non-revenue water (NRW) losses, and operational inefficiencies. To address these issues and enhance the resilience of the water supply systems, this component focuses on comprehensive upgrades and modernization efforts, all while promoting sustainable, low-carbon practices. The primary objective is to strengthen the water supply infrastructure to withstand the adverse impacts of climate change, ensuring continuous and reliable water services for the community, particularly during extreme weather conditions.

Through key adaptation measures including the installation of community-based rainwater harvesting systems and low-cost water filtration units for vulnerable households, ensuring supplementary water sources during droughts or disruptions in the main supply. Additionally, a network of emergency water supply points will be established, with modifications to water access points to cater specifically to disabled and elderly residents, ensuring that all members of the community have secure and consistent access to clean water, even during emergencies.

Additionally, the Micoud Water Treatment and Supply Systems will undergo a thorough vulnerability assessment, capacity enhancement, and modernization, including the integration of backup systems to ensure uninterrupted operations during disasters. The project also focuses on retrofitting existing infrastructure with energy-efficient technologies, such as Variable Frequency Drives (VFDs) to optimize pump speeds, and replacing outdated equipment with modern, energy-saving models. The incorporation of renewable energy sources, particularly photovoltaic (PV) systems, will further reduce the carbon footprint of the water sector. A storage tank, providing clean, fit for drinking water will be installed at the treatment site and will have a capacity 200,000K to safeguard against droughts and disruptions in water supply whereby building redundancy of the system.

This component will also address the critical need to reduce NRW by optimizing the distribution of potable water. Climate change is intensifying water scarcity through irregular rainfall patterns, prolonged droughts, and increased evaporation, putting additional pressure on already limited freshwater resources. Furthermore, the increasing frequency and severity of extreme weather events, such as floods and storms, exacerbates the stress on water supply systems, making water resources less reliable.

By reducing water losses, utilities can make more efficient use of available resources, ensuring that essential services like agriculture, health, and domestic needs continue to be met, even during climate-induced water shortages. Lowering NRW is not only a vital adaptation strategy but also provides a key co-

benefit: mitigating climate change impacts by reducing energy consumption associated with treating and distributing water that is ultimately lost. This will make water networks more resilient to climate-induced damages, allowing utilities to better manage scarce resources, reduce operational costs, and lower their carbon footprint.

To enhance monitoring and management capabilities, the Computerized Real-time Management System (CMMS) will be upgraded with Geographic Information Systems (GIS) and SCADA tools, providing real-time control, monitoring, and leak detection. This will facilitate efficient planning and maintenance, reducing water losses and improving system reliability.

Overall, this component takes a comprehensive approach to addressing current vulnerabilities while preparing Micoud for future climate-related impacts. By enhancing the resilience of the water supply infrastructure and integrating sustainable practices, the project will contribute to consistent economic productivity, improved public health outcomes, and increased community flexibility in facing water-related challenges.

Outcome 1: Strengthened resilience and reliability of Micoud's water supply infrastructure, ensuring sustainable access to clean water in the face of climate change and other challenges.

Output 1.1: Climate resilient water supply and network installed.

- **Activity 1.1.1**: Modernization and upgrade of the Micoud water treatment and supply systems: This activity involves assessing the vulnerabilities in the existing water treatment and supply infrastructure and implementing upgrades to ensure it meets current and future demands. This includes enhancing water treatment processes to improve water quality, addressing any weaknesses in the supply network, and integrating backup systems to maintain operations during disruptions such as extreme weather events or power outages.
- **Activity 1.1.2**: Retrofitting and upgrading of existing infrastructure with renewable energy and energy efficiency: This activity focuses on enhancing the energy efficiency of the water treatment and supply systems by retrofitting existing infrastructure with renewable energy sources and energy-efficient technologies. This may include the installation of solar panels, wind turbines, or other renewable energy systems, as well as upgrading pumps and other equipment to reduce energy consumption and operational costs
- **Activity 1.1.3:** This activity involves the installation of a water storage tank to improve the reliability of the water supply in Micoud. The tank will serve as a buffer during periods of drought or flooding, ensuring that the community has a reserve supply of clean water. It will also help reduce reliance on traditional water sources, which may be compromised during extreme weather events. The tank will be installed at the treatment site and will have a capacity 200,000K Gallons. The tank will supply the entire communities Escap to Ti Rocher including Micoud Village. Within these communities, there are residential and commercial developments and schools. The distribution network is used to provide water in a non-discriminatory manner
- **Activity1.1.4** Community-Based Rainwater Harvesting and Filtration Systems for Vulnerable Households: Provide vulnerable households, particularly low-income families, with rainwater harvesting systems integrated with subsidized water filtration and purification units. These combined systems will offer a supplementary and reliable water source during droughts or disruptions to the main supply, while also ensuring that the collected rainwater is safe for drinking and other household uses
- **Activity 1.1.5:** Emergency Water Access and Distribution System for Vulnerable, Disabled, and Elderly Residents; Develop a network of strategically located emergency water supply points throughout the community, specifically designed to accommodate the needs of vulnerable

populations, including the disabled and elderly. These points will feature user-friendly systems such as lever handles, touchless technology, ramps, handrails, and non-slip surfaces to ensure safe and easy access. Additionally, install user friendly systems that cater specifically to the needs of disabled and elderly residents, ensuring they have secure and consistent access to clean water without physical barriers

Output 1.2: Systems to optimise the distribution of potable water implemented.

- **Activity 1.2.2:** Install Bulk and Smart Meters in Strategic Locations to Reduce NRW: This activity involves the installation of bulk meters at major distribution points and smart meters at consumer endpoints across Micoud. Bulk meters will measure the flow of water entering different sections of the distribution network, while smart meters at individual properties will provide accurate, real-time data on water consumption. Reducing NRW is a vital adaptation strategy for maximizing the efficiency of water distribution. By lowering losses, water utilities can make better use of limited water resources, ensuring more water is available for essential services like agriculture, public health, and domestic use, even during times of climate-induced water shortages. These systems will enable more efficient water management, timely billing, and faster detection of leaks or other issues within the network
- **Activity 1.2.3:** Upgrade/Update the Computerized Real-time Management System (CMMS): This activity involves upgrading and updating the Computerized Real-time Management System (CMMS) used by WASCO to manage the water supply network. The upgrades will include the development and integration of Geographic Information System (GIS) tools, Supervisory Control and Data Acquisition (SCADA) systems, and software for leakage monitoring and reduction. It will also involve the creation of detailed maps of the island's water assets to support more efficient management and decision-making.

Outcome 2: Strengthened institutional capacity and systems for climate responsive management of water resources.

This component aims to enhance the resilience of the water sector by integrating climate-related risk planning into operational and maintenance protocols. The primary goal is to strengthen institutional capacity and systems for climate-responsive management of water resources. Climate-related risk planning will be integrated into WASCO operations through a series of activities. These activities involve the development and mainstreaming of climate change considerations into WASCO's risk management framework. This includes reviewing and updating existing plans and strategies to respond to disasters, incorporating climate change data, forecasts, and models to anticipate and respond to specific climate-induced events. Additional focus will be placed on developing policies, manuals, and protocols for water abstraction, treatment, distribution, and asset maintenance in the context of climate change, aiming for a sustainable and resilient water management approach. Furthermore, the development and implementation of a centralized geospatial database to consolidate comprehensive water-related data, facilitating efficient water management and strategic resource planning for WASCO. This will also require providing comprehensive training related to water resource management, plant operations and maintenance, advanced technologies, climate change, and gender, social, and environmental considerations to WASCO and relevant stakeholders. By mainstreaming climate-related risk planning into operational and maintenance protocols, this component aims to equip WASCO and other stakeholders with the necessary tools and knowledge to effectively manage climate-related risks and ensure the resilience of water resources in the face of changing climatic conditions. To integrate climate-related risks planning into the Water Sector by mainstreaming, developing, and implementing operational and maintenance protocols with respect to climate hazards.

Output 2.1: Climate-related risks planning integrated into WASCO operations.

Activity 2.1.1: Develop SOPs, manuals and a disaster risk plan for the upgraded Micoud water treatment and supply systems. In the context of climate change and disaster risk management, a comprehensive set of SOPs, manuals and disaster risk plan will be designed to provide detailed guidelines for sustained operations of the water treatment plant.
Activity 2.1.2: Develop and implement a centralize geo-spatial database of water source quality and quantity, disruptions, intakes and treatment systems, distribution systems, storage capacity, elevations, hydromet and end-users and consumption (by type).
Activity 2.1.3: Install data capturing devices and equipment in sources of water
Activity 2.1.4: Develop and provide training related to water resource management, ground water mapping, plant operations and maintenance, smart meters, CMMS, GIS, SCADA, climate change and gender, social and environmental considerations to WASCO and other Ministries, Department and Agencies, as applicable.

Outcome 3: Strengthened awareness of climate threats and risk-reduction processes associated with the water resources.
This component focuses on enhancing water conservation and efficiency among water users in Micoud, St. Lucia, to strengthen the resilience of the water sector against climate change. Its primary goal is to raise awareness of climate threats and risk reduction processes associated with water resources This Component will build on and complement the ongoing GCF Water Readiness to avoid duplication of efforts while ensuring targeted messaging for the Micoud community. The public awareness campaign will integrate existing themes from the GCF program—such as Water Resources Management, Conservation of Forests, Water and Wastewater Services, Water Conservation, Demand Reduction, Rainwater Harvesting, Water Re-use, Water Recycling, and Climate Change Impacts—and adapt them to the local context, with a focus on vulnerable groups in Micoud, such as female-headed households.
This campaign will work in synergy with the GCF Water Readiness initiative by adopting their materials, frameworks, and public education strategies while tailoring messages specifically to the needs of Micoud. The campaign will coordinate with the GCF Readiness team to align timing, messaging, and outreach efforts, ensuring that the two programs complement each other without overlapping.
In addition, partnerships with **media associations** will be developed to build the capacity of local journalists and media outlets in understanding and effectively communicating the impacts of climate change specific to Micoud. This will broaden the scope of the GCF initiative by expanding its media reach and engagement through local channels. The campaign will employ a variety of communication tools—traditional media, social media, workshops, and community engagement programs—ensuring a wide audience is reached and the messages are clear and actionable. Through this alignment, the project will enhance the existing efforts of the GCF Readiness Communications Consultancy while tailoring the approach to the specific needs and vulnerabilities of the Micoud community, making the initiative more locally relevant and impactful. Additionally, an education and outreach program will target schools, community-based organizations, and stakeholder groups, fostering awareness and active participation in water conservation efforts. Practical demonstrations will engage students in installing water-efficient measures at schools and public buildings, providing hands-on training for future water managers, and disseminating educational materials for wider awareness.
Output 3.1: Improved conservation and efficiency in the use of water resources

Activity 3.1.1: Develop and implement a gender-sensitive public awareness campaign including messaging related to Water Resources Management, Conservation of Forests, Water and Wastewater Services, Water Conservation, Demand Reduction, Rainwater Harvesting, Water Re-use, Water Recycling,

Climate Change Impacts as well as any other related area. This also includes partnering with the Media Associations to build capacity in climate change issues and challenges.
This is a comprehensive public awareness campaign designed to address water and climate change issues through a gender-sensitive approach. It promotes an inclusive cover of various topics, including Water Resources Management, Forest Conservation, Water and Wastewater Services, Water Conservation, Demand Reduction, Rainwater Harvesting, Water Re-use, Water Recycling, and Climate Change Impacts. The campaign leverages partnerships with media associations to expand its reach and build their capacity in understanding and reporting on climate change. It employs a diverse range of communication channels, including traditional and digital platforms, workshops, and feedback mechanisms, to engage the public and promote active participation in sustainable water and environmental management.
Activity 3.1.2: Develop and implement a programme of education and outreach in schools, community-based organizations, and stakeholder groups across customer class on water and climate to encourage conversation and efficient use of water resources in St. Lucia.
This activity focuses on promoting water conservation and climate awareness in Micoud, St. Lucia through targeted education and outreach. The program introduces curriculum-based sessions in schools, collaborates with community-based organizations for localized training, and provides specialized outreach to various customer classes addressing their unique water usage patterns. Utilizing hands-on demonstrations, media campaigns, and interactive platforms, the activity aims to foster active participation and awareness.
Activity 3.1.3: This activity will in gender responsive manner, engage students from secondary, tertiary, and Technical and Vocational Education and Training (TVET) institutions in the practical installation of water-efficient technologies and conservation measures at schools and public buildings. It includes hands-on, on-the-job training for TVET students, equipping them with the skills needed to implement water conservation measures in their future careers. To support this, educational toolkits and implementation guides will be developed, providing standardized resources for teaching and training, and guiding the implementation of water-efficient practices across Saint Lucia.
Partnerships with existing programs or government entities will be actively sought to ensure synergy, coordination, and alignment with similar efforts, maximizing the impact of this initiative. Through this activity, students will gain practical experience, merging theoretical learning with real-world application, and contributing directly to St. Lucia's water conservation efforts. This initiative cultivates a new generation of environmentally responsible individuals equipped to address future water management challenges.
Activity 3.1.4: Develop a framework for an incentive programme to support the adaptation of climate resilience, conservation and efficiency technologies amongst water users. This activity seeks to identify projects and products that can support efforts geared toward building resilience in homes and businesses.

Outcome 4: Enhanced learning, knowledge transfer, and dissemination of best practices for climate-resilient water management in Micoud.

The learning and knowledge transfer component of this project is designed to enhance the overall impact and sustainability of the interventions aimed at improving water resilience in Micoud. By documenting the project's successes, challenges, and innovations, and by facilitating the exchange of knowledge among local, national, and regional stakeholders, this component will play a crucial role in ensuring that the benefits of the project extend beyond its immediate implementation.
Systematic documentation of all project activities, including challenges encountered and solutions developed, will be central to this component. This will not only help in improving the ongoing project but also serve as a resource for future projects in similar contexts. The platform will be managed by the implementing partner throughout the lifespan of the project. The implementing partner will be responsible for regularly updating the platform with project documents, case studies, reports, and best practices, ensuring that all information is accessible and transparently shared among stakeholders.

The development and maintenance costs of the digital platform will be incorporated into the project's budget. The platform's sustainability and continuity beyond the project's lifespan, we will collaborate with relevant government agencies during the implementation phase. These agencies will be identified and engaged to take over the management and maintenance of the platform after the project's conclusion.
Training and capacity-building activities will be conducted to ensure that local communities, government agencies, and other stakeholders have the necessary knowledge and skills to maintain and build upon the project's achievements.
The knowledge gained from this project will be shared with broader audiences, including other communities in Saint Lucia and the wider Caribbean region, through various channels such as reports, conferences, and media outreach.
By integrating these elements into the project, we aim to ensure that the knowledge generated is not only preserved but actively used to inform and improve water management practices in Micoud and beyond, ultimately contributing to the long-term resilience and sustainability of water resources in the face of climate change.

Output 4.1: Comprehensive documentation of project activities, challenges, and successes.

Activity 4.1.1: Develop a Project Knowledge Management Plan (KMP) that outlines processes for capturing, storing, and sharing lessons learned. This includes setting up a dedicated team to collect data, monitor progress, and document challenges and solutions throughout the project.
Activity 4.1.2: Regularly update a centralized digital platform with project documents, case studies, reports, and best practices, ensuring accessible and transparent sharing of information among stakeholders.
Activity 4.1.3: Create a series of video documentaries and written case studies that highlight key achievements, challenges, and lessons learned from the project. These materials will be distributed to local communities, government agencies, and regional partners.

Output 4.2: Capacity building and training for local stakeholders.

Activity 4.2.1: Conduct workshops and training sessions for local government officials, community leaders, local education institutions, and WASCO staff on the new technologies and processes implemented in the project. Focus on hands-on learning and practical application of skills.
Activity 4.2.2: Develop training manuals and educational materials tailored to different stakeholder groups, including technical guides for WASCO staff and simplified guides for community members on water conservation and climate resilience.
Activity 4.2.3: Establish a peer learning network among communities involved in similar projects across Saint Lucia, facilitating the exchange of knowledge, experiences, and best practices in water management and climate adaptation.

Output 4.3: Dissemination of project outcomes to broader audiences.

Activity 4.3.1: Organize a national conference at the end of the project to present findings, share lessons learned, and discuss future strategies for climate-resilient water management. Invite stakeholders from across the Caribbean to foster regional collaboration.
Activity 4.3.2: Publish a comprehensive final report that synthesizes all lessons learned and best practices identified during the project. Distribute this report to relevant government agencies, NGOs, and international partners.
Activity 4.3.3: Collaborate with local media outlets to share stories of success and innovation from the project, raising awareness among the public and encouraging broader adoption of best practices in water management.

Project/Programme Components and Financing:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs, and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

Project/Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
1. **Component 1: Building resilience into the water supply infrastructure and systems**	1. Climate resilient water supply and network installed. 2. Systems to optimise the distribution of potable water implemented	1. Increased reliability of water supply and water system services	7,254,990.00
2. **Component 2: Strengthening institutional capacity and systems for climate responsive management of water resources.**	1. Climate-related risks planning integrated into WASCO operations	1. Strengthened institutional capacity and systems for climate responsive management of water resources.	401,300.00
3. **Component 3: Improving water conservation among water users for a climate resilient water sector**	1. Improved conservation and efficiency in the use of water resources	1. Strengthened awareness of climate threats and risk-reduction processes associated with the water resources	422,300.00
4. Outcome 4: Enhancing learning, knowledge transfer, and	1. Comprehensive documentation of project	Enhanced learning, knowledge transfer, and dissemination of best	188,000.00

dissemination of best practices for climate-resilient water management in Micoud	activities, challenges, and successes. 2. Capacity building and training for local stakeholders 3. Dissemination of project outcomes to broader audiences.	practices for climate-resilient water management in Micoud	
4. **Project/Programme Execution cost**		$950,000.00	
5. **Total Project/Programme Cost**		$8,266,590. 00	
6. **Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)**		$783,410.00	
Amount of Financing Requested		$10,000,000.00	

Projected Timelines:

The project is expected to be implemented over a 4-year period from October 2025 to September 2029

Milestones	Expected Dates
Start of Project/Programme Implementation	**October 2025**
Mid-term Review (if planned)	**September 2027**
Project/Programme Closing	**April 2029**
Terminal Evaluation	**September 2029**

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

1. **Component 1:** This component is designed to directly address the vulnerabilities in Micoud, Saint Lucia's water supply infrastructure, particularly in the face of increasing climate change impacts. The primary focus is on enhancing the resilience, reliability, and sustainability of the water systems that serve the community. The adaptation activities under this component are comprehensive and targeted, aiming to fortify the water supply against the threats posed by extreme weather events, such as droughts and hurricanes, which are expected to intensify due to climate change.

   Key activities include the installation of water storage tanks at the treatment facility to ensure a continuous water supply during droughts and disruptions, thereby building redundancy into the system. The modernization and upgrade of the Micoud Water Treatment and Supply Systems will address vulnerabilities by improving water treatment processes, integrating backup systems for uninterrupted operations during disasters, and enhancing infrastructure efficiency. To further support sustainability, the project will retrofit existing water infrastructure with energy-efficient technologies, such as Variable Frequency Drives (VFDs), and integrate renewable energy sources, particularly photovoltaic (PV) systems. These measures not only reduce the carbon footprint of the water sector but also ensure operational continuity during power disruptions caused by climate events.

   Additionally, the Computerized Real-time Management System (CMMS) will be upgraded with Geographic Information Systems (GIS) and SCADA tools, providing real-time monitoring, leak detection, and efficient management of water resources. This enables faster responses to disruptions and ensures water availability during emergencies.

   Importantly, the project also includes community-based rainwater harvesting systems and low-cost water filtration units for vulnerable households, providing supplementary water sources and ensuring access to clean water, especially during droughts or when the main supply is compromised. To further enhance accessibility, a network of emergency water supply points will be established, with modifications to water access points specifically designed for disabled and elderly residents, ensuring that all community members have secure access to clean water during severe disruptions.

   These activities collectively contribute to climate resilience by strengthening both the physical infrastructure and the community's capacity to respond to

and recover from climate-related water challenges. By addressing immediate and long-term vulnerabilities, Component 1 ensures that Micoud's water sector remains reliable and sustainable, even as climate change intensifies, ultimately safeguarding the well-being of the entire community, particularly its most vulnerable members.

2. **Component 2:** By enhancing WASCO's risk management framework to address climate-related threats, internal operations are better equipped to confront and adjust to climate shifts, hence, strengthening climate resilience. The second component focuses on the refinement of current disaster response methods, such as droughts or hurricanes, and the development of new policies, guidelines, and procedures for water abstraction, treatment, distribution, and maintenance in the context of climate change. Such advancements are pivotal for maintaining infrastructure and ensuring its longevity, especially as changing environmental conditions can be paired with unforeseen risks. Moreover, the integration of a centralized geo-spatial water management system, coupled with comprehensive training for WASCO personnel and associated departments on up-to-date management techniques, maintenance, and advanced technology, fosters resilient and sustainable operations in the face of a changing climate.
3. **Component 3:** places focus on adaptation through education and awareness to enhance conservation and efficiency within the water sector. Covering diverse topics such as Water Resources Management, Forest Conservation, Water and Wastewater Services, Water Conservation, Demand Reduction, Rainwater Harvesting, Water Re-use, Water Recycling, and the Impacts of Climate Change, through a gender-sensitive approach. By encouraging public engagement, it not only imparts knowledge but also creates a culture of sustainability that spans generations. This extends to practical, hands-on learning through school programs and community outreach, addressing localized challenges within the water sector and promoting climate resilience.
4. **Component 4:** In the context of Micoud's water supply challenges, climate change introduces unpredictable variables that require adaptive and resilient solutions. However, the effectiveness of these solutions is not solely dependent on their implementation but also on the ability of the community and stakeholders to learn from these interventions and apply this knowledge in future scenarios. As such, this component is essential for embedding resilience within the community, allowing them to adapt to ongoing and future climate impacts. The Learning and Knowledge Transfer component is designed to ensure that the lessons learned, best practices, and innovations generated through the project are systematically captured, shared, and utilized to enhance climate resilience within Micoud and beyond. This component is vital because it fosters continuous improvement, empowers stakeholders, and ensures that the project's impact extends beyond its immediate activities by building local capacity and promoting sustainable practices

B. Describe how the project/programme provides economic, social, and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

Economic Benefits

The project supports key sectors such as agriculture and tourism, which are vital to the island's economy. According to the Agriculture SASAP, climate change has led to increased frequency and intensity of droughts and irregular rainfall patterns in Saint Lucia. This has resulted in water scarcity, which directly leads to reduced crop yields and quality, resulting further in income losses for farmers and affecting the livelihoods of those involved in the agricultural supply chain. This has broader implications for food security and the local economy. A reliable water supply ensures that agricultural activities can be sustained and even expanded, leading to increased agricultural productivity and food security. This, in turn, can enhance the livelihoods of farmers and those involved in the agricultural supply chain. Micoud is one of the principal agricultural districts in Saint Lucia, with a significant portion of its population engaged in farming activities. The district is known for the cultivation of bananas, plantains, root crops, vegetables, and fruits.

Tourism, a cornerstone of Saint Lucia's economy, also benefits significantly from a reliable water supply. Although Micoud is not currently a vibrant tourism destination, the government's efforts to bolster community tourism—by supporting community-based projects[14]—aim to improve the overall tourism product in this region. This initiative creates a strong rationale for the need for a dependable water supply. Consistent water availability can enhance the quality of services provided to tourists, thereby boosting visitor satisfaction and potentially increasing tourism revenue for micro, small, and medium-sized enterprises (MSMEs). The project generates employment opportunities through the construction, operation, and maintenance of water infrastructure. These jobs not only provide immediate income but also contribute to skill development within the local workforce. The enhanced infrastructure attracts investment, both domestic and foreign, as investors seek stable environments with reliable water resources. 4

Reduced healthcare costs are another economic benefit, as improved water quality and access lead to better public health outcomes. Fewer waterborne diseases mean lower healthcare expenditures for both individuals and the government. Additionally, a healthier population is more productive, contributing positively to the economy.

Moreover, increased productivity extends beyond health improvements. By reducing the time spent collecting water, particularly for women and children, the project allows more time for education and economic activities, further stimulating economic growth.

Lastly, the project fosters climate resilience, protecting the economy from the adverse effects of climate change and extreme weather events. By safeguarding

[14] https://ctasaintlucia.org/the-government-of-saint-lucia-receives-continued-funding-support-for-community-tourism-projects-from-the-caricom-development-fund/

water resources, it ensures that economic activities can continue with minimal disruption during climatic events, thus providing a stable economic environment

Social Benefits

The projects will improve public health by ensuring access to safe and reliable water, thereby reducing waterborne diseases and promoting better hygiene practices. This leads to healthier communities and a decrease in illness-related incidents.

The project also stimulates economic development by supporting key sectors like agriculture and tourism and creating jobs through infrastructure projects and maintenance. Targeted interventions, such as the installation of water-efficient measures at schools and public buildings, provide hands-on training opportunities for Technical and Vocational Education and Training (TVET) students, enhancing their employability and contributing to human capital development.

Additionally, it enhances the quality of life by providing a consistent water supply, which improves living conditions and frees up time for education and other productive activities, particularly for women and children**.** The project also promotes social equity by ensuring equitable access to water resources, reducing disparities between urban and rural areas. Through education and awareness campaigns, communities become more informed about the importance of water conservation, leading to greater support and engagement in these efforts

By engaging stakeholders across various sectors, including schools, community-based organizations, and vulnerable groups, the project promotes social cohesion and inclusivity, ensuring that all members of society have access to clean water and participate in decision-making processes.

Environmental Benefits:

The project aimed offers numerous environmental benefits. Sustainable water management practices reduce over-extraction and help preserve water bodies, maintaining groundwater levels and surface water systems. This supports the health of ecosystems and preserves biodiversity by protecting natural habitats. Improved water infrastructure reduces pollution risks, ensuring cleaner rivers, lakes, and coastal areas. Climate-smart infrastructure mitigates the impacts of extreme weather, reducing erosion and flooding, thereby protecting the environment. Public education on water conservation encourages communities to adopt practices that minimize water waste, lowering the strain on local resources. Proper water management supports soil health, preventing over-irrigation and erosion, and promoting better agricultural productivity. Capacity building efforts educate communities on sustainable practices and natural resource protection, fostering greater community involvement in environmental conservation. Overall, the project enhances the sustainability and health of Saint Lucia's natural environment.

Gender considerations

This project is committed to fostering a gender-responsive, inclusive, and mainstreamed approach at every stage of planning, initiation, and implementation. Recognizing that climate change impacts can disproportionately affect diverse gender groups and vulnerable populations, the project places a strong emphasis on ensuring equitable participation and benefits. From the initial planning stages, the project team will actively engage with and seek the input of women, men, and marginalized communities to understand their unique perspectives and needs in

relation to water security and climate resilience. The project design will incorporate gender-sensitive strategies, recognizing the different roles and impacts of climate change on individuals. Initiatives will be implemented to ensure that women and marginalized groups actively participate in decision-making processes, and their voices are amplified. Capacity building and training programs will be tailored to address specific needs and challenges faced by different genders, promoting inclusivity and equality. The monitoring and evaluation framework will incorporate gender-disaggregated data to track and assess the project's impact on diverse communities, ensuring that outcomes are not only resilient to climate change but also contribute to social equity and inclusiveness. This comprehensive and integrated gender-responsive approach reflects the project's commitment to promoting environmental sustainability hand in hand with social justice.

Overall, the project adheres to the Environmental and Social Policy and Gender Policy of the Adaptation Fund, ensuring that all activities are implemented in a manner that avoids or mitigates negative environmental and social impacts.

Environmental and social risks will be identified and assessed during project planning and implementation, with appropriate measures put in place to minimize adverse effects on ecosystems, communities, and vulnerable groups. Gender considerations will be mainstreamed throughout the project cycle, ensuring equitable participation and benefits for women and men, while actively addressing gender-based disparities and promoting women's empowerment in water management and decision-making processes. A robust grievance redress mechanism will be established, ensuring that gender-sensitive issues, such as risks of sexual exploitation or harassment, are addressed promptly and equitably. Gender-disaggregated indicators will be used to track project impacts, ensuring continuous alignment with gender equity goals and early identification of potential issues.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

1. With a cost/beneficiary ratio of USD $614.10, using the population size of Micoud, the project is expected to create the enabling environment which will result in greater efficiency and effectiveness in the sector. The AF grant will be utilized to mitigate climate-induced risks to the water sector, in particular, the availability of drinking water during the dry season, and following extreme weather events. The targeted population will benefit from these interventions, but poor and vulnerable groups would specifically benefit from some of the project activities included under the project.

2. Economic and financial analyses will be carried out as part of the feasibility study in support of the Funding Proposal. Indicators such as Financial Rate of Return (FRR), and Economic Rate of Return (ERR) will be calculated to support the level of efficiency and effectiveness provided by the outputs of the project. However, based on the outputs from components 1 and 2, it is expected that critical financial and economic benefits will accrue to the economy overall, in terms of cost savings related to reduced maintenance of aged and climate impact prone

infrastructure, the ability to provide water to customers during periods of drought and following storm events. In addition, WASCO's finances are expected to be more robust with the Climate Resilient Water eGovernance component of other related initiatives, which would facilitate increased revenue from a re-constituted tariff structure. In addition, the energy efficiency measures to be introduced in WASCO's operations would likely contribute modest reductions in emissions.

3. Promoting conservation and efficient use of water resources through public awareness and education campaigns has proven to be a cost-effective strategy in various global contexts. When approached holistically, as proposed in St. Lucia, the benefits often outweigh the costs. A comprehensive public awareness campaign addressing Water Resources Management, Conservation of Forests, and related topics serves as a foundational layer. Forest conservation, for instance, ensures healthy watersheds that naturally filter and regulate water supplies, leading to reduced treatment costs and consistent water flows. Promotion of practices such as Rainwater Harvesting, Water Re-use, and Water Recycling directly impacts consumers by providing alternative water sources, thereby reducing reliance on centralized water supplies. This not only aids in Demand Reduction but also translates to economic savings for consumers and reduced strain on public water infrastructure.

4. When combined with an education program in schools and community-based organizations, the campaign's messages gain longevity. Instilling these values in younger generations ensures continued conservation efforts in the long term. Moreover, by targeting various customer classes, including businesses and households, the program ensures broad-based adoption of water-saving measures. The development of Toolkits for teaching and training further solidifies the initiative's cost-effectiveness. These toolkits provide clear guidelines on implementing water-efficient and conservation measures. When widely distributed and utilized, they can lead to standardization in practices, making efforts more systematic and impactful. Savings achieved from reduced water treatment costs, deferred infrastructure upgrades, and environmental preservation are likely to surpass the initial investment in campaign and educational initiatives.

5. The upgrade to Micoud's water system not only directly benefits Micoud's residents but has a positive impact on surrounding areas, specifically the Patience and Desruisseaux water systems. These systems, previously aiding Micoud's water needs, now experience reduced demand which provides added benefits such as prolonged life of infrastructure and decreased maintenance expenses. Moreover, during prolonged dry periods, these neighboring systems have an additional safeguard, ensuring consistent supply to their communities. In a broader perspective, the entire region stands to gain from Micoud's improved water system, showcasing how targeted infrastructure upgrades in one area can indirectly benefit the surrounding community, ensuring resilience and sustainability and thereby reducing the cost/beneficiary ratio.

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

1. This project is strategically aligned with the key priorities and strategic framework of the Government of Saint Lucia (GoSL), which has been steadfast in developing policies aimed at fostering sustainable economic development while enhancing climate resilience. The Climate Action Policy (CAP) of 2015 outlines three essential processes for successful climate adaptation: Adaptation Facilitation, Adaptation Financing, and Adaptation Implementation. Since the inception of this policy, the GoSL has laid a robust foundation for climate action, embedding climate adaptation strategies into various national frameworks. Additionally, the recently enacted Climate Change Act[15] solidifies the parameter for the previously mentioned policies, like the NAP, NDC, and CAP.
2. The development of the National Adaptation Plan (NAP) has further strengthened Saint Lucia's climate adaptation efforts. The NAP process, initiated in 2017, has been instrumental in integrating climate change adaptation considerations into all relevant policies, programs, and development planning. This integrated and coordinated approach ensures that critical climate change-related risks and development priorities are addressed comprehensively, utilizing both existing and future synergies.
3. Saint Lucia's NAP is defined as a 10-year process, consisting of key cross-sectoral and sectoral adaptation activities outlined in the NAP document. These activities are complemented by Sectoral Adaptation Strategies and Action Plans (SASAPs), which specify adaptation objectives, priority measures, proposed activities, and project concept notes for implementation. The Sectoral Adaptation Strategy and Action Plan for the Water Sector (Water SASAP) 2018-2028 is the first of these SASAPs and has been designed as a ten-year framework to reduce water-related risks induced by climate change and variability. It also aims to build the capacities of relevant stakeholders to ensure the sustainable management of water resources and services under current and future climatic conditions.

   This project directly contributes to three of the four major outcomes outlined in the Water SASAP:

   Outcome 1: *Enhanced Enabling Environment and Improved Behaviors for Water-Related Climate Adaptation Actions*.

   One of the strategic objectives under this outcome is to increase public awareness of integrated water resource management. The project aligns with this objective by promoting education and awareness on water resource management practices.

   Outcome 2: *Increased Water Access, Use, and Quality.*

   The project addresses critical issues related to water scarcity, water quality,

[15] https://npc.govt.lc/assets/files/laws/acts/2024/Act%20No3%20of%202024%20Climate%20Change%20Act.pdf

service efficiency post-disruption by natural hazards, and sustainable water management for the Micoud water treatment facility. By enhancing these aspects, the project supports the strategic goals of Outcome 2.

Outcome 3: *Improved Water Efficiency and Conservation.*

Under Strategy 2 of this outcome, which focuses on improving water infrastructure to build resilience, the project's activities—such as upgrading the Micoud treatment facility, modernizing equipment, and enhancing monitoring systems—are directly aligned with and contribute to the achievement of this strategic goal.

Overarchingly, the project not only supports the objectives of the Water SASAP but also reinforces the broader climate resilience and sustainable development goals of Saint Lucia.

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund

National Technical Standards	**Description and Project Alignments**
Water and Sewage Act 2006	The Water and Sewage Act empowers the Water and Sewerage Company Inc. (WASCO) and other relevant authorities to regulate the use and management of water resources in Saint Lucia. This project, which involves the modernization and upgrade of water treatment and supply systems in Micoud, directly supports the Act's mandate by improving the infrastructure and operational efficiency of water services, ensuring that they meet regulatory standards and are resilient to climate impacts
St. Lucia Bureau of Standards	The Saint Lucia Bureau of Standards (SLBS) plays a critical role in ensuring quality assurance, standardization, and conformity assessment across various sectors, including water and infrastructure projects. This aligns with the project's goal of modernizing and upgrading the Micoud water treatment and supply systems to meet international and national quality standards. By adhering to SLBS standards, the project ensures that the infrastructure improvements enhance operational efficiency and reliability, thereby supporting sustainable water management practices.
Saint Lucia National Environmental Policy and National Environmental Management Strategy	The goal of national environmental policy is to ensure that development is environmentally

	sustainable, while optimizing the contribution of the environment to the economic, social, and cultural dimensions of development. The project's focus on modernizing and upgrading the Micoud water treatment and supply systems directly contributes to sustainable water management by improving the efficiency and reliability of water services, ensuring that resources are used sustainably and are resilient to climate impact. The project's activities, such as installing water storage tank and retrofitting infrastructure with energy-efficient technologies, contribute to this objective by reducing the vulnerability of water resources to climate variability and enhancing the adaptive capacity of the water sector. By enhancing the resilience of the Micoud water treatment facility, the project aligns with the NEP's goal of fostering climate resilience across critical environmental sectors.
Public Health (Sewage and Drainage) Act 1953	The Act mandates the provision of safe and clean drinking water as a fundamental public health requirement. By enhancing the reliability and safety of the water supply, the project directly contributes to the public health objective of providing safe drinking water to the residents of Micoud. The Act also emphasizes the importance of adequate sanitation and hygiene in preventing the spread of waterborne diseases and protecting public health. The project's focus on improving water infrastructure, including the installation of water storage tanks in strategic locations, helps ensure that communities have consistent access to water for sanitation and hygiene purposes. This is particularly critical during droughts or infrastructure disruptions, where water scarcity can exacerbate public health risks
Physical Planning and Development Act Rev 2005	. The Act requires that all significant development projects obtain planning permission from the relevant authorities, ensuring that projects are assessed for their environmental, social, and economic impacts. The project aligns with this by seeking the necessary planning permissions and conducting environmental impact assessments (EIAs) as required by the Act. This ensures that the project complies with local regulations and mitigates any potential negative impacts on the environment and communities. The Act recognizes the importance of developing and maintaining infrastructure that supports public utilities, such as

	water supply and sanitation, in a manner that is consistent with national development plans. The project's activities, which include upgrading water treatment facilities, installing energy-efficient technologies, and improving water storage capacity, align with the Act's provisions for infrastructure development.
The Saint Lucia Climate and Adaption Policy	The policy emphasizes the importance of adapting key sectors, such as water resources, to the impacts of climate change. One of the three key processes outlined in the policy is Adaptation Implementation, which involves taking concrete actions to mitigate the adverse effects of climate change. The project Policy by directly addressing the key areas of climate resilience in water resource management, implementing adaptation measures, integrating climate risks into development planning, raising public awareness, building institutional capacity, aligning with the NAP process, and facilitating adaptation financing. Through these actions, the project supports the policy's overarching goal of building a resilient and adaptive society in Saint Lucia.

F. Describe if there is duplication of project/programme with other funding sources, if any.

The potential for duplication of this project with others funded by different sources appears to be minimal, given its specific focus on water infrastructure resilience in Micoud. Instead, the project presents opportunities for complementarity and synergy, particularly with existing or pipeline initiatives aimed at climate adaptation, disaster risk reduction, and sustainable development in Saint Lucia. By coordinating with ongoing efforts and aligning with national strategies, this project can enhance its impact and contribute meaningfully to the country's climate resilience objectives

In assessing the potential for duplication with other funding sources and identifying complementarities or synergies with existing or pipeline projects in Saint Lucia, it was essential to consider the broader landscape of climate adaptation and development initiatives in the country.

This project's focus on the Micoud water treatment and supply systems, with a particular emphasis on climate resilience, energy efficiency, and community engagement, while not unique it scope, provides the opportunity for minimal overlaps with existing projects. There can be found strong synergies between this project and the Green Climate Fund Readiness project dubbed ***"Mainstreaming Climate Resilience into Water Sector Planning, Development and Operations in Saint Lucia***" that aims to strengthen Saint Lucia's capacity to access and manage climate finance. It includes activities

related to developing climate-resilient infrastructure and enhancing institutional frameworks for climate action. This concept project therefore builds on the broader goals of building institutional capacity and ensuring that climate finance is effectively utilized in Saint Lucia.

Notably, the CDB has undertaken projects in recent past which focuses on improving water supply infrastructure across Saint Lucia, including the replacement and upgrade of aging pipelines, and enhancing water treatment facilities. The focus on modernizing and upgrading the Micoud water treatment plant complements the broader infrastructure improvements being undertaken through the Water Sector Rehabilitation Project. Some of these projects are as follows.

1. Dennery North Water Supply Redevelopment Project
2. John Compton Dam Rehabilitation
3. Vieux Fort Water Supply Redevelopment project

The project aligns with the Saint Lucia, National Water Policy, NAP, and the SASAP for Water. While these policies and plans set broader goals for water management, the project provides specific, actionable steps to adapt to climate related risk. This includes measures to reduce vulnerabilities to drought and floods, which are critical in a changing climate. Other projects operating within these frameworks may focus on different aspects or regions, creating opportunities for complementarity rather than duplication.

The majority of the project aims to enhance water resources management in the face of climate change focusing on resilience and sustainability. They involve capacity building, supporting policy development and improvement of infrastructure. Regional projects such as *Enhancing climate resilience in CARIFORUM Countries and* Strengthening *Resilient Water Resource Management in the Eastern Caribbean* share strong complementarities particularly in terms of shared objectives, capacity building, and infrastructure resilience. The risk of duplication, although low, if the projects are not carefully coordinated. By fostering collaboration and ensuring that activities are complementary, both projects can contribute to a more resilient and sustainable water management system in Saint Lucia and the wider Eastern Caribbean region. As result of the specific geographical project intervention, the likelihood is low allowing for target interventions that address specific community need in Micoud. The localized focus complements broader national scope. The proposed project in Micoud would complement several ongoing and past projects in Saint Lucia by building on existing efforts to enhance climate resilience, particularly in the water sector. Through its focus on infrastructure upgrades, renewable energy integration, and water quality improvement, the project would not only align with but also enhance the impact of broader national and regional initiatives aimed at adapting to climate change and reducing disaster risks.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

The learning and knowledge management component of this project is designed to ensure that valuable lessons and best practices are systematically captured, analyzed, and disseminated. This process will not only enhance the effectiveness of the current project but also inform future initiatives, promoting continuous

improvement in climate resilience and water management strategies. Some of the key elements are as follows:

1. Documentation of Best Practices and Lessons Learned: Throughout the project's implementation, detailed records will be maintained to capture successful strategies, challenges encountered, and the solutions employed. This will include technical reports, case studies, and regular progress evaluations. Specific focus will be placed on documenting the effectiveness of the water treatment system upgrades, energy efficiency improvements, and community engagement activities.
2. Knowledge Sharing Workshops: Periodic workshops will be organized to bring together stakeholders, including community members, WASCO officials, local government representatives, and technical experts. These workshops will serve as a platform for sharing experiences, discussing challenges, and brainstorming solutions. They will also facilitate the exchange of knowledge between communities, ensuring that successful strategies are replicated elsewhere on the island.
3. Development of Training Materials: Based on the project's findings, training materials, such as manuals, guides, and video tutorials, will be developed. These materials will focus on the maintenance and operation of upgraded water systems, the integration of renewable energy technologies, and effective water conservation practices. The training materials will be tailored for different audiences, including WASCO staff, local government officials, and community members.
4. Creation of a Centralized Knowledge Repository: A centralized digital repository will be established to store all project-related documents, reports, data sets, and multimedia content. This repository will be accessible to all stakeholders and will serve as a reference point for future projects. It will include searchable databases of lessons learned, case studies, and technical guidelines, making it easier to retrieve and apply knowledge.
5. Community-Based Knowledge Exchange Programs: A community-based knowledge exchange program will be launched to facilitate the transfer of knowledge and skills between local residents. This will include peer-to-peer learning sessions, where community members who have successfully adopted water conservation measures or renewable energy solutions share their experiences with others. This grassroots approach will help ensure that knowledge is effectively transferred and retained within the community.
6. Monitoring and Evaluation (M&E) Framework: An M&E framework will be developed to continuously assess the impact of the project's knowledge management activities. This framework will include key performance indicators (KPIs) related to knowledge dissemination, such as the number of workshops held, materials distributed, and participants engaged. Regular feedback loops will be established to adjust the knowledge management strategy based on the M&E findings, ensuring that it remains relevant and effective.
7. Dissemination Through Online Platforms and social media: The project will leverage online platforms, including a dedicated project website and social media channels, to disseminate information widely. Regular updates, success stories, and lessons learned will be shared with a broader audience, both within Saint Lucia and internationally. This will help raise awareness of the project's achievements and encourage the adoption of similar practices in other regions.

8. Partnerships with Educational Institutions: Collaborations will be established with local educational institutions to integrate the project's findings into academic curricula. This will include guest lectures, workshops, and the development of case studies for use in environmental science, engineering, and climate change courses. By engaging the academic community, the project will help foster a new generation of professionals equipped.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

The development of climate-resilient water sector projects in Saint Lucia has been an ongoing effort since 2015, involving extensive consultations with key stakeholders at both the national and regional levels. This consultative process has been inclusive, ensuring the involvement of various stakeholders. The included

National Engagement	**Regional**
Water Resource Management Agency (WRMA)	- Caribbean Development Bank (CDB)
- National Utilities Regulatory Commission (NURC)	- Caribbean Water and Sewerage Association (CAWASA)
- National Integrated Planning and Programme Unit	- Caribbean Community Climate Change Centre (CCCCC)
- Department of Sustainable Development (DSD)	- Organization of Eastern Caribbean States (OECS)
- Saint Lucia Development Bank (SLDB	- Caribbean Public Health Agency (CARPHA)
Water Resource Management Agency (WRMA)	- GCF GIZ G-Crews Project
- National Utilities Regulatory Commission (NURC)	- Climate Finance Access Network (CFAN)

These National consultations were essential for gathering input and building consensus on the strategic direction and priorities for water sector resilience. They also facilitated the development of key documents such as:

- *WASCO Climate Risk Vulnerability Assessment (CRVA) 2018, updated in 2022*
- *WASCO Adaptation Plan of Action (APA) 2018, updated in 2022*
- *Saint Lucia Sectoral Adaptation Strategy and Action Plan for the Water Sector (Water SASAP) 2018-2028*
- *Regional Strategic Action Plan (RSAP) 2018*

The regional engagements wit allowed for broader regional alignment and collaboration on climate resilience initiatives, ensuring that the Saint Lucia project was informed by and aligned with regional strategies and actions.

The Caribbean Community Climate Change Centre (CCCCC), in collaboration with WASCO, led the stakeholder engagement process, in the development of the project concept. This involved:

- *Consultations with the WRMA and the (UNOPS) potential executing entity*
- *Engagement with national counterparts to inform project development and solicit input for proposals*

- *Site visits to WASCO's facilities to understand recent works and assess general needs*

  January 2023 - A two-day engagement was held where CCCCC project development staff met with key personnel from WASCO and Saint Lucia's Green Climate Fund (GCF) National Designated Authority (NDA) to discuss the development of the water project and the island's GCF readiness finance needs.
  March 2024 - Given the time lapse between initial discussions and the ongoing project development, a recent stakeholder meeting was held to ensure the project's continued relevance and coherence with the country's needs and priorities. This included:
- *Meetings with WASCO, WRMA, and the Department of Sustainable Development*
- *A site visit to the Micoud community, where interactions with junior officers and treatment facility staff were conducted*

  As the project moves towards the full funding proposal stage, there will be further, more extensive consultations, particularly focused on gender considerations and the needs of the most vulnerable groups within the community. In alignment with the strong emphasis on gender mainstreaming, efforts were made to gather relevant data for gender analysis. This included consultations with the Central Statistics Office to obtain data specific to the Micoud community. This data will inform the development of gender-sensitive project activities, ensuring that the project adequately addresses the needs and priorities of both men and women, with particular attention to vulnerable groups.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

1. Saint Lucia's Nationally Determined Contributions (NDCs) and National Adaptation Plan (NAP) 2018-2028 outline critical adaptation measures across multiple sectors, including water. According to the NAP Financing Strategy, the total cost for implementing adaptation measures identified in the Water, Fisheries, and Agriculture SASAP is estimated at USD 35.4 million, with actual needs likely exceeding this baseline. The requested AF funding for this project represents a fraction of these adaptation needs, yet directly addresses urgent climate vulnerabilities in the water sector. This funding is pivotal for advancing Saint Lucia's adaptation goals as traditional financing mechanisms cannot adequately support these efforts.

2. The water sector in Saint Lucia faces acute challenges due to climate change, including prolonged droughts, extreme rainfall events, and increased turbidity, which compromise vulnerable water supply systems and jeopardize water security. The project's proposed actions, such as climate-resilient infrastructure upgrades in Micoud, align with WASCO's Adaptation Plan for Building Climate Resilience, which estimates sectoral needs at USD 500 million. These actions specifically address climate impacts by incorporating renewable energy systems, flood-resistant infrastructure, and advanced monitoring technologies, all critical

to ensuring long-term resilience.

3. Adaptation Fund financing uniquely enables the implementation of equitable adaptation measures targeted toward the most vulnerable groups, including low-income households, female-headed households, and marginalized communities. Activities such as community-based rainwater harvesting systems, emergency water points, and water purification systems ensure that vulnerable populations can adapt to climate variability. These interventions are often underfunded by conventional sources, making AF financing essential for protecting lives and livelihoods in Micoud.

4. Over the past eight years, the Government of Saint Lucia has invested over USD 75 million in loans, grants, and counterpart funding to address developmental water needs and rising demand. However, these investments do not account for the additional costs of climate-proofing infrastructure to adapt to increasing climate risks. Fiscal constraints, exacerbated by rising debt levels (91.5% of GDP in 2021) and the economic fallout from the COVID-19 pandemic, limit the government's ability to allocate resources for climate adaptation. The concessionary nature of AF financing is critical to bridging this gap, enabling Saint Lucia to implement adaptation measures that would otherwise remain out of reach.

5. Given the small market size and limited profitability of water sector investments, attracting private sector financing has been challenging. Exogenous shocks from extreme weather events and the economic downturn caused by the pandemic have further constrained private sector participation. AF financing offers a pathway to implement climate adaptation actions while addressing systemic barriers to private sector involvement, paving the way for more resilient water infrastructure without over-relying on domestic or private resources.

6. The project aligns with Saint Lucia's Climate Financing Strategy and Private Sector Engagement Strategy, published in 2020, which highlights the island's reliance on external financing to meet NDC targets. As outlined in the NDC Finance Strategy (2021), Saint Lucia's ability to access international climate finance is critical, given the 39% decline in net Official Development Assistance (ODA) from 2015 to 2018. By accessing AF financing, this project directly supports the country's diversification of donor engagement and its efforts to utilize underfunded climate finance mechanisms to achieve adaptation goals.

7. The requested AF financing goes beyond developmental needs to address climate-specific challenges. It enables the integration of real-time monitoring systems, SCADA technologies, and energy-efficient systems, which reduce operational costs and mitigate the financial burden on vulnerable communities. These measures not only protect water access during extreme events but also build long-term resilience by minimizing disruptions and damages from climate-induced risks.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

The sustainability of the project outcomes has been meticulously integrated into the project's design to ensure long-term impact and resilience in Micoud's water supply infrastructure. This includes the modernization and upgrading of water treatment and supply systems, with a focus on integrating climate-resilient technologies to ensure that the infrastructure can withstand future climate-induced stresses, such as increased turbidity, floods, and droughts. This guarantees a reliable water supply for the community over the long term.

WASCO, as the primary authority, has made a firm commitment to ensuring the sustainability of the project by taking full responsibility for the operation and maintenance of the upgraded systems. This includes routine maintenance, emergency response, and ensuring energy-efficient operations. WASCO will integrate these responsibilities into its operational framework, ensuring that all infrastructure remains functional and resilient in the face of climate change.

The inclusion of renewable energy sources is another critical aspect, reducing reliance on the national grid, particularly during extreme weather events. This ensures continuous operation during disruptions and lowers operational costs, contributing to financial sustainability. Additionally, the project emphasizes capacity-building activities for WASCO staff, enhancing their technical skills in climate-resilient water management practices, ensuring that the utility can efficiently maintain, operate, and adapt the water supply systems in the future.

Community engagement and awareness are also vital to the project's sustainability. Public education programs are designed to raise awareness about water conservation, climate change impacts, and the importance of maintaining infrastructure. By involving the community, the project fosters a sense of ownership and responsibility, crucial for sustaining the outcomes. Furthermore, the project targets reducing Non-Revenue Water (NRW) through the installation of smart meters and real-time management systems, directly impacting WASCO's financial health by increasing revenue and reducing water losses, allowing for reinvestment in system improvements.

Knowledge transfer and continuous learning are integral, with a dedicated component for capturing and disseminating lessons learned. By documenting best practices and challenges, the project ensures knowledge transfer to future projects, enhancing their effectiveness and sustainability. This component also promotes ongoing adaptation and refinement of strategies, ensuring that the water supply systems remain resilient as climate conditions evolve.

To further ensure sustainability, a strategic partnership approach will be adopted, particularly for components that directly impact vulnerable populations. Collaborating with key stakeholders such as the Ministry of Equity, Social Justice and Empowerment, Human Services, and other relevant agencies with established capacities in supporting vulnerable groups will be essential. These partnerships will ensure that the project's initiatives, especially those focused on improving water accessibility and resilience for the elderly, disabled, and low-income households, are effectively implemented and maintained. By leveraging the expertise and resources of these agencies, the project can achieve a more comprehensive and targeted approach, ensuring that the most vulnerable

communities receive the support they need. This collaborative effort will also foster long-term sustainability by embedding the project's activities within broader social support structures, thereby ensuring continuity and ongoing impact beyond the project's lifespan

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/program.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	**No Risk:** Proposal follows the law depending on concrete actions prioritized during project design further assessment will be made a full funding proposal stage	
Access and Equity	**No Risk:** The project will not reduce or prevent communities in the targeted areas from accessing basic services the project will take several transparent steps that will ensure that the benefits of the project are being distributed fairly with no discrimination and favoritism, the project targeting will comprise of all families, gender, race	
Marginalized and Vulnerable Groups		**Low risk**: The project catered to marginalized and vulnerable groups. The vulnerability to climate change and social economic effect is the rational reason why the Micoud community is targeted. Therefore, the project aims to address the issue of vulnerability of the demography. During the project implementation it understood that there may be some level of disruptions and inconvenience, however through a grievance redress mechanism will be established. This will allow for those affected by the project to have an accessible, transparent, fair, and effective process for receiving and addressing complaints about environmental or social harm which may occur during all project stages. A robust stakeholder engagement, and the implementation of

		appropriate mitigation measures are essential to minimize potential risks.
Human Rights	**No Risk:** Meaningful stakeholder engagement and consultation processes are essential to uphold the right to participation and ensure that affected communities have a voice in project planning, implementation, and monitoring. Transparent communication, access to information, and grievance mechanisms are critical for fostering inclusive decision-making and accountability which this project is committed too.	
Gender Equality and Women's Empowerment		**low Risk:** Although the project does not address any specific gender issue. It addresses the needs of all marginalized groups. It will afford both men and women access to new and improved water. The differentials need of both men and women will be taken into consideration at stakeholder engagement at various level in the project design. Given the nature and emphasis on community engagement and awareness it is expected that these nuances will be captured. To mitigate against deeply rooted culturally induced gender dynamics, gender specialist is envisioned to undertake a gender assessment and action plan for implementation.
Core Labor Rights	**No Risk:** The project commits to meeting the core labor standards as identified by the International Labor Organization. St. Lucia. The Labor act, 2006 address core conventions of labor right to ensure compliance and adherence labor contracts will be drafted with these laws and standards. Continuous assessment of compliance will be undertaken throughout the project's lifespan. Additionally, the grievance redress mechanism will facilitate a procedure for lodging and resolving complaints concerning violations that might arise at any stage of the project.	

Indigenous Peoples	**No risk** Envisaged.;	
Involuntary Resettlement	**No Risk:** There is no assumption that the project will lead to voluntary or involuntary settlement.	
Protection of Natural Habitats		**Low risk:** The project is not expected to have any negative impact on the natural habitats. An Environmental and social management plan (ESMP) will be developed as part of the full project design to ensure that appropriate mitigation measures can be taken. To ensure environmental protection the projects legal register will catalogue pertinent protected areas to species and the relevant legislation pertaining to these will be environmental impact Assessment, as per relevant legislations, these will rigorously adhere to the prescribed legal requirement.
Conservation of Biological Diversity		Same as above
Climate Change	**No Risk:** Drivers of climate change are not promoted in this project. It is expected that during the project implementation the most efficient approached and methodologies are used to ensure that the project is not contributing to the climate problem	
Pollution Prevention and Resource Efficiency	**Not Risk:** The proposed project activities will not pose any significant pollution risk, and no further assessment is required. The project is expected to bring environmental benefits such as sustainable water use to communities.	
Public Health		**Moderate Risk:** During infrastructure upgrades and installations, there may be temporary disruptions to water services, potentially affecting communities' access to clean water and sanitation facilities. Construction activities associated with the project could pose health risks to workers and nearby residents, such as accidents, noise pollution, and air quality issues from dust and emissions. Improper handling of construction materials, equipment, or wastewater discharge during project implementation could lead to water contamination,

		posing health hazards to communities reliant on affected water sources. Vulnerable groups, such as women, children, the elderly, and individuals with pre-existing health conditions, may be disproportionately impacted by disruptions in water services or exposure to construction-related hazards, requiring targeted interventions to mitigate potential health risks. Through implementation of Environmental and Occupational health and safety adherence many of these likely impacts can be mitigated. A thorough risk mitigation plan will be actualized at full funding proposal stage
Physical and Cultural Heritage	**No Risk**: While the site of the project is already identified there are no apparent risk regarding the physical and cultural heritage of the Micoud community of St. Lucia overall. However, at full proposal development measures will be identifies in the ESMP on how the project can mitigate any risk through risk assessment ensuring compliance to the AF environmental and Social Policy	
Lands and Soil Conservation		**Low Risk:** The allocation of land for water storage facilities or pipeline routes could potentially conflict with existing land uses, such as agriculture, forestry, or conservation areas. However, as the intervention site is owned by the Water Company, this risk is not applicable in this case. Nevertheless, the expansion of water supply infrastructure may lead to the fragmentation of natural habitats and disruption of wildlife corridors, potentially impacting biodiversity and ecosystem connectivity, particularly in sensitive or protected areas. To address this, potential impacts on land and soil conservation will be thoroughly assessed during the full funding proposal stage. This assessment will include the development of a comprehensive risk management plan, outlining mitigation measures to minimize adverse effects and promote long-term environmental sustainability.

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

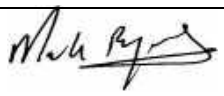
A. Record of endorsement on behalf of the government[2] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Ms. Anita Montoute *Permanent Secretary* *Ministry of Education, Innovation, Gender Relations and Sustainable Development* *Dept. of Sustainable Development* *Georgina Court* *John Compton Highway* *Saint Lucia, W.I*	Date*: November, 14 , 2024*

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (Saint Lucia's Climate Action Policy, and Nationally Determined Contribution) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.

[6.] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities

Name & Signature: Mark Bynoe, PhD.  Implementing Entity Coordinator:	
Date: *(Month, Day, Year)* *12/16/2024*	Tel. and email: +592 620 0559 mbynoe@caribbeanclimate.org
Project Contact Person:	
Tel. And Email:	

MINISTRY OF EDUCATION, SUSTAINABLE DEVELOPMENT, INNOVATION, SCIENCE, TECHNOLOGY AND VOCATIONAL TRAINING
DEPARTMENT OF SUSTAINABLE DEVELOPMENT

Communication on this subject should be addressed to:
The Permanent Secretary

Georgianna Court
John Compton Highway
Castries
SAINT LUCIA, W.I.
Tel No: (758) 468-5863
Email: sustainable.devt@govt.lc

November 14, 2024

Adaptation Fund Board
Secretariat
c/o Global Environment Facility
Mail stop: N 7-700
1818H Street NW
Washington DC 20433
USA

Dear Sir/Madam,

Subject: Endorsement of "Replicating Resilient Water Supply Systems Project in Saint Lucia (Re- Water Saint Lucia)"

The Department of Sustainable Development, in its capacity as National Designated Authority to the Adaptation Fund, has extensively engaged with the Saint Lucia Water and Sewerage Company (WASCO) and Water Resources Management Agency (WRMA). We confirm that the above-captioned national concept note is in alignment with the Government's national priorities, with respect to implementing adaptation initiatives to reduce the adverse impacts of, and risks, posed by climate change in Saint Lucia. More specifically, the proposed project will contribute to the fulfilment of prioritised measures outlined in Saint Lucia's Sectoral Adaptation Strategy and Action Plan (SASAP) for the water sector, as part of the country's broader National Adaptation Plan (NAP).

In this regard, the Department is pleased to endorse the above project concept for support under the Adaptation Fund. This endorsement will facilitate the development of a full project proposal, which will further address any data or procedural gaps of the concept note.

Yours sincerely,

.....
ANITA MONTOUTE (Mrs.)
Permanent Secretary

c.c.
Dr. Colin Young, Executive Director, Caribbean Community Climate Change Centre
Ms. Zilta George Leslie, Chief Executive Officer & Mr. Terrence Gilliard, Strategic Planning Manager, Water and Sewerage Company
Mr. Jason Ernest, Director, Water Resources Management Agency
Ms. Dawn Piere-Nathoniel, Chief Sustainable Development and Environment Officer

ANNEX 1

Preliminary Gender Assessment- Replicating Resilient Water Supply Systems Project in St. Lucia (Re-Water St. Lucia)

Context

Saint Lucia's population was 165,595 persons in 2010 with an estimated population of 177,301 in 2017 (49.64% Males(M) and 50.37% females (F))[16]. Micoud's population size stands at 16,284, with the highest concentration of indigence at 27.4% and the second highest concentration of the non-indigent poor at 15.9%. At the 2010 Census 24%M, and 32%F were unemployed in Micoud. This was contrasted with the national unemployment rates of 19%M and 22%F.

Saint Lucia's NAP (2018-2028) outlines a 10-year process for adaptive and coordinated action to address climate change nationally. It aims to create the enabling environment needed and fast-track climate change and disaster management actions in the country. The ten-year NAP serves as a means of identifying immediate, medium and long-term climate change adaptation needs, and developing and implementing strategies and actions to address those needs. It is organized into seven priority sectors: water, agriculture, fisheries, infrastructure and spatial planning, natural resource management, education, health and tourism (Government of Saint Lucia, 2018a). Gender is included in the NAP, where a section outlines the approach to "mainstreaming of gender across all activities involved in the NAP process, with the aim of decreasing gender-based vulnerabilities, promoting gender equality in decision-making and ensuring the implementation of adaptation measures does not impose additional burden to women, in particular, and does not promote the domination of any gender over others" (Government of Saint Lucia, 2018a: 47).

Gender Differentiated Activities and Division of Labour

The Saint Lucia National Report of Living Conditions 2016 noted that generally occupational sex segregation is a feature of the labour market. There were also lower labour force participation rates among women are persistent, and there are higher unemployment rates among women (17.5%) compared to men (16.9%)[17]. Males also experienced a larger increase in median earnings than females, and females earned less than males in every educational category in 2016[18].The EnGenDer assessment put forward that this highlights the structural inequalities in women's access to employment, and the likelihood of them being both unemployed and underemployed[19].This pattern has remained consistent with the most recent Labour Force Survey conducted in the first quarter of 2020, which found that

[16] The Central Statistical Office of Saint Lucia, 2019 as cited in Caribbean Natural Resources Institute (CANARI), EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[17] Kairi Consultants Limited, 2018 as cited in CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[18] *Ibid*

[19] CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

unemployment rates among females are substantially higher than for males at 22% and 14%, respectively.[20]

Gender Differentiated Climate Change Risks and Impacts

The EnGenDer assessment also identified that high risks groups that are vulnerable to climate-related disasters include female-headed households, children and elderly[21]. Female-headed households were found to have increased vulnerability to the impacts of Hurricane Tomas as they represented 44% of households and comprised 47% of low to middle-income households[22]. Women in female-headed households were found to have lower employment levels and lower wage brackets in the labour market[23]. Female-headed households also had large household sizes and were more likely to live in poor housing in disaster-prone areas. It was also noted that socially vulnerable female-headed households, which were not classified as poor, might move below the poverty line in the event of a natural disaster. "After Hurricane Tomas, the damage to the water sector was estimated at $US 46.2 million. Around 80% of the population (137,896 persons) were without potable water for two weeks after the hurricane due to siltation of the dam, and due to damage to back up generators and pumps. The impacts of the hurricane exacerbated water supply issues in rural areas such as Vieux Fort leading to less treated water being delivered post-hurricane. There was a notable increase in gastroenteritis in children under 5 years for 2010 (47% increase), which may be correlated with the hurricane's impacts on access to and the quality of potable water".[24]

Vulnerability and Water

About 95% of households have access to pipe-borne water. However, the other 5% are generally poor, rural households that rely on rainwater or untreated water from rivers that can be contaminated due to erosion, agricultural run-off and untreated effluent[25]. Only 70.8% of the population of Micoud has public piped water into their dwellings. 17.5 of the population accessed was from public standpipes outside dwelling units and 8.5% received water from other sources[26]. In comparison to other districts, Micoud was among the four worst performing districts of the twelve districts in terms of household access to water supply. The EnGenDer Assessment identified "areas of most concern, which continue to experience multiple deprivations including in access to water and sanitation, were districts and communities in Anse la Raye, Bexon, Canaries, sub- urban/rural Castries (including Marchand Road), Dennery, Gros Islet, Laborie, Marc, Micoud, Ravine Poisson and Soufriere. These areas saw deprivations and or growing poverty and inequality over a 10- year period from 2006-2016 and are among those areas frequently impacted by climate-related hazards".[27]

[20] The Central Statistics Office of Saint Lucia, 2020 as cited in in CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[21] CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[22] ECLAC, 2011 as cited in CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[23] *Ibid*

[24] *Ibid*

[25] CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

[26] GOSL, Population and Housing Census, 2010

[27] *Ibid*

Differences in Water Use

In a gender analysis of five communities in Saint Lucia supplied by the John Compton Dam, it was highlighted that "within the household women and men equally value piped water inside the dwelling and have similar and complementary usage for personal and household activities". … "Difference in water use is evident in the types of household activities undertaken. These correspond to traditional gender roles with women primarily using water for daily meal preparation to sustain family nutrition, general household cleanliness, laundry, and care of sanitary facilities. Men's use of water for household activities canters on cleaning of yards, vehicles, tools and equipment"[28]. The study further highlighted that the intensity of women's needs for water undertake tasks in comparison to the seemingly optional need by men. It was noted that both sets of activities are conducive to households' wellbeing[29]**.** Importantly the study highlighted that Women feel intense pressure when their role fulfilment is continuously frustrated by persistent water shortages[30]. The reality of lone female or male households is that their roles were more flexible and the above would not always hold true.

Water Collection Responsibilities

The Saint Lucia Country Gender Assessment found that the collection of water or the use of river water can be extremely time consuming, especially for women who are responsible for household activities requiring water (cooking, cleaning, laundry, etc.).[31] A survey done for the evaluation of the gender sensitive socioeconomic impacts of the Vieux Fort Water Redevelopment Project revealed that "In response to the question who in your household would usually collect water, 64% of the persons in the Treatment Group said adult women and 67.5% in the Control Group accounted for the same"[32]. This was the case since women predominantly were at home during the day. "While some men were noted to assist with household chores adult women were mentioned to bear the brunt of this responsibility"[33]. This was not a role solely expected of adult women, but also young women below the age of 18.

Coping with Water Shortages

Women and men in households have developed the proactive coping mechanism of always storing water. There are identified nuances identified in the Caribbean Policy Development Centre's 2020 study, however, largely households regardless of male or female heads rely on water storage. The means used to ensure safe storage of water is important as there are some gender distinctions, but moreover socio-economic distinctions in that regard. The study does highlight that socioeconomic differences among households result in some having the benefit of cement tanks or plastic 5,000-gallon storage tanks while others rely on smaller containers such as barrels, buckets and bottles[34]. "…Household storage is

[28] Caribbean Policy Development Centre, Gender Capacity Building in the Water Sector, 2020

[29] *Ibid*

[30] *Ibid*

[31] Rawwida Baksh And Associates, Country Gender Assessment Saint Lucia, 2016

[32] SHIDAA Sustainable Development Solutions Ltd, Evaluation of The Gender-Sensitive Socioeconomic Impacts of the Vieux Fort Water Supply Redevelopment Project for water and Sewerage Company Ltd. (WASCO), 2019

[33] *Ibid*

[34] Caribbean Policy Development Centre, Gender Capacity Building in the Water Sector, 2020

supplemented by resorting to natural water sources such as ponds, rivers and springs where these exist and are accessible to maintain daily social reproduction and productive functionality during shortage. Women also cope with water shortage by limiting the number of times they cook, deferring washing and cleaning, and enduring the inconveniences of laundry piling up"[35]. Purchasing bottled water for drinking, and conserving available water are also coping strategies. The means for conserving available water similarly has gender and socioeconomic distinctions.

EnGenDer Recommendations for Water Sector in Saint Lucia

The 2022 EnGenDer assessment produced concrete recommendations for ensuring gender responsive climate resilience in the water sector. The recommendations as highlighted below[36] are useful for shaping gender solutions for this Re-Water Saint Lucia Project:

1. Invest in infrastructure for the provision of adequate water and sanitation to the most vulnerable communities, and those experiencing compounded socioeconomic deprivation due to structural inequalities. These include but are not limited to Anse la Raye, Bexon, Canaries, Dennery, sub-urban/rural Castries (including Marchand Road), Gros Islet, Marc, Laborie, Micoud, Ravine Poisson and Soufriere.

2. Address non-revenue water losses due to poor infrastructure and invest in storage to better deal with increasing water shortages and droughts. Implement 'pro-poor' policies to support low-income families in accessing water, ensuring that water is affordable and that daily needs can be met. This should include a focus on income poor single female headed households with a burden of care for children and others in their households.

3. Implement awareness raising and specific gender-responsive and community-led climate resilient water management initiatives, including for rainwater harvesting and storage. This should also translate into the development and implementation of sustainable wastewater management to address related issues of water quality and inadequate sewage disposal and sanitation.

Water and Sewage Company Inc (WASCO)

As one of the project's Implementation Partner WASCO's capacity for mainstreaming gender is bolstered by the Company's experience in implementing projects with donors that require gender responsiveness such as the Caribbean Development Bank. The Company has commissioned project level gender analyses to support its interventions in several areas including in Vieux Fort. In addition, WASCO has a gender policy which provides guidance for mainstreaming gender in the institution and services of the company. While this is so, it is recognised that integration of gender and social inclusion into the operation of utility companies requires cultural shift, awareness raising and capacity development. This too is in line with the Company's Gender Policy.

[35] *Ibid*

[36] Sourced directly from CANARI, EnGenDer Report of the Gender-based Climate Resilience Analysis for Saint Lucia (2022)

Stakeholder Consultations

Saint Lucia's Water Sectoral Adaptation Strategy and Action Plan (SASAP) has informed the design of this project. While there has not yet been dedicated engagement of stakeholders from a gender perspective, those or with gender expertise for this Re-Water Saint Lucia Project, the engagement for the SASAP was broad to also include perspectives of the Department of Gender Relations. Going forward, it will be important to ensure that critical perspectives on social inclusion and gender equity are considered. It is therefore expected that these key stakeholders will be consulted as part of the Gender Assessment, and their views are incorporated to further flesh out the design of this project.

Gender Solutions Re-Water St. Lucia

The 2022 EnGenDer assessment for the Water Sector in Saint Lucia provides sound recommendations for ensuring that the needs of vulnerable populations, including single female headed households are prioritised. The Project must ensure that there is inclusive and meaningful access to water, even when water availability is improved through the interventions of Re-Water Saint Lucia. The project should actively explore optimizing the coping mechanism to water shortages pointed out by communities. Gender differentiated coping strategies are preliminarily identified from complementary gender assessments done by SHIDAA Sustainable Development Solutions Ltd (2019), these can be further explored to ensure that activities aimed at ensuring sustainable access to clean water in the face of climate change and other challenges are beneficial to both genders. As part of the project's Gender Assessment, and Environmental and Social Study options for water collection and storage and collection will need to be further explored and detailed in support of Component 1.

Institutionally, the Departments of Gender Relations and/or Social Transformation should be key project partners in implementing initiatives that ensure inclusive access to water for vulnerable populations, primarily under components 1 and 4. They are pivotal partners who can ensure gender and social inclusion approaches are integrated as part of comprehensive integrated water resource planning and management.

Recognising the importance of teachers and parents in awareness communication for behavioural change, the project will need to ensure that unique approaches for awareness building are considered as part of the project's gender action plan, and ultimately the project's activities. Effective and gender responsive approaches to communication may need to be studied to detail a responsive plan for awareness.