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ABBREVIATIONS

AD	Aspirational Development
ASP	Agency for Social Protection
ASYCUDA	Automated System for Customs Data
BAU	Business-as-Usual
BCE	Blue Carbon Ecosystem
BESS	Battery Energy Storage Systems
BGF	Blue Grant Fund
BIF	Blue Investment Fund
BIT	Business Income Tax
CAP	Common Alerting Protocol
CBS	Central Bank of Seychelles
CBT	Climate Budget Tagging
CCDR	Country Climate and Development Report
CCKP	Climate Change Knowledge Portal
CC-MFMOD	Climate Change Macro-Fiscal Model
CDM	Clean Development Mechanism
CMIP6	Coupled Model Intercomparison Project Phase 6
CPAT	Climate Policy Assessment Tool
CRDC	Crisis Resilience Debt Clause
CSO	Civil Society Organization
CSR	Corporate Social Responsibility
DBS	Development Bank of Seychelles
DfD	Debt-For-Development
DfN	Debt-For-Nature
DRE	Distributed Renewable Energy
DRF	Disaster Risk Financing
DRMD	Disaster Risk Management Division
EEZ	Exclusive Economic Zone
EFF	Extended Fund Facility
EIA	Environmental Impact Assessment
EPA	Environment Protection Act
EU	European Union
EWS	Early Warning System
FiTI	Fisheries Transparency Initiative
FMIS	Financial Management and Information System
FSA	Financial Services Authority
FSC	Financial Stability Committee
GCF	Green Climate Fund
GCM	General Circulation Model
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIS	Geographic Information System
GOP	Gainful Occupation Permit
GoS	Government of Seychelles
HLO	High-Level Objective
ICT	Information and Communication Technology
IDC	Island Development Corporation
IEc	Industrial Economics, Incorporated
IFMIS	Integrated Financial Management and Information System
IMF	International Monetary Fund
KPI	Key Performance Indicator
LUP	Land Use Plan
LWMA	Landscape and Waste Management Agency

MECENR	Ministry of Environment, Climate, Energy and Natural Resources
MCP	Maximum Catch Potential
MPA	Marine Protected Area
MRV	Measurement, Reporting, and Verification
MSMEs	Micro, Small, and Medium Enterprises
MSP	Marine Spatial Plan
MoFEPTI	Ministry of Finance, Economic Planning, Trade and Investment
NBS	Nature-Based Solutions
NCCP	National Climate Change Policy
NGFS	Network for Greening the Financial System
NGO	Nongovernmental Organization
NDC	Nationally Determined Contribution
NDS	National Development Strategy
NEOC	National Emergency Operations Center
NIEMP	National Integrated Emergency Management Plan
NPV	Net Present Value
PES	Payments for Ecosystem Services
PFM	Public Financial Management
PIM	Public Investment Management
PPA	Physical Planning Act
PPG	Partial Portfolio Guarantee
PPP	Public-Private Partnership
PUC	Public Utilities Corporation
PV	Photovoltaic
RCP	Representative Concentration Pathway
RE	Renewable Energy
REDD+	Reducing Emissions from Deforestation and Forest Degradation Plus
REPAIR	Regional Emergency Preparedness and Access to Inclusive Recovery Program
R-USLE	Revised Universal Soil Loss Equation
RSF	Resilience and Sustainability Facility
SCCI	Seychelles Chamber of Commerce and Industry
SEEREP	Seychelles Energy Efficiency & Renewable Energy Programme
SeyCCAT	Seychelles' Conservation and Climate Adaptation Trust
SIA	Seychelles Infrastructure Agency
SIDS	Small Island Developing States
SLB	Sustainability-Linked Bond
SLL	Sustainability-Linked Loan
SLTA	Seychelles Land Transport Agency
SMA	Seychelles Meteorological Authority
SMEs	Small and Medium Enterprises
SOE	State-Owned Enterprise
SPA	Seychelles Planning Authority
SPEI	Standardized Precipitation Evapotranspiration Index
SRC	Seychelles Revenue Commission
SSP	Shared Socioeconomic Pathway
SSRC	Sustainable Seychelles Recognition and Certification Program
SSTL	Seychelles Sustainable Tourism Label
STB	Seychelles Tourism Board
SWIOFish3	Southwest Indian Ocean Fisheries Governance and Shared Growth Project (Phase 3)
TCFD	Task Force on Climate-related Financial Disclosures
TVET	Technical and Vocational Education and Training
UMIC	Upper-Middle-Income Country
UNFCCC	United Nations Framework Convention on Climate Change
URC	Utility Regulatory Commission
VAT	Value Added Tax
VCM	Voluntary Carbon Market

VRE	Variable Renewable Energy

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Executive Summary

The Seychelles Country Climate and Development Report (CCDR) provides analysis and recommendations on how Seychelles can achieve sustained development while responding to climate change. As the continent's only high-income country, Seychelles is a success story in Africa. But as a small island developing state (SIDS) of 122,000 people scattered across several islands in the Indian Ocean, it is also highly exposed to shocks, including increased climate variability and change. Despite these structural challenges, Seychelles has high ambitions to climb the ranks among high-income countries, leveraging a balanced approach between economic development and environmental stewardship. Achieving these goals will require a more diversified, productive, and inclusive economy. This report finds that adapting to a changing climate offers opportunities to boost growth, jobs, and development outcomes, while also reducing climate risks and greenhouse gas (GHG) emissions. However, grasping these opportunities will require actions to address rising sea levels, increasing temperatures, and more frequent storms, which threaten tourism and fisheries—the two central pillars of the economy— as well as the 90 percent of the population and key infrastructure concentrated in coastal areas.[1]

Seychelles' pathway to realize the opportunities and manage the risks from a changing climate differ from those of larger nations. First, with the country contributing less than 0.01 percent of global GHG emissions, Seychelles is primarily pursuing the renewable energy (RE) transition for its cost effectiveness and for energy security and resilience benefits—though it will also reduce emissions.[2] Second, though closely related, the investment needs for climate adaptation are significantly higher than those for emission reduction. Third, due to its tiny land mass[3] the agriculture sector is small, though it remains critical for food security but vulnerable to climate variability and change. Seychelles climate response also differs from that of many other SIDS, as it is not in a direct cyclone path nor is it an atoll nation where sea level rise could feasibly make large parts of the country uninhabitable within a generation (as in Maldives). Instead, the most prevalent sudden-onset climate event is the recurrence of heavy rain combined with king tides, which cause flooding, soil and beach erosion, and landslides.

This CCDR analyzes how Seychelles can achieve its development ambitions while strengthening climate resilience and ensuring sustainability. Chapter 1 provides background on how development, structural vulnerabilities, and climate interact in Seychelles. Chapter 2 provides an overview of Seychelles' climate change commitments, current policies, and institutional gaps. Chapter 3 provides policy recommendations and investment needs for six areas of the economy—tourism, ocean economy, energy, infrastructure, water and agriculture, and human capital—crucial to achieve resilient and sustainable development. Chapter 4 assesses the macroeconomic and distributional impacts of three modeled pathways of development and climate action. Chapter 5 outlines options for mobilizing financing. Chapter 6 concludes with priority actions and recommendations on a path forward.

Actions for a resilient development pathway

This report identifies actions to steer Seychelles' economy to a more resilient development pathway. First, Seychelles will need to ***reorientate*** its key economic sectors—tourism and the ocean economy—as well as the energy sector, toward more climate resilient and sustainable development models. At the same time, the country will need to ***reduce*** exposure and vulnerability to the physical impacts of stronger storms, erratic precipitations, increased heatwaves, and sea level rise. Finally, Seychelles will need to ***reinforce*** the institutional and macro-fiscal foundations that will enable this resilient economic transformation through targeted reforms and public-private partnerships (PPPs).

This CCDR focuses on these *3Rs—reorientate, reduce, reinforce*—to help Seychelles achieve its ambitious development vision and seize the opportunities created by a changing climate while addressing the growing risks (**ES Figure 1**). Doing so will require mobilizing significant private and public

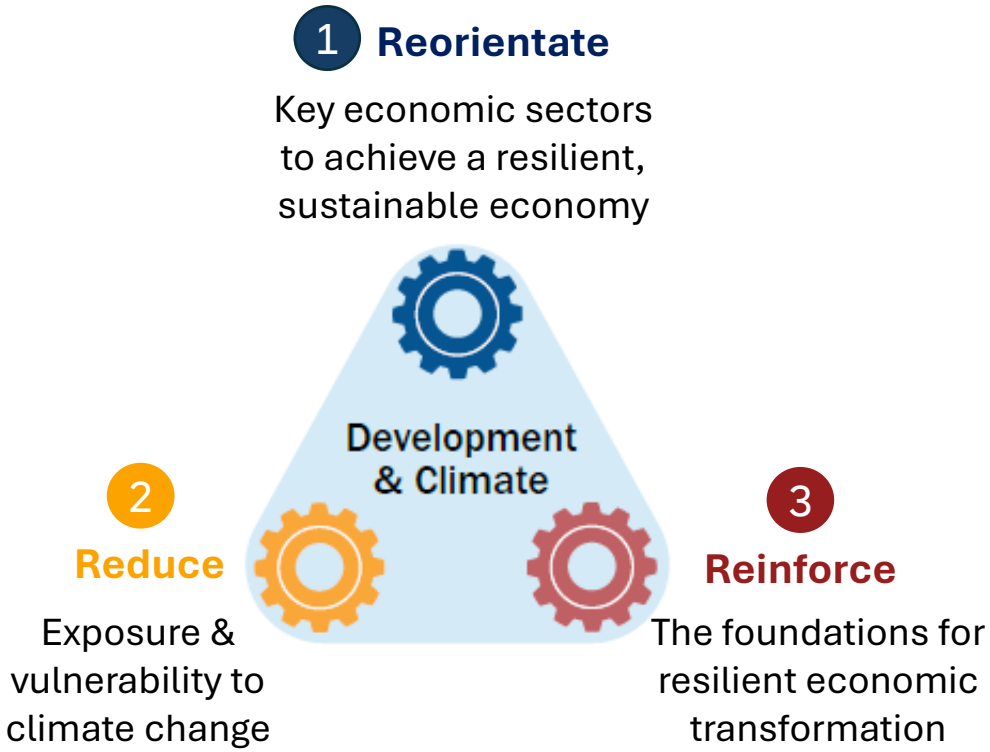
[1] World Bank and Ministry of Environment, Energy and Climate Change of Seychelles. (2019). Seychelles Coastal Management Plan: 2019–2024.

[2] Though as a SIDS with GHG emissions per capita of 0.01percent—comparable to other high-income countries—Seychelles is also pursuing decarbonization for global public good and political (signaling) motivations.

[3] Seychelles' land area is smaller than Madrid while it's exclusive economic zone is the size of Spain, France, and Germany combined.

investments, estimated in this CCDR at 2.8 percent of gross domestic product (GDP) annually over the next five years, and a further 1.0 percent of GDP annually over the following two decades.

ES Figure 1: Achieving resilient and sustainable growth and job creation will require Seychelles to address three interrelated development and climate priorities



Based on an economy wide analysis, this CCDR presents a set of 10 key recommendations grouped under the 3Rs (ES Table 1). These are the highest priority actions identified in the report. They are drawn from a longer set of recommendations summarized at the end of each chapter and further elaborated in Chapter 6 in terms of prioritization, responsible entities, urgency, the expected source of financing (public, private, or public private partnerships (PPPs)), and indicative cost.

ES Table 1: Summary of the CCDR's 10 key recommendations

PILLAR 1: REORIENTATE key sectors to achieve a resilient and sustainable economy	
1. Tourism	Diversify tourism demand and increase visitors' length of stay by (i) developing a more diverse tourism product offering, including ecotourism-, agrotourism-, and cultural tourism; and (ii) expanding into new (including regional) markets.
2. Blue Economy	Support development of the aquaculture industry and increase the value of fish catches landed (target and bycatch) by reforming and expanding the Blue Investment Fund (BIF) and supporting the local bycatch processing sector, while continuing to support the management of protected areas and ocean health.
3. Energy	Support the scale-up of Renewable Energy (RE) by: (i) investing in critical grid infrastructure and battery energy storage systems (BESS) to enhance grid stability and flexibility; and (ii) removing remaining regulatory barriers, including further streamlining and operationalizing recently introduced licensing procedures to ensure faster permitting; adopting and applying a transparent multi-year electricity tariff methodology; and establishing a transparent and cost-reflective tariff framework for distributed renewable energy (DRE) under both net billing and gross metering regimes.
PILLAR 2: REDUCE exposure and vulnerability to climate change	
4. Disaster Risk Reduction	Develop a National Adaptation Plan with a detailed and costed set of priority adaptation projects, providing a clear, actionable roadmap for achieving climate resilience across sectors and guidance on the role of the Disaster Risk Management Division (DRMD) in climate resilience.
5. Coastal Protection and Infrastructure	Protect key assets and boost infrastructure resilience by: (i) undertaking prioritized coastal protection investments (including seawalls, dune and mangrove restoration, and coral reef rehabilitation) and climate-informed upgrades to Port Victoria, Seychelles International Airport, and the coastal road networks on Mahé, Praslin, and La Digue; and (ii) enhancing awareness and enforcement of climate risk- and mitigation-related regulations under the Planning Act, including the Physical Planning (Building) Regulations, 2024.
6. Water	Secure the water supply and access by: (i) evaluating options to protect existing desalination facilities from flooding, saline intrusion and storm surges and introduce RE systems; and (ii) constructing and operating a water treatment plant at the La Gogue dam site.
PILLAR 3: REINFORCE the foundations for resilient economic transformation	
7. Fiscal Sustainability	Implement additional tax and expenditure reforms (such as reducing tax expenditures, improving tax administration, and further pension reform) to create additional fiscal space, and strengthen the integration of climate considerations into the public financial management (PFM) system, including in public investment management (PIM) and procurement.
8. Climate Finance	Revise the Climate Finance Resources Mobilisation Strategy to include the financial sector among potential financing sources, and draft roadmaps with clear timelines to effectively mobilize banking sector assets, payments for ecosystem services (PES), pension fund assets, insurance company assets, and potentially a sustainability-linked bond/loan.
9. Climate Finance	Analyze the efficiency of the financial schemes offered by the Development Bank of Seychelles (BDS), assess the opportunity to develop a Partial Portfolio Guarantee (PPG) to replace part of these schemes, and study the feasibility of a PES scheme for coral reefs and the capacity to mobilize the private sector around this concept.
10. Close the Skills Gap	Reform the Gainful Occupation Permit (GOP) process to reduce the barriers to accessing foreign labor to fill skills gaps; and align the education system and curricula with the skills needed for climate resilience and sustainable development, particularly for RE technicians, sustainable construction, water and waste management, and other low-carbon trades.

Overview

Why are the 3Rs necessary?

Seychelles' development success is facing headwinds

Despite its impressive development, Seychelles' long-term economic development is threatened by inherent structural challenges and the increasing impacts of climate change. Seychelles achieved high-income status in 2015, following three decades of inclusive growth and poverty reduction which saw it achieve the highest Human Development Index in Africa. Yet, as a SIDS, the country faces many inherent structural challenges related to its economic geography, which is characterized by extreme remoteness, small size, and geographic dispersion. These structural challenges are compounded by increasing impacts from climate change and extreme climate events, which hinder sustainable development. Moving to the next stage of development will require a new round of reforms to accelerate resilient and sustainable economic transformation, where long-term growth is fostered by private sector- led productivity gains. This will involve reforms and strategic investments to reduce the impact of structural vulnerabilities, and to address increasing vulnerabilities to a changing climate.

Climate variability will have unprecedented impacts on the economy

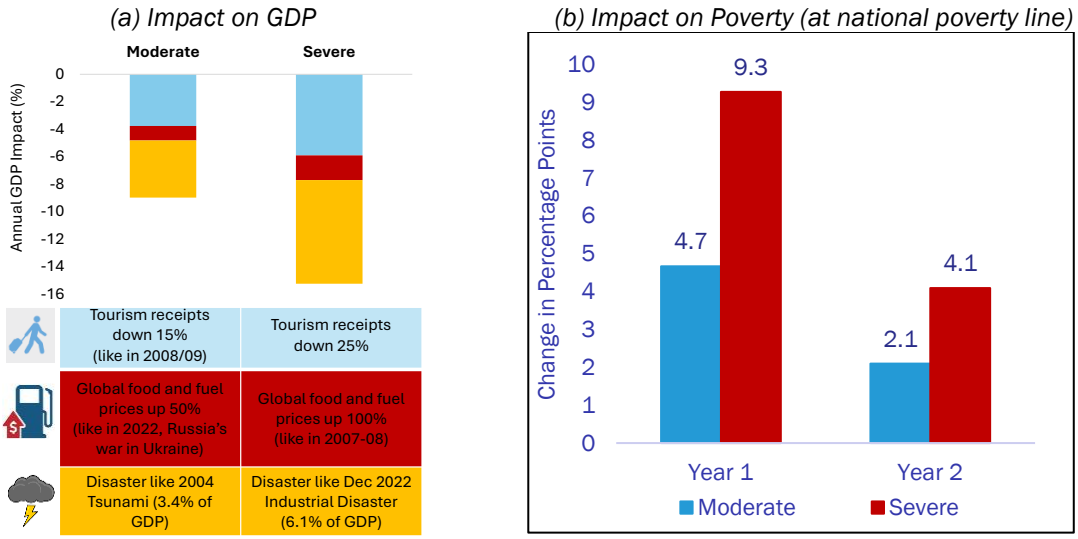
Seychelles is projected to experience significant climate changes over the next 25 years, including extreme temperatures, increased storm severity, sea warming, and sea level rise. By 2030-2035, the country will face regular temperatures surpassing 35°C in the summer months and above 25°C throughout the year. By 2050, the population will experience dangerous tropical nights of above 29°C from October to June. Precipitation patterns will become even more erratic, with fewer but more intense storms leading to increased flood risks. Mean sea level is projected to rise by 25cm by 2050 and 78cm by 2100. Combined with more frequent storm surges events, this will increase the risks of coastal inundation and associated socioeconomic effects.

Climate change thus poses substantial risks to the Seychelles' economy and people. Macroeconomic modeling suggests that, without action, the impacts of climate change quantified in this CCDR could reduce Seychelles' GDP by over 6 percent by 2050 and increase the poverty rate by at least 1 percentage point by 2035. Over half of this impact would come from lower tourism revenues, while 30 percent would come from sea level rise and increased flooding. Beyond 2050, the negative impacts due to rising sea level (on infrastructure) and temperature (on fisheries) are projected to accelerate from 2070. However, average impacts mask vulnerabilities to large or compound shocks. These risks can be explored with an illustrative 'Compound Shock Scenario' in which multiple shocks—both climate-related and independent of it—occur in quick succession. While unlikely, this scenario can serve as a stress test to identify key vulnerabilities and opportunities to build resilience. A Compound Shock Scenario could see the convergence of several low-probability but high-impact events, including a sharp drop in tourism earnings (as experienced in 2008/09), a spike in global food and fuel prices (similar to 2007/08 or 2022), and a significant disaster (comparable to the 2004 Pacific Ocean Tsunami or the December 2023 industrial disaster in Mahé)—all happening in rapid succession. Model simulations that combine these events show that such a scenario could reduce GDP by up to 15 percent, and the proportion of households living below the national poverty line could rise by over 9 percentage points (from 27.1 percent to 36.3 percent) (

ES Figure **2**).

However, Seychelles' response to climate change also brings opportunities. The analysis in this CCDR indicates that Seychelles can afford to steer its economy onto a more resilient and sustainable development path. The actions proposed are estimated to deliver higher GDP, more jobs, reduced poverty, and lower GHG emissions—all while also reducing public debt.

ES Figure 2: A plausible Compound Shock Scenario could see GDP drop 15 percent and increase poverty by 9 percentage points in a single year *(percent change from business-as-usual (BAU))*



Source: World Bank staff calculations based on simulations from the Climate Change Macro-Fiscal Model (CC-MFMOD) macroeconomic model and the 2018 Seychelles Household Budget Survey.

How should Seychelles respond?

1. *Reorientate* key sectors of the economy

Accelerate the transition to a high-value, low-volume tourism sector

Tourism is the backbone of the economy but is highly vulnerable to climate change. Tourism-related industries account for about 21 percent of GDP, 23 percent of employment, and 42 percent of exports, meaning that its performance touches all parts of the economy, including generating vital foreign exchange and boosting government revenues. Yet, increasing climate variability poses a significant threat to its future. Under a Business-As-Usual (BAU) Scenario, tourism revenues could decline by 11-16 percent by 2050, as rising temperatures reduce tourist arrivals. These losses could be compounded by recurrent damage to key tourism and road assets due to erosion and sea level rise, and disruptions to transport infrastructure. A shock of this magnitude would have significant implications for economic activity, jobs, and the balance of payments.

Seychelles' strategic shift toward high-value, lower-volume tourism presents a strong foundation for advancing climate resilience in the sector—and should be accelerated. The country's strong sustainability track record, international visibility, and high-end tourism model offer a strategic advantage in transitioning toward a more resilient and sustainable industry. However, accelerating this transition is imperative given the substantial risks that climate change poses to the sector. Looking ahead, further efforts should aim to deepen the high-value, low-volume model by attracting travelers who stay longer, spend more, and seek sustainable experiences, thereby maximizing economic returns while minimizing environmental impact. Scaling up this approach can reduce pressure on fragile coastal ecosystems, lower the environmental cost of tourism, and support the uptake of climate-informed technologies, regenerative practices, and eco-certified products, while promoting green jobs and enhancing natural carbon sinks such as mangroves and seagrasses. Adaptation measures to protect key tourism assets will also be essential. Strengthening this tourism model will be critical not only for enhancing the sector's resilience to climate risks but also for maintaining Seychelles' long-term competitiveness as a sustainable destination.

Diversify the fisheries, marine ecosystems, and ocean economy

Climate change impacts, such as rising sea temperatures and the increasing frequency of marine heatwaves, are expected to significantly affect Seychelles' marine biodiversity and fisheries sector. The fisheries sector accounts for 10 percent of GDP, 11 percent of exports, and 8 percent of jobs—making it the second largest source of jobs and foreign exchange. Sea surface temperatures are projected to rise by up to 1.7 °C by mid-century and 3.2 °C by 2100, leading to a decline in fish biomass by about 24 percent under moderate global warming and by over 80 percent under extreme warming scenarios.[4] These changes threaten key sectors like tuna exports and tourism, necessitating urgent climate adaptation strategies and sustainable fisheries management to preserve crucial ecosystems and enhance resilience.

The Government of Seychelles (GoS) has placed climate change adaptation at the forefront of its national agenda, focusing on a blue economy approach that combines coastal management, biodiversity conservation, and fisheries sustainability. Effective fisheries management is essential to mitigate the socio-ecological risks posed by climate change. Investment to develop climate-resilient and diversified ocean economy, alongside marine spatial planning, offers opportunities to protect and expand economic activity and employment while ensuring the long-term sustainability of the ocean economy. For example, development of the aquaculture industry could generate up to 2,500 jobs by 2040 (over 4 percent of the labor force).[5] Access to credit (including by reforming and expanding the Blue Investment Fund (BIF)[6] so it can also support aquaculture, processing, and logistics, and revising the financing terms), infrastructure investments, and improved linkages with education and training will be required to realize this opportunity and ensure that Seychellois workers are equipped for these jobs.

Accelerate the energy transition

Seychelles relies heavily on expensive imported fossil fuels for its energy sector, which poses significant risks to its macroeconomy and energy security. About 95 percent of the country's electricity comes from fossil fuel-fired generators.[7] The high and volatile cost of importing fossil fuel, combined with the lack of economies of scale in domestic generation, transmission, and maintenance, results in corporate electricity tariffs that are among the highest in the world, undermining private sector competitiveness. Recognizing these vulnerabilities, Seychelles has set targets to achieve a 15 percent share of RE generation by 2030 and 100 percent by 2050. However, the uptake of RE remains limited due to technical and financial constraints, including: (i) reliability and stability issues associated with the variability of RE in a small grid system; (ii) limited scale and available financing for RE projects (both for distributed and utility-scale projects); and (iii) a lack of land or suitable sites. To address these challenges, Seychelles is seeking to accelerate the transition to RE.

Switching to RE will cost an additional US$266 million (in net present value (NPV) terms) over 2026–2050. Modeling conducted for this CCDR indicates that under an accelerated scenario, the share of RE could reach 25 percent by 2030, rising to 41.5 percent by 2043, compared to 15 and 30 percent under a BAU Scenario. This transition will require an additional US$266 million (in NPV terms)[8] in capital investments compared to the BAU Scenario, including for increased RE generation capacity, BESS installation, and higher levels of interconnectivity between grid systems in the three main islands—Mahé, Praslin, and La Digue.

The switch to RE offers long-term benefits: it will cut electricity generation costs by 20 percent, reduce imports by over US$100 million annually, create jobs, make Seychelles more energy secure, and improve the environmental and financial sustainability of the power sector. RE is expected to lower the marginal cost of electricity generation from US$0.15 per kWh to US$0.12 and reduce fuel imports by about 5 percentage points of GDP annually (over US$108 million in 2024, and US$2.9 billion in NPV terms over the next 25 years). However, to achieve this energy transition, Seychelles will need to attract private sector capital by developing a pipeline of bankable RE projects, remove technical and regulatory

[4] World Bank Climate Change Knowledge Portal (CCKP).
[5] PUC. (2023). Annual Report.
[6] This fund was created in 2018 to channel US$12 million of Seychelles' sovereign Blue Bond to develop sustainable fishery value chains. It is administered by the Development Bank of Seychelles (DBS).
[7] PUC. (2023). Annual Report.
[8] This is equivalent to 1.1 percent of GDP in 2026-2030 and 0.4 percent of GDP over the period 2031-2050. The higher value over the first period is due to the NPV calculation that more heavily discounts investments further into the future, along with some frontloading of investments in the electricity grid.

barriers to RE deployment, implement a risk-sharing or blended finance facility to lower the relative risk or borrowing cost for RE projects, and increase access to finance for DRE investments. Additionally, targeted skills development programs will be essential to ensure Seychellois can take full advantage of the new jobs created by the energy transition.

2. *Reduce* exposure and vulnerability to climate change

Invest in infrastructure resilience

Flooding—both inland and coastal—as well as sea level rise and storm surges, are the principal drivers of climate-related infrastructure vulnerability. Coastal erosion is already damaging roads across all three main islands with estimated annual damages of over US$ 23 million (1.1 percent of GDP).[9] In mountainous inland areas, intense rainfall increases the likelihood of landslides and drainage failures, affecting road surfaces, buildings, homes, and service access. GoS estimates that 48 percent of the road network is currently at risk.[10] Ports and airports face growing exposure to storm surges and sea level rise, threatening trade, tourism, food security, and emergency response. Power, digital, and water infrastructure are increasingly at risk from saltwater intrusion and flooding, while homes and buildings (including schools and health centers) are vulnerable to flood damage and service disruption. As these impacts grow in frequency and intensity, adaptation and risk reduction in infrastructure systems have become a central pillar of resilience and development planning.

Investments in disaster risk reduction could enhance economic productivity and provide development and environmental benefits. Over the past two decades, Seychelles has reduced infrastructure vulnerability through disaster preparedness and climate adaptation initiatives. However, further actions are necessary to enhance the climate resilience of infrastructure in light of increasing climate risks, particularly for key assets such as roads, Mahé airport, and Victoria port. Developing a National Adaptation Plan with a detailed and costed set of priority adaptation projects is a priority. Cadastral maps should integrate climate-informed data indicating areas at current and future risk of flooding and landslides, and be accessible to planners, developers, and researchers. Enhancing coordination and comprehensiveness of the early warning system (EWS) is also crucial to enhance climate resilience. Additionally, Seychelles acknowledges the importance of nature-based solutions (NBS) for coastal protection, given the anticipated impacts of climate change on coastal urban infrastructure and tourism.

Address vulnerabilities in water management

Water supply is becoming a critical issue due to intensifying climate-related stress from prolonged dry seasons, extreme rainfall, and storm-induced flooding. Droughts are becoming more frequent and severe, while high-intensity rainfall and flash flooding pose significant risks. Despite recent investments, such as the raising of the La Gogue dam, Seychelles faces challenges in managing seasonal water scarcity. Increased storage also requires additional water treatment facilities to avoid straining existing treatment plants and reducing overall efficiency. The country relies heavily on surface water and desalination, with six coastal desalination plants providing a crucial supply during dry seasons and droughts, particularly to support the high season for tourism. However, these plants are vulnerable to flooding, saline intrusion, and storm surges, while the reliance on imported fossil fuels for desalination increases operational costs and risks due to potential transport disruptions. Emerging technologies, however, could improve the energy efficiency of desalination, offering opportunities to reduce both costs and climate vulnerability. Securing the water supply is fundamental to sustaining Seychelles' economy, as reliable water access underpins key sectors like tourism, agriculture, and the blue economy and is essential for public health. Protecting existing desalination plants from climate risks and constructing a water treatment plant at the La Gogue dam are priorities.

[9] Seychelles Land Transport Agency. 2023. Sites Impacted by Coastal Erosion on the Islands of Mahé, Praslin & La Digue and Proposed Mitigative Measure.
[10] GoS. 2019. Seychelles Coastal Management Plan 2019-2024. Ministry of Environment, Energy and Climate Change and the World Bank.

3. *Reinforce* the foundations for resilient economic transformation

Build human capital for the economic transformation and jobs

Seychelles economic development is constrained by skills shortages, underutilized potential in the labor force, and an ageing population. The nation relies heavily on foreign labor—which accounts for 32 percent of the labor force—to fill domestic skill gaps. This dependency is structural—given the small size of the population—but it is exacerbated by a persistent mismatch between the education system and labor market needs. The population is also rapidly aging, with the proportion of elderly citizens projected to triple from 9 percent in 2017 to 26 percent in 2050. Modeling for this CCDR indicates that higher temperatures and more frequent climate shocks risk exacerbating these challenges by reducing labor productivity and disrupting learning and service delivery.

Education and human capital development will be essential to ensure that the labor force does not pose a binding constraint on Seychelles' development, and that Seychellois workers can fully benefit from the nation's green transition. The education and training systems struggle to produce graduates with the skills demanded by evolving sectors such as RE, sustainable tourism, blue economy services, digital services, and sustainable agriculture. With a more coordinated and forward-looking human capital strategy—anchored in strong public-private partnerships and labor market intelligence—Seychelles could fully harness the opportunity of a resilient and sustainable path while ensuring that Seychellois are equipped to take advantage of these new employment opportunities. However, it will take time to develop these home-grown skills. In the short term, meeting the demand for these specialized skills will require foreign labor, reinforcing the need to reform the GOP system to make it more efficient and less costly for business. Reforming the Employment Act to provide greater flexibility to hire or retain older workers would also help.[11]

To build a resilient and adaptive society, Seychelles should focus on strengthening its institutional capacity, data systems, and skills to enable people and services to anticipate, absorb, and recover from shocks. This includes integrating climate risks into sectoral planning and budgeting, building climate literacy into all levels of curricula, medical protocols, and professional training, ensuring inclusive access to finance and social services, and developing the capacity of the social protection system to respond quickly to shocks. These adaptations will not only reduce vulnerability but also create the foundation for a more dynamic role of human capital in achieving a resilient and sustainable development pathway.

Economy-wide implications of resilient and sustainable development

Macroeconomic modeling undertaken for this CCDR indicates that Seychelles can afford to steer its economy to a more resilient development path—with the proposed actions delivering higher GDP, reduced poverty, and lower public debt. By 2050, key investments to achieve the National Development Strategy (NDS) 2024-2028 and enhance resilience would boost GDP by 7 percent, while reducing public debt by 3 percentage points, relative to the BAU Scenario. Higher government revenues due to higher economic activity would help offset the fiscal impact of additional public investment, while higher GDP would more than offset the additional public debt, leading to a net decline in the debt to GDP ratio. Combined, these dynamics would keep public debt below GoS' 50 percent GDP target over the projection period, with debt trending down to 42 percent of GDP in 2050. Higher economic activity and more resilient infrastructure and services are estimated to reduce poverty by 10 percent compared to the BAU Scenario by 2035 (a 2.2 percentage point reduction in the poverty rate).

The measures to deliver resilient and sustainable development require US$810 million (in net present value terms, NPV) in *additional* investment from the private and public sectors over the next 25 years—equivalent to 2.8 percent of GDP annually until 2030, and 1.0 percent of GDP annually over the following 20 years (ES Figure 3).[12] This comprises of US$532 million for mitigation and adaptation measures and a further US$277 million for complementary structural measures to catalyze economic

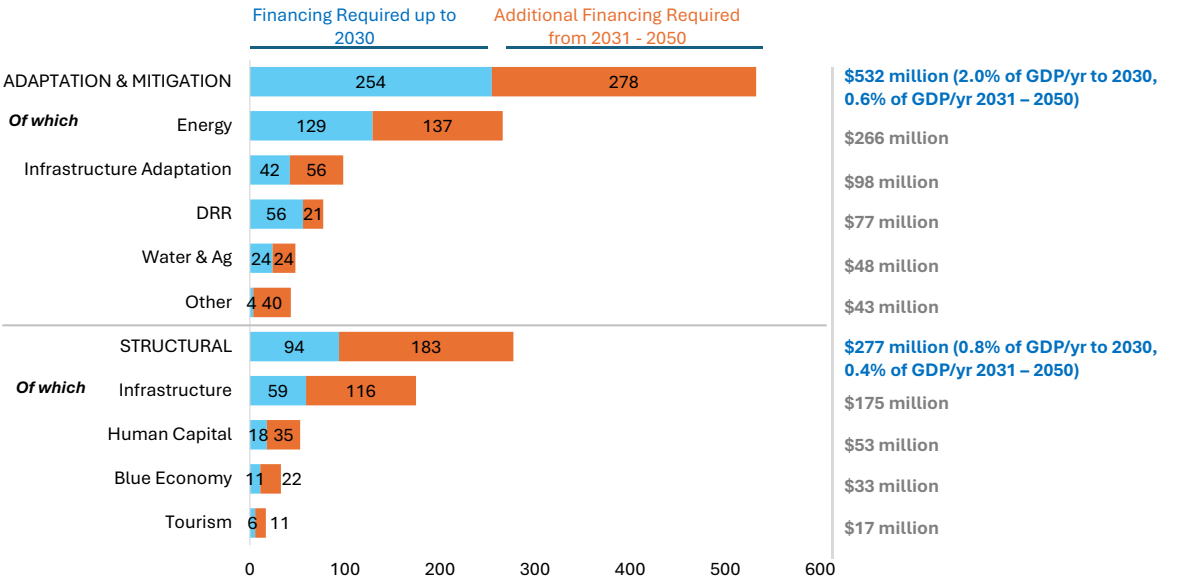
[11] The WBG's upcoming Seychelles Country Growth and Jobs Report will provide a comprehensive analysis of key opportunities to boost economic growth and private-sector job creation, including the GOP system and the Employment Act.

[12] The higher percentage of GDP needs in 2026-2030 is due to the NPV calculation that more heavily discounts investments further into the future, along with some frontloading of investments in the energy grid to accelerate the transition to RE.

development. This includes both key development priorities—such as investments to accelerate the RE transition, upgrade and extend the Victoria port and Mahé airport, diversify the tourism sector and ocean economy, boost human capital, and address youth issues and drugs—along with key adaptation investments, such as climate-proofing of key infrastructure and the water supply, coastal protection and rehabilitation, and strengthening climate information services and early warning systems (See **ES Table 3** for a summary). One-third of the investment needs are for the energy sector, 28 percent is for other adaptation investments, and 34 percent for other key structural priorities. In comparison, the *BAU Scenario* assumes that private and public sector investment spending remains at 18 percent of GDP, similar to the historical average.[13] Thus, the incremental investment to achieve resilient and sustainable development identified by this CCDR reflects a 5-20 percent increase in the expected annual investment spending in the economy in the *BAU Scenario* over 2026-2050.

ES Figure 3: Achieving resilient and sustainable development requires US$810 million (NPV) in incremental investment between 2026 and 2050, comprising US$532 million for mitigation and adaptation measures and a further US$277 million for complementary structural measures to catalyze economic development.

Cumulative incremental investment needs 2026–2050



Source: World Bank staff analysis.

Notes: DRR = Disaster Risk Reduction. Estimates are in NPV terms, with a 6 percent discount rate used for future investments. Investments are incremental, relative to the BAU of current policies or investments already in place and planned. Estimates for energy mitigation measures are from the economic modeling in Section 3.3, estimates adaptation measures are from the Seychelles 2021 Natiionally Determined Contribution (NDC) report (GoS, 2021), the Seychelles Climate Finance Resource Mobilisation Strategy 2025–2030 (MoFNPT, 2025), the Seychelles Land Transport Agency 2023 study on coastal erosion (SLTA, 2023), GoS projects, and World Bank staff calculations.

While public finances for these development and climate needs are constrained, they can play a catalytic role to crowd in private finance. After spiking to 77 percent of GDP in 2020 due to the pandemic, public debt has declined since 2021 as GoS has implemented a multiyear fiscal consolidation, underpinned by its commitment to achieve a public debt-to-GDP ratio of 50 percent by 2030. However, as part of its debt strategy, GoS could consider borrowing instruments specifically dedicated to financing climate-informed projects, such as green and sustainable bonds or targeted concessional finance (Chapter 5). The recent strengthening of the legal framework should help to increase the use of PPPs, especially for large infrastructure projects (including the port and airport), and should also be explored for adaptation and mitigation investments.

Further fiscal reforms can create some space for GoS to contribute to the (collective) investments necessary to meet Seychelles' development and climate needs. For example, revenue mobilization through tax base broadening, tax administration modernization, and land tax reform, combined with pension reform and spending efficiency improvements, could yield up to an additional 14.5 percent of GDP. In addition, simulations indicate that a carbon tax could be welfare and growth enhancing, while

[13] Historically, this has been split 80:20 between the private and public sectors.

also supporting the achievement of climate targets and generating revenues to meet Seychelles' investment needs. However, any reforms to energy taxes should be considered only after reform to the electricity tariff structure is implemented and DRE net billing and gross metering regimes are introduced. Fiscal reforms should be complemented by actions to strengthen public financial management by integrating climate considerations into the procurement and investment management systems.

How to finance resilient and sustainable development in Seychelles

This CCDR estimates that Seychelles has an annual climate finance gap of US$27 million over the next five years, which could be financed from the domestic private sector and payments for ecosystem services (PES).[14] Over the period 2026–2030, addressing Seychelles' climate mitigation and adaptation needs (that is "Adaptation & Mitigation" investments in ES Figure 3) will require US$61 million annually (in nominal terms). The country has received US$34 million annually during 2010–2020,[15] on average, leaving an annual financing gap of US$27 million. Given GoS' limited fiscal space, the private sector has an important role in closing the climate finance gap. This CCDR finds that the most feasible sources to close this financing gap are via the domestic financial sector and PES, with ES Table 2 providing one example of the potential size and composition of funding that could close the finance gap.

ES Table 2: Financial sector funding and PES could generate sufficient climate finance to fill Seychelles' climate finance gap

Source	Potential Financing
1. 4% of the banking sector assets	US$ 86 million (US$ 17.1 million/ year)
2. 4% of the value of the annual services rendered by coral reefs and beaches for tourism/recreation activities (that is, PES)	4% * US$ 211.5 million/year = (US$ 8.5 million/year)
3. 4% of the assets managed by the Seychelles Pension Fund	US$ 10.8 million (2.2 million/year)
4. 4% of the assets managed by insurance companies	US$ 3.6 million (0.7 million/year)
TOTAL	**US$ 28.5 million/year**

The domestic financial sector shows significant interest in climate-related investments but appropriate regulations and derisking mechanisms are needed to convert this interest into project financing. Banks have potential investment capacity due to their liquid assets, but involvement in financing RE and adaptation projects remains minimal. Pension funds and insurance companies are interested but need regulatory changes to invest in alternative assets. Additionally, the sector requires the development of climate finance instruments and a green taxonomy to build investor confidence. Large-scale RE projects face adoption challenges, while small-scale projects suffer from limited incentives and understanding among potential prosumers. GoS schemes have had moderate success, and tailored banking products are scarce. The sector would benefit from derisking mechanisms—such as partial guarantees, first loss capital, and/or paying for a private asset manager with a sustainability mandate to structure and manage a blended finance infrastructure/RE fund—to mobilize domestic resources and support sustainable financing.

On the public finance side, GoS is exploring a sustainability linked bond (SLB) or loan (SLL) to help finance the required climate investments. This would build on Seychelles' reputation for innovation, sustainable finance, and transparent use of proceeds from issuing the world's first sovereign Blue Bond in 2018. Given GoS' commitment to reduce the public debt ratio to 50 percent by 2030, credit enhancement from development partners may be critical to the success of any new sustainable financing approach.

[14] PES is a public-private sector solution to leverage private sector funds to finance climate adaption. It would involve contracts to protect beaches from coastal erosion and maintain/increase coral reefs. The buyers could be private companies that benefit from these environmental assets (that is ., hotels, fisheries, and tour/scuba diving companies). The service providers could be NGOs. Intermediation could be provided by the public sector (that is., SEYCCAT).
[15] Climate finance received by GoS over the period 2010-2020 according to AfDB (2023). This figure is used by GoS in the Seychelles Climate Finance Resource Mobilization Strategy 2025–2030.

ES Table 3: Incremental investments for the Aspirational Development Scenario (AD) versus BAU and possible source of financing, 2026 – 2050, US$ millions, NPV

Sector/Project/Activity	Value	Public/Private/PPP
ENERGY	**266**	
CAPEX	260	Public and Private
OPEX	6	Public and Private
LOW-CARBON TRANSPORTATION	**39**	Public and Private
INFRASTRUCTURE	**273**	
Port Victoria Rehabilitation and Extension Project	42	PPP
Mahé airport upgrade and extension	181	PPP
Road upgrades and construction	12	Public
Develop and implement Transport/NMTS strategy + risk assessments	8	Public
Improve cold storage infrastructure	5	Public
Coastal and other infrastructure protection	25	Public and Private
BLUE ECONOMY	**33**	
Sustainable fisheries management and aquaculture development	24	Public and Private
Develop the fish processing zone and other fisheries related infrastructures	5	Public and Private
Monitore and evaluate the implementation of the Blue Economy Strategy	4	Public
WATER AND AGRICULTURE	**48**	
Ensure climate resilient water supplies	34	Mainly Private
Protection and sustainable use of agricultural land and water	5	Public
Climate resilient food security	5	Public
Other	4	Private
HUMAN CAPITAL	**53**	
Mutlisectoral intervention to address youth at risk	43	Mainly Public
Health infrastructures upgrades	5	Mainly Public
Education infrastructures upgrades	5	Mainly Public
DISASTER RISK REDUCTION	**77**	
Strengthen climate information services and EWS	13	Public and some Private (i.e., PES)
Coastal risk mapping and monitoring	12	Public
Reduce vulnerability to flooding and landslide	29	Mainly Public
Wetlands and dunes restoration	4	Public and some Private (i.e., PES)
Ecosystems-based adaptation measures	19	Public and some Private (i.e., PES)
TOURISM	**21**	Private
TOTAL	**810**	

1. Toward a Resilient Development Path

As the continent's only high-income country, Seychelles is a success story in Africa. Over the past three decades Seychelles—a small archipelagic country of 122,000 citizens—has seen rapid inclusive growth and significant declines in poverty, underpinned by strategic structural transformation. The country achieved an average growth rate of over 4 percent between 1984 and 2023, reflecting a three-fold increase in real gross domestic product (GDP) per capita within a single generation. This rapid growth was accompanied by a significant reduction in poverty, with the headcount rate falling from 17.7 percent in 2006 to an estimated 6.2 percent in 2024,[16] and impressive gains in human development, with Seychelles achieving the top ranking on the Human Development Index among African nations.

The primary engine of growth has been the transition from lower-productivity agriculture to an economy centered on tourism and fisheries. Tourism is Seychelles' economic backbone, contributing around 25 percent of GDP and jobs, 42 percent of exports, generating vital foreign exchange, and boosting government revenues. The fisheries sector (including ancillary activities) accounts for a further 11 percent of exports and 8 percent of jobs. Rapid physical capital accumulation was also a major contributor to growth, supported by prudent macroeconomic management.[17]

Despite its impressive development, the long-term viability of Seychelles' economic model is threatened by two major challenges:

- First, as a small island developing state (SIDS), the country faces many **inherent structural challenges related to its economic geography**, which is characterized by extreme remoteness, small size, and geographic dispersion. These geographic limitations drive up production costs, and hinder export competitiveness, ultimately restricting economic diversification and increasing reliance on the public sector and state-owned enterprises (SOEs) to provide essential services. High import dependence (including fossil fuels for energy generation)—largely accessed by maritime transport—further exposes Seychelles to external shocks and contributes to low energy security.
- Second, **increasing impacts from climate change and extreme climate events** will continue to hinder sustainable development. Most disasters are triggered by the increasing frequency and intensity of monsoon rains, floods, and landslides. This was the case in December 2023, when these hazards, combined with an explosion in an industrial zone, resulted in a state of emergency and damages and losses estimated at SCR 2.2 billion (7.4 percent of GDP).[18] Long-term effects of climate change from rising sea level and temperature are key risks to tourism and fisheries, as well as to the 90 percent of the population and key infrastructure concentrated in narrow coastal areas on only a few of the country's islands. [19]

Accelerating development in the face of these vulnerabilities will require Seychelles to undertake three complementary transformations: economic, social, and climate informed. While the initial transformation into a tourism- and fisheries-driven economy has delivered significant development gains, the economy remains dominated by these sectors, reliant on imports (including fossil fuels for energy generation), and prone to shocks. Moving to the next stage of development will require a new round of reforms to accelerate resilient and sustainable structural transformation of the economy, where long-term growth is fostered by private sector-led productivity gains. This will involve reforms and strategic investments to reduce the impact of structural vulnerabilities, and to address climate risks.

The Seychelles National Development Strategy (NDS) 2024–2028 outlines the ambitious reform priorities of the Government of Seychelles (GoS) to achieve diversified, inclusive, and climate-resilient economic and social development. The NDS 2024–2028 represents a concerted effort to navigate Seychelles toward a sustainable and prosperous future, leveraging a balanced approach between

[16] Based on the upper middle-income (UMIC) poverty line of US$ 6.85/day in 2017 purchasing power parity terms. Seychelles' national poverty line (US$267 per person/month) is much higher than the UMIC poverty line. As a result, in 2024, 6.2 percent of households were estimated to be below the UMIC poverty line, but 27.1 percent were below the national poverty line.
[17] For example, following a debt crisis in 2008, the authorities floated the exchange rate, liberalized the economy by reducing state control and encouraging private-sector growth, and implemented fiscal reforms to reduce unsustainable public debt.
[18] World Bank. (2023). Seychelles Complex Emergencies: Rapid Damage and Loss Assessment
[19] World Bank and Ministry of Environment, Energy and Climate Change of Seychelles. 2019. "Seychelles Coastal Management Plan: 2019–2024."

economic development and environmental stewardship. The strategy is built around six pillars: (1) a modern public service; (2) economic transformation across tourism, agriculture, and the ocean economy, alongside strengthening sectors such as the digital and financial economies; (3) a healthy nation; (4) law and order; (5) a modern education system in line with future needs; and (6) environmental sustainability and climate resilience. Key objectives include shifting the tourism sector towards a higher value (versus higher volume) model, diversifying the economy by fostering innovation and investments in financial services, agriculture, and the ocean economy, and addressing fundamental enablers to private sector development, particularly energy and human capital. The NDS identifies climate change as the number one risk to the country's development considering the likelihood of occurrence and potential impact within the country. Broader institutional implications of climate resilient and sustainable growth are discussed in Chapter 2.

In light of the NDS priorities, this Country Climate and Development Report (CCDR) focuses on six areas critical to achieve diversified, inclusive, and climate-resilient economic and social development in Seychelles. The development and climate-related opportunities and risks for each of these six focus areas are analyzed in Chapter 3. Given their economic importance and Seychelles' economic geography, the tourism sector and the ocean economy will remain key growth drivers. The energy sector is a key enabler, as lower energy costs and greater energy security will reduce imports and help catalyze economic transformation. Other key areas include: (i) infrastructure, which is highly vulnerable to climate risks; (ii) water and agriculture, which are central to enhancing resilience and food security; and (iii) human capital, given its role in enabling productive diversification and climate resilience. The interplay of these sectors and the macroeconomic impacts of climate change are analyzed in Chapter 4.

1.1. Structural vulnerabilities hinder economic transformation

The reliance on tourism makes Seychelles highly vulnerable to exogenous shocks, including fluctuations in global demand and natural disasters. The COVID-19 pandemic was a case in point: with borders closed and travel restrictions beyond its control, Seychelles experienced a sharp recession. While the sector has rebounded in recent years, arrivals remain 8 percent lower than pre-pandemic levels, due to subdued economic growth in Europe (Seychelles' key tourism market), tighter global financial conditions, and intensifying competition in the global tourism market.

Seychelles' vulnerability extends to the energy sector, due to heavy dependence on expensive imported fossil fuels to meet its energy demands. In 2023, Seychelles generated less than 5 percent of its electricity from renewable sources, with diesel-powered generators making up over 95 percent of generation.[20] The reliance on imported fossil fuels is not only a risk for fiscal and external sustainability but also exposes the country to climate-related maritime transport disruptions. GoS has thus made the renewable energy (RE) transition a centerpiece of its response to climate change.

Limited arable land severely restricts agricultural production, forcing Seychelles to depend on food imports that are vulnerable to global trade fluctuations and volatile commodity prices. Agriculture accounts for only 3 percent of GDP, with 70 percent of food being imported. The reliance on imports exposes Seychelles to disruption in global supply chains, which can immediately jeopardize food security—as was experienced during the pandemic. High and volatile food prices are also a key contributor to inflation that disproportionately affects the most vulnerable households.

Future economic development is also constrained by skills shortages, underutilized potential in the labor force, and an aging population. The nation relies heavily on foreign labor—which accounts for 32 percent of the labor force—to fill domestic skill gaps, especially in construction (40 percent) and tourism and hospitality (26 percent).[21] This dependency is structural—given the small size of the population—but it is exacerbated by a persistent mismatch between the education system and the skills demanded by the economy. This is compounded by social issues such as youth drug use, teenage pregnancy, and gender-based violence, which undermine labor force participation and future earnings.[22] As a result,

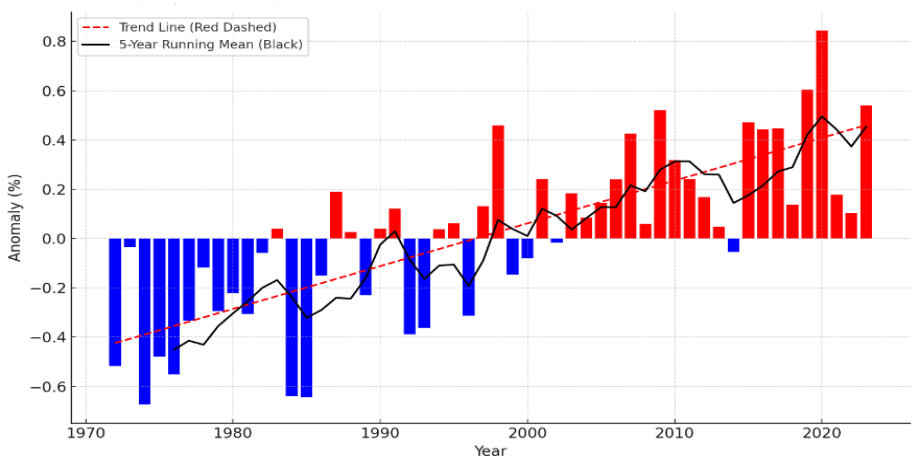
[20] PUC, 2023. Annual Report.
[21] World Bank staff calculations based on GoS Gainful Occupation Permit (GOP) administrative data and National Bureau of Statistics (NBS) labor force data.
[22] At about 5 percent of the population, Seychelles has one of the highest rates of heroin consumption in the world. At 53 births per 1,000 women aged 15 – 19, the rate of teenage pregnancies is almost five times the average for high-income countries.

unemployment among 15 to 24-year-olds is about 14 percent, far exceeding the national average (2.8 percent). Finally, Seychelles' demographic transition will heighten the pressure on human capital. Although Seychelles has a median age of about 35 and 71 percent of its population falls within the working-age bracket, the proportion of elderly citizens is projected to triple from 9 percent in 2017 to 26 percent in 2050, with the overall dependency ratio expected to rise to 46 percent.[23] These shifts are likely to escalate health and pension costs, intensifying fiscal pressures and potentially diverting resources from other priorities like climate action.

1.2. Climate risks impose a significant burden on development

Seychelles is expected to experience increasing extreme temperatures and hot spells. Since 1972, the annual mean temperature at Seychelles International Airport has risen by 0.9°C (Figure 1), and by 2030-2035, the country may see year-round summer-like temperature (Tmax > 25°C).[24] March and April will often see heat indexes above 35°C, with heat index levels exceeding 39°C for one-third of the summer months (January-March) by 2080-2099 under a pessimistic scenario (Shared Socioeconomic Pathway (SSP3-7.0)). The increase in the number of days with a high heat index might become pronounced by the end of the century, with approximately one-third of summer month of February projected to have a heat index exceeding 35°C (Figure 2). As temperature increases, by mid-century the entire population will be exposed to dangerous levels of tropical nights, up from just 4.5 percent during 1975–2025.[25] According to climate projections, tropical nights (Tmin > 26°C) will become prevalent from October to June by 2050, and by 2090, they could extend into the typically cooler months of July to September. By 2090, half of March and April could experience even hotter tropical nights, with minimum temperatures exceeding 29°C.[26] This will have direct impacts on cooling demands and energy use. High temperatures in February and March intensify cyclone severity, with Seychelles experiencing floods from increased storm intensity and storm surges despite being outside major cyclone zones (Figure 3).

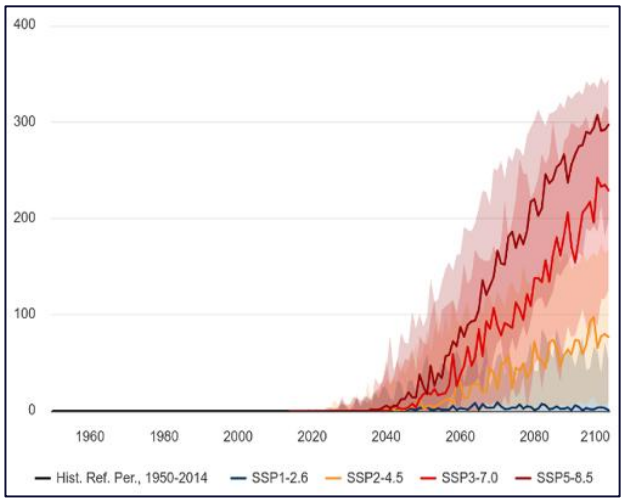
Figure 1: Annual mean temperature anomalies for the Seychelles International Airport for 1972-2023 relative to 1981-2010.



Source: Seychelles Meteorological Service
Note: The black line represents the 5-year running mean.

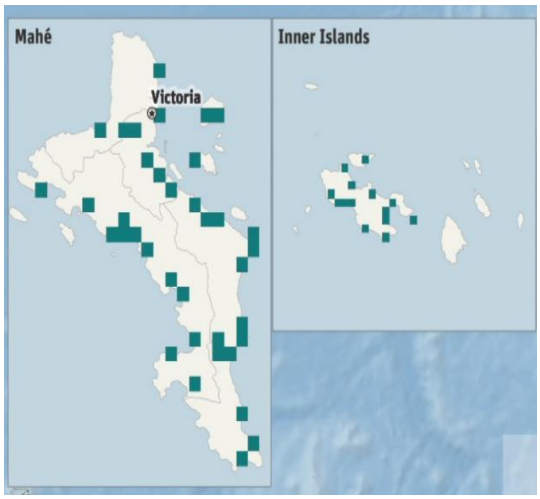
[23] NBS. 2024. Seychelles Population Projections 2024-2064.
[24] World Bank Climate Change Knowledge Portal (CCKP).
[25] World Bank Climate Change Knowledge Portal (CCKP). Modeled climate data is derived from CMIP6, the Coupled Model Intercomparison Project, Phase 6. The CMIP efforts are overseen by the World Climate Research Program. Projected climate conditions and changes under multiple scenarios for the medium term (2050s; 2040-2059) using data presented at a 0.25° x 0.25° (25km x 25km) resolution.
[26] World Bank Climate Change Knowledge Portal (CCKP).

Figure 2: Projected number of days with Heat Index >35C and Heat Index by end of century



Source: World Bank Group: Climate Change Knowledge Portal, 2025

Figure 3: Areas more exposed to floods



Source: World Bank Group: Seychelles, disaster risk profile, 2016.

Climate change projections suggest that Seychelles will experience dramatic sea warming and sea level rise, particularly over 2070-2100. Under a pessimistic scenario, sea surface temperatures in the West Indian Ocean are expected to rise by 1.2°C by 2021-2040, 1.7°C by 2041-2060, and 3.2°C by 2081-2100. Sea level has already increased from 0.50 cm per year (1993-2020) to 0.61 cm per year over the last 10 years, higher than the projected global mean sea level rise of 0.31cm per year [27] and is projected to rise by a further 25cm by 2050 and 78cm by 2100—with the fastest acceleration occurring post-2070. Given that over 99 percent of Seychelles' population resides on the granitic, mountainous islands of Mahé, Praslin, and La Digue, this rate of sea level rise does not pose an immediate existential threat that requires population retreat or radical adaptation measures on these islands—though it could threaten some of Seychelles' over 100 atoll islands, a few of which contain high-end resorts (that is, the Four Seasons on Desroches Island). Nevertheless, extreme events that combine sea level rise, high tide, and storm surge are projected to become significantly more frequent, increasing the risk of major coastal inundations. An event of this type with a 100-year intensity return period, currently reaching at least 1.38 m above normal sea level rise, is expected to occur as often as once every 5 years by 2050 under the high climate change scenario (Representative Concentration Pathway) (RCP4.5), with approximately 2.4°C of warming.[28]

Precipitation has increased significantly, mainly through fewer but more intense storm events, and rainfall patterns are becoming increasingly erratic. The number of consecutive wet days has declined by two days per decade from 1951 to 2020. Climate change is expected to cause a long-term increase in the average annual precipitation level, mostly driven by changes from January to March (the rainy season). Intense precipitation events will likely recur more frequently (for example the return period will decrease) with an increased number of extreme wet days by 2100, resulting in flash floods events.

These gradual yet profound changes are compounded by sudden-onset climate events, such as cyclones, floods, and landslides. The largest losses caused by these climate-related disasters tend to occur in the residential sector. Floods account for 50 percent of residential losses, with annual direct flood losses estimated at US$2.5 million. Cyclone-related losses are less frequent but still have amounted to an estimated US$350,000 annually.[29] These disasters create significant socioeconomic impacts, forcing households into financial strain and displacement, while public resources are redirected toward recovery and rebuilding.

Household vulnerability to climate change varies across Seychelles' geography and depending on the magnitude of the hazard (Table 1). This is highlighted by a 'Composite Vulnerability Indicator' designed

[27] Government of Seychelles. 2023. Seychelles Third National Communication.
[28] World Bank Climate Change Knowledge Portal (CCKP).
[29] GFDRR and World Bank 2016. Disaster Risk Profile: Seychelles.

for the World Bank Group Scorecard FY24–FY30.[30] The indicator uses principal component analysis on district-level data to assess which households are most at risk to cyclones, drought, flood, and heat, based on three factors: (i) the likelihood that the extreme event occurs; (ii) exposure (the degree to which they could be affected); and (iii) vulnerability (their inability to resist or respond to the hazard).[31] To assess household vulnerability to different size shocks, the CCDR estimated the population at risk of a 1-in-20-year hazard (a more frequent, moderate event) and a 1-in-100-year hazard (a rare, severe event). Overall, Praslin and La Digue have the highest share of households at risk to a 1-in-20-year hazard (2.6 percent). In comparison, the West region has almost no households exposed to a moderate disaster, but is highly exposed to a rare, severe event—with almost one in six households at risk. This indicates that—even in a SIDS like Seychelles—region-specific risk reduction strategies are relevant to address varying climate-related risk patterns.

Table 1: Climate-related risks to households vary by region and by magnitude of the hazard

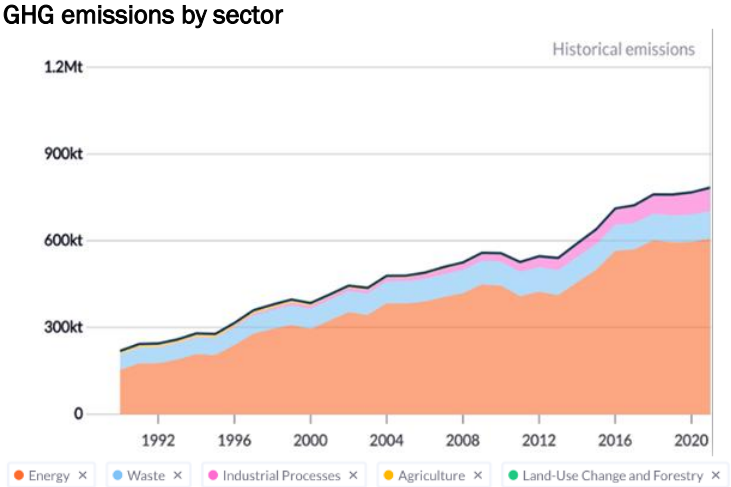
Regions	Share of the population at risk of any hazard that have a:	
	1-in-100-year hazard (%)	1-in-20-year hazard (%)
Central 1	2.0	0.3
Central 2	4.1	1.0
East/South	6.8	0.7
North	3.4	0.0
Praslin/La Digue	7.7	2.6
West	15.8	0.4

Source: World Bank staff calculations based on the 2018 Seychelles Household Budget Survey.

1.3. Shifting to a low-carbon development path can increase resilience

Although Seychelles contributes less than 0.01 percent of global greenhouse gas (GHG) emissions, GoS is committed to pursuing a low-carbon growth pathway primarily to strengthen energy security and macroeconomic stability. In its 2021 National Determined Contributions, Seychelles committed to cutting emissions by 26.4 percent by 2030 and achieving net-zero emissions by 2050. This approach is not primarily driven by a need to reduce its global footprint—which is minimal (**Figure 4**)—but rather to: (i) build an economy that is less vulnerable to exogenous shocks, such as volatile fuel prices; (ii) promote economic diversification by lowering energy prices; and (iii) raise competitiveness in key sectors like tourism and fisheries.

Figure 4: Seychelles GHG emissions by sector



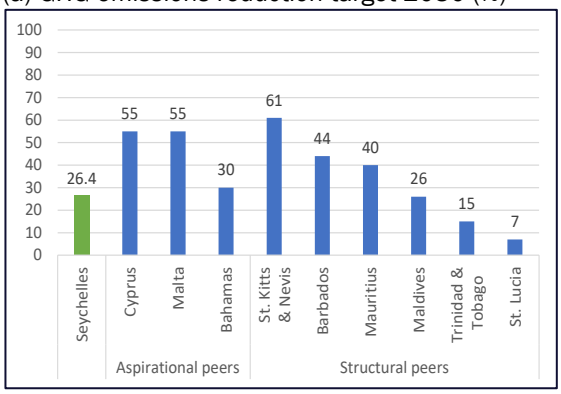
[30] The regional-level data used comprise the poverty rate, level of education, access to social protection, access to financial services, access to electricity, access to improved drinking water, and access to an all-season road (less than 2km from home). The methodology and reproducibility package is available at https://datacatalog.worldbank.org/int/search/dataset/0066435/counting_people_at_high_risk_from_climaterelated_hazards.
[31] The regional-level data used comprise the poverty rate, level of education, access to social protection, access to financial services, access to electricity, access to improved drinking water, and access to an all-season road (less than 2km from home). The methodology and reproducibility package is available at https://datacatalog.worldbank.org/int/search/dataset/0066435/counting_people_at_high_risk_from_climaterelated_hazards.

Source: Climate Watch.

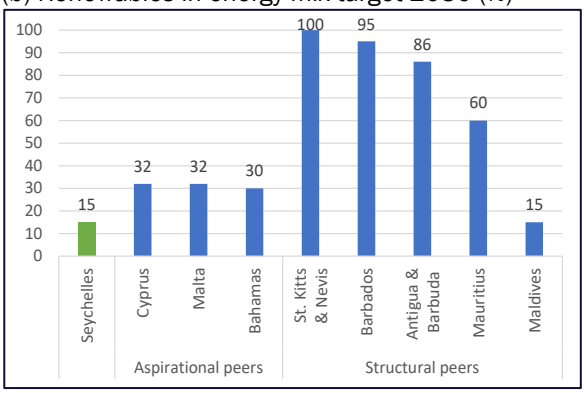
Seychelles' GHG emission targets are to be achieved via actions in the energy, transport, water, refrigeration, and waste sectors. In addition, Seychelles' commitment to protect and enhance marine carbon sinks and include them in its GHG inventory calculations by 2025 will help the country achieve net zero by 2050. Nevertheless, in the 2021 NDC, Seychelles set relatively modest targets for GHG emissions reductions and RE generation by 2030 compared to its peers (**Figure 5**).

Figure 5: Seychelles' 2030 emissions reduction and RE commitments compared to its peer countries[32]

(a) GHG emissions reduction target 2030 (%)



(b) Renewables in energy mix target 2030 (%)



Source: World Bank Group staff elaboration based on country NDCs. Note: Cyprus and Malta's GHG targets refer to the joint target for European Union (EU) Member States compared to 1990 levels; for St Kitts & Nevis, it is the target compared to 2010; for St Lucia, it is the target for the energy sector compared to 2010; for all other countries (including Seychelles), it is the target compared to a 2030 Business-as-Usual (BAU) Scenario..

Emission reductions along the country's development path could come as a co-benefit of development. The energy transition is critical to reduce macroeconomic vulnerabilities and spur economic diversification, while the sector also accounts for the largest share of Seychelles' GHG emissions. Transitioning to cleaner energy sources can reduce reliance on imported fossil fuels, enhance energy security, lower energy costs over time, and diminish exposure to global market fluctuations. Recognizing these benefits, Seychelles is actively working to boost its RE generation capacity—leveraging solar, wind, and marine sources—and to improve energy efficiency. The GoS' goal is to achieve a 15 percent RE generation share and a 15.5 percent improvement in energy efficiency by 2030, and 100 percent RE generation by 2050. Moreover, Seychelles is exploring alternative sources beyond wind and solar, such as ocean thermal energy conversion due to its vast maritime resources. Additionally, it is considering the potential of waste-to-energy and energy efficiency and storage solutions to help meet its targets.

The energy transition is particularly important for the transport sector, which remains a major consumer of fossil fuels. In Seychelles, cars, sea vessels and aircrafts rely on gasoline, diesel, and jet fuel, respectively, significantly contributing to GHG emissions. Seychelles has identified the promotion of active and electric mobility as a key strategy to reduce road transport-related emissions and increase RE use in transport systems. There is also potential in exploring green hydrogen for marine transport, especially for international shipping in agreement with the plans for expansion of the port.

The travel and tourism sector accounts for 78 percent of total GHG emissions, with aviation accounting for the majority of the sector's carbon footprint.[33] Given Seychelles' reliance on long-haul air travel, aviation makes up 38 percent of its tourism sector emissions, followed by direct emissions such as energy and local fuel consumption in hotels, resorts, and local transport (24 percent). The sector's share of total emissions is substantially higher than structural peer Mauritius (22 percent) and aspirational peer Barbados (38 percent).This reflects Seychelles' less diversified economy, as well as its higher share of long-haul tourism relative to these peers. Until sustainable aviation fuel is economically viable, Seychelles' geographic isolation makes it difficult to reduce carbon emissions from

[32] In this report, two sets of countries have been selected to benchmark Seychelles' economic performance. The first group consists of structural peers, namely countries with broadly similar economic structure and income per capita to Seychelles. This category includes Antigua and Barbuda, Barbados, Maldives, Mauritius, St. Lucia, St. Kitts and Nevis, and Trinidad and Tobago. The second group comprises aspirational peers, namely countries with similar economic characteristics but higher income per capita. This group comprises The Bahamas, Cyprus, and Malta.

[33] Calculation based on total tourism industry emissions from WTTC Global Travel and Tourism Footprint (2022) tourist arrivals from UNWTO (2023), and average length of stay from Seychelles Tourism Board (2023), AHRIM (2023) and Caribbean Tourism Report (2023).

flights. Nevertheless, making the on-island tourism industry less emissions intensive can help minimize the overall environmental impact.

Given the critical role tourism plays in the economy, Seychelles is committed to integrating climate-informed strategies into this sector to boost sustainability and resilience. GoS aims to reduce tourism-related GHG emissions by 20 percent per visitor by 2030, driven by a shift to a circular economy. This transition includes electric transport, phasing out hydrofluorocarbons in hotels, and implementing water recycling systems. By 2030, all tourism businesses are expected to adopt resilient and low carbon practices, such as eliminating non-recyclable plastics. Diversifying the sector to include more sustainable, eco-friendly tourism is crucial to alleviating the current pressures on natural resources, especially regarding the expansion of lodging facilities and development in environmentally sensitive areas.

Finally, the green transition presents a transformative opportunity for Seychelles' labor market. With the right investments and institutional frameworks, the shift to a climate-resilient and sustainable economy can open new avenues for job creation, productivity gains, and long-term human capital development. Early signals of this shift are already visible in key sectors. In tourism, the new Sustainable Tourism Policy Framework (2024–2034) outlines a clear vision for increasing the resilience and the sustainability of the sector and developing the required skills to support this transition. In the fisheries sector, efforts to professionalize and diversify employment are being advanced through vocational training at the Seychelles Maritime Academy and the expansion of aquaculture, guided by a long-term human capital development plan developed under the World Bank-supported Southwest Indian Ocean Fisheries Governance and Shared Growth Project (Phase 3) (SWIOFish3) program. These sectoral measures are reinforced by broader national initiatives, including a new policy and strategy for Education for Sustainable Development that will integrate climate into the curriculum at all levels of the education system as well as professional development and lifelong learning opportunities, combined with the expansion of vocational and tertiary education in digital and technical fields. Together, they reflect a growing recognition that climate action and job creation must move in tandem—and that a skilled, inclusive, and future-ready workforce is essential to ensuring the green transition delivers both environmental and development dividends.

2. Mainstreaming Climate Commitments and Strengthening Institutions

2.1. Mainstreaming low carbon and resilience commitments

Seychelles is committed to a development trajectory founded on sustainability and climate resilience, supported by a suite of environmental and climate policies and legislation. As noted in Chapter 1.1, the NDS 2024-2028 outlines the country's development agenda and includes environmental sustainability and climate change resilience as one of its six pillars. This vision is supported by the 2020 National Climate Change Policy (NCCP), which provides a framework for climate change efforts led by GoS, aiming to make Seychelles climate resilient, sustainable, and low carbon, by facilitating a coordinated, coherent, proactive, and effective response to the challenges and opportunities presented by climate change. Seychelles' climate policy commitments are reflected across several key pieces of legislation, including the Environment Protection Act (EPA 2016), the Energy Act (2012), the Planning Act (2021) and accompanying regulations, and the Disaster Risk Management (DRM) Act (2014).[34]

In terms of adaptation, Seychelles' commitment to climate resilience is made explicit in the 2021 NDC. Specific adaptation targets in the NDC are tied to Seychelles' development priority of enhancing the blue economy and include regulating coastal planning and infrastructure at the national and local levels to prioritize 'blue' nature-based solutions (NBS) for climate resilience. It also confirms a commitment to protect mangrove and sea grass ecosystems (50 percent by 2025 and 100 percent by 2030). Seychelles also committed to the implementation of its Marine Spatial Plan (MSP) and effective management of the country's Marine Protected Areas (MPAs) (30 percent of the total exclusive economic zone, EEZ) via 2025 regulations. In addition to the blue economy targets, the NDC also identifies a series of other priority adaptation actions across key sectors, including developing a climate resilient Port Master Plan, improving freshwater resource management, integrating adaptation targets in the tourism sector (in partnership with the private sector), promoting climate-informed and sustainable agriculture and fisheries, strengthening sustainable and climate resilient land-use planning, and implementing the National Integrated Emergency Management Plan (NIEMP).

However, the 2021 NDC lacks detailed investment costs and prioritization. While the Seychelles Climate Finance Resource Mobilisation Strategy 2025–2030 includes several climate-related projects, it remains incomplete, as it does not distinguish between mitigation and adaptation projects and does not provide detailed costing and prioritization. GoS is currently developing a National Adaptation Plan which presents an opportunity for the identification of detailed, prioritized, and costed projects across a range of sectors, ideally aligned with NDS priority themes and the 2025 updated NDC and targets.

Seychelles acknowledges the need for greater private sector involvement for climate change planning and implementation. Private sector representatives participate in national consultations for climate change planning (for example for the Third National Communication and the updated NDC), and the private sector played a key role in contributing data to Seychelles' GHG inventory for the energy sector. However, these same strategic climate change documents point to the need for strengthened collaboration with the private sector to encourage a more active role in implementing resilience and low carbon actions. One important step would be to operationalize a national climate change governance body (for example, as one of six high-level bodies to monitor and coordinate progress on the six pillars of the NDS), ensuring representation from the private sector among its members. According to the Seychelles Chamber of Commerce and Industry (SCCI), the private sector is keen to be more involved in environmental governance and action. SCCI has called for a more enabling environment for business solutions, including the availability of technical advice for the private sector.[35]

Private sector engagement offers a solid foundation for scaling up sustainability and climate actions, particularly in the tourism sector. A national sustainable tourism label coordinated by the Department of Tourism provides guidance and recognition for hotels of all sizes to adopt environmentally responsible practices, such as improving energy and water efficiency, installing RE technologies,

[34] See Annex 1 for additional analysis of Seychelles' legal framework for climate change.
[35] SCCI. 2021. Greening the economy and the role of the private sector: A short to medium term plan proposed by the SCCI.

reducing and recycle waste, and contributing to the conservation and restoration of local ecosystems (for example, mangroves, coral reefs, beach erosion). Other local businesses provide environmental services such as installation of solar panels or water saving devices, and recycling or composting services.[36] In addition, civil society organizations (CSOs) are highly involved in climate research, planning, and action in Seychelles. They were actively involved in developing and reviewing the 2021 NDC update and the Third National Communication, and CSOs take the lead in implementing many adaptation and mitigation actions (particularly those focused on NBS nature-based solutions), as well as climate education and training, often in partnership with government counterparts.

2.2. Strengthening climate change institutions and governance

Seychelles does not currently have any specific climate change legislation. Laws and regulations related to climate adaptation and mitigation are instead being embedded into other related legislation—for example, the Energy Act (2012), the Meteorological Act (2015), the DRM Act (2014), the Environment Protection Act (EPA, 2016), and the Planning Act (2021)—providing a complex and uncoordinated legal framework for climate action. The Planning Act and its accompanying regulations provide guidance on climate-informed land use planning, and climate resilient and low carbon building design and construction, but effective implementation will require increased awareness and strengthened enforcement. Moreover, current legislation does not explicitly mandate the use of flood risk data, or climate and sea-level rise projections in land use plans (LUPs) or development controls, which may limit the effectiveness of climate-informed planning and infrastructure decisions. According to the 2021 NDC, Seychelles plans to enact dedicated climate change legislation covering comprehensive monitoring, reporting, and evaluation of GHG data as well as mitigation and adaptation action, and defining a cross-institutional climate governance framework. Led by the National Assembly, GoS is currently evaluating: (i) the pros and cons of developing specific climate change legislation versus 'mainstreaming' climate change across related legislation and strengthening the national climate change policy; and (ii) the most effective governance/coordination mechanism for climate change action in the local context.

Despite the recognition of climate change as a critical risk to Seychelles' national development, the country lacks a coherent, coordinated climate change governance structure.[37] The Ministry of Environment, Climate, Energy and Natural Resources (MECENR) is the key focal point for climate adaptation and mitigation work but has limited human resources to undertake the required whole-of-government coordination and engagement to implement the nation's climate goals and NDC commitments. From the mid-2000s to around 2020, a National Climate Change Committee included representatives from government, the private sector, and civil society and served to coordinate the preparation of national communications to the United Nations Framework Convention on Climate Change (UNFCCC). The Climate Change Policy (2020) called for the establishment of a multi-stakeholder National Climate Change Council to coordinate climate change action, research and reporting but this has yet to be operationalized. However, there is still an urgent need to improve coordination, communication, and monitoring of climate related initiatives to build synergies, strengthen capacity across government and civil society, and avoid duplication of efforts.

2.3. Improving disaster risk management institutions and policies

The national disaster risk reduction framework is well developed. The DRM Act (2014) is the main legislation governing disaster risk reduction and management. The act establishes the Disaster Risk Management Division (DRMD) as the government division responsible for disaster management through an integrated multi-hazard approach. It provides clarity on the structures to be activated in the event of a crisis, such as the National Emergency Operations Centre (NEOC) and supplementary emergency operations centers. Under the Act, Seychelles has moved from a relief-focused approach to a more holistic one mainstreaming disaster risk reduction and preparedness while not explicitly including slow-onset or climate-specific risks such as sea-level rise and marine heatwaves.

[36] Several local industries have invested in supporting the energy transition with the increase in solar panels systems to reduce electricity costs.
[37] Etongo, D., V. Amelie, A. Pouponneau, and W. L. Filho. 2021. «Identifying and Overcoming Barriers to Climate Change Adaptation in the Seychelles." In *African Handbook of Climate Change Adaptation*, 2675–2692). Cham: Springer International Publishing.

The DRMD is the primary coordinating agency for national DRM activities. It is responsible for: (i) disaster risk assessment and mitigation (including those related to climate hazards); (ii) coordinating preparedness and planning in collaboration with key stakeholders from government, the private sector, and civil society; (iii) humanitarian affairs, recovery, and reconstruction following a disaster; and (iv) education to create awareness about disaster resilience and build capacity. DRMD's mandate includes engaging with government and non-governmental partners to develop Business Continuity Plans in the event of a disaster, supporting them by reviewing and approving all plans and Standing Operating Procedures, and providing technical assistance to stakeholders. Climate risk research, planning and response have recently become a more targeted focal point of DRMD's mandate.[38]

Another key Seychelles' DRM tool is the National Integrated Emergency Management Plan (NIEMP), launched in 2019, which established a framework for coordination of preparedness and response operations.[39] The NIEMP's effectiveness was positively tested on December 7, 2023, when Mahé island was affected by a complex combination of heavy rainfall, flooding, landslides and a devastating but unrelated industrial explosion. The NIEMP provided the framework for DRMD to effectively coordinate the response from government agencies, districts and other stakeholders. However, the event highlighted the need for further efforts to disseminate training on the NIEMP, establish better facilities for the National Emergency Operation Centre (NEOC), and develop a robust Disaster Management Information System.[40]

Seychelles is taking steps to establish a coordinated and comprehensive early warning system (EWS). In 2024, DRMD launched the UN's Early Warning for All global initiative in partnership with the Red Cross Society of Seychelles, the Seychelles Meteorological Authority (SMA), and the Department of Information and Communications Technology. This program builds on work done under the Climate Risk and Early Warning Systems project. The project, a World Bank and World Meteorological Organization initiative, supports the review of the SMA legislation to strengthen the operational capacity and sustainability of climate risk management and EWS in Seychelles.

The NDS 2024–2028 acknowledges climate risks, but they are not fully integrated into all sectors to guide decision-making and action. Similarly, many national sectoral plans mention climate change but have not incorporated climate adaptation actions into their activities and budgets. Existing and locally available climate projections from the SMA, and in the NDC can inform climate risk assessments.

By leveraging digital technologies, Seychelles can enhance its climate resilience and improve disaster preparedness and response. Digital tools are already playing a growing role in climate preparedness and response. SMA operates 15 automated weather stations that transmit data every five minutes, enabling impact-based forecasting. SMA has partnered with telecom providers to accelerate public disaster alerts via mobile platforms. Additional innovations include geographic information system platform (GIS)-based hazard maps, mobile and SMS alert systems, and the development of a centralized disaster risk information platform. Still, many of these tools remain in early stages or function in silos. Expanding system interoperability, open data standards, and institutional capacity will be essential to fully leverage their potential for DRM.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Develop a National Adaptation Plan** with a detailed and costed set of priority adaptation projects, providing a clear, actionable roadmap for achieving climate resilience across sectors and guidance on the role of DRMD in climate resilience. *Entity: MoFEPTI, MECENR, DRMD*	Short Term	High	Public $ marginal But plan will outline public, private, and public-private partnerships (PPP) options

[38] Government of Seychelles. (2021). National Disaster Risk Reduction Strategic Plan 2021-2030. Division of Risk and Disaster Management DRMD.
[39] World Bank and Department of Risk and Disaster Management of Seychelles. (2019). Seychelles National Integrated Emergency Risk Management Plan. Washington, DC: World Bank; Victoria, Seychelles: Department of Risk and Disaster Management
[40] The World Bank. Seychelles Rapid Damage and Loss Assessment (December 2023).

				$$$
2	**Evaluate options to strengthen the legal and policy framework for climate action.** This should consider the pros and cons of specific climate change legislation versus mainstreaming climate change into related legislation and strengthening the 2020 National Climate Change Policy. The solution should introduce the comprehensive monitoring, reporting and evaluation of GHG data, guide the prioritization of mitigation and adaptation actions, and define a cross-institutional climate governance framework. *Entity: MECENR*	Short Term	Medium	N/A
3	**Strengthen the Climate Change Division** by expanding the number of permanent staff and broadening the mandate to provide technical support on climate mitigation and adaptation actions for key sectors, including the private sector, and to improve generation, collection, and access to key climate-related data to inform decision making and planning. *Entity: MECENR*	Short Term	Medium	Public $
4	Engage the private sector in climate change governance and action with more **targeted consultations** to understand how to build an enabling environment for low carbon climate resilience among local businesses and the tourism industry. *Entity: MoFEPTI, MECENR, sector ministries*	Medium Term	Medium	N/A
5	**Establish a national climate change governance and coordination mechanism**, with regular meetings and representation from key GoS agencies as well as civil society and the private sector. The mechanism should be the focal point for a national climate governance system centred on inclusive consultations, institutional coherence and scientific excellence. *Entity: MoFEPTI, MECENR*	Short Term	Low	Public $ marginal
6	**Build capacity for implementation of the NIEMP** through sector training in DRM and improved facilities for a NEOC. *Entity: DRMD, MECENR*	Longer Term	Low	Public $

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10million; $$ = US$10–100million; $$$ = >US$100million.

3. Implications of Climate Change in Key Sectors

This chapter describes the physical impacts of climate change and the actions that can be taken to build resilience in key economic sectors and nexus areas. The chapter first assesses the impact of climate change on key economic sectors: 1) tourism; 2) fisheries, marine ecosystems, and the ocean economy, and 3) energy. It then considers the impacts on 4) infrastructure; 5) water and agriculture; and 6) human capital. Each section also considers the actions required to steer the economy to a more resilient development pathway under the 3Rs framework. The interplay of these areas and the macroeconomic impacts of climate change are then analyzed in Chapter 4, using climate scenarios to account for uncertainties in future climate projections (**Box 1** and **Annex 1**).

Box 1: Modeling in this report

This report uses a set of modeling tools selected to address the specific issues raised.

A macro-structural model assesses the impacts of climate change on the Seychelles economy under various scenarios with and without climate action. This analysis provides quantitative evidence of the potential impacts of climate change and climate action on the real, fiscal (taxation, subsidies, debt), and external (trade) sectors. The results provide robust evidence of the tradeoffs to pursuing alternative development pathways, which can be used to prioritize strategic investments and targeted adaptation measures crucial to build the resilience needed for sustainable development. The analysis uses the Climate Change Macro-Fiscal Model (CC-MFMOD)—a macro-structural model developed by the World Bank and customized for Seychelles.[41]

For estimating distributional impacts, a microsimulation model was constructed using data from the 2018 Seychelles Household Budget Survey. The model assesses employment choices and changes in individual earnings, household income, and consumption, using the results from CC-MFMOD.

The models are used to assess four main scenarios:

- The ***Business-as-Usual Scenario (BAU)*** assumes that domestic economic and climate policies and practices remain at their current settings/trends over the period up to 2050. The other scenarios are compared to the BAU to highlight their additional impacts and financing needs.
- The ***Climate-Impact Scenario*** models the damage of climate change to the economy through nine channels that affect output, productivity and physical assets across the four key areas: (1) human health and development; (2) agriculture, land use and energy; (3) infrastructure; and (4) environment. The nine channels comprise: (a) heat and labor productivity; (b) human health and labor supply; (c) tourism (Area 1); (d) rainfed crop production; (e) erosion and land use impacts (Area 2); (f) inland flooding (i.e., temporary flooding events); (g) sea level rise (i.e., permanent loss of land) (Area 3); (h) fisheries; and (i) coral (Area 4). The impact of coastal erosion is not modeled. Shocks from these impact channels are estimated using physical damage functions under two global climate scenarios: **an optimistic scenario** (where global warming is 1.5 C or 2 °C by 2100, that is., SSP1-1.9), and a **pessimistic scenario** (where global temperatures increase by more than 4 °C by 2100, i.e., SSP3-7.0). Annex 2 provides details of the nine impact channels and the two global climate scenarios.
- The ***Aspirational Development (AD) Scenario*** assesses the impacts of key investments and reforms designed to catalyze economic transformation and the RE transition. The scenario includes transformation of the electricity sector toward RE, upgrades and extensions to the Victoria port and Mahé airport, diversification of the tourism sector, sustainable fisheries management and aquaculture development, and investments to boost human capital and address youth issues and drugs.
- The ***Resilient Development Scenario*** builds on the AD Scenario. It includes investment in infrastructure and coastal protection (including nature-based solutions) to reduce the impacts of sea level rise and floods. It also includes investments in irrigation, water storage, and disaster risk reduction and management (among others), to strengthen the resilience of key sectors across the economy.

In addition, a ***Compound Shock Scenario*** based on a 'plausible worst-case' outcome is used to demonstrate the broader macroeconomic risks to which Seychelles is exposed and the potential costs of inaction. It is based on a hypothetical period in which the country suffers from three compounding shocks: (a) a decline in tourism sector earnings; (b) a spike in global food and fuel prices, which pass through to domestic prices; and (c) a disaster. For each shock, a 'Moderate' and 'Severe' scenario is calibrated based on past shock events. This scenario is independent of the Aspirational Development and Resilient Development Scenarios.

[41] The CC-MFMOD focuses on the supply side of the economy. It builds out various interactions between fiscal and monetary policy, economic aggregates such as labor, GDP, the current account balance and prices, and the supply of the economy in terms of potential GDP via capital stock and structural employment. The model has been augmented to introduce emissions, pollution, and damage functions related to climate change. It also includes an adaptation module to analyze the economic benefits of adaption investment.

3.1. Sustainable, climate-resilient, high-value tourism

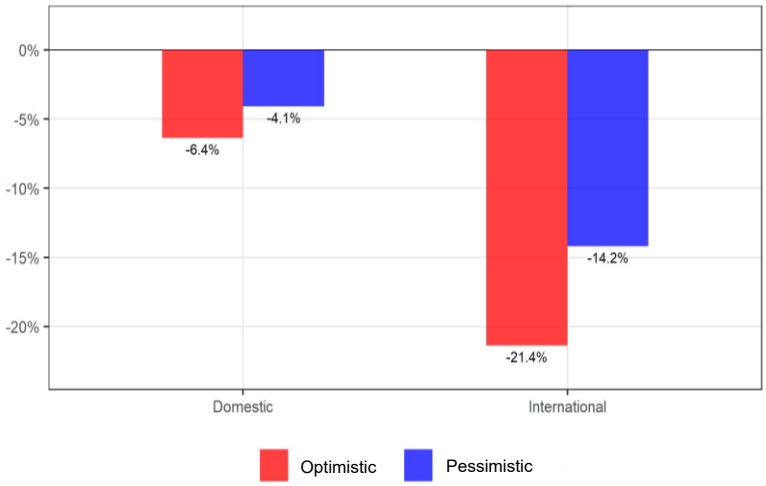
Tourism remains the backbone of the economy, with about 21 percent of GDP and 23 percent of employment concentrated in tourism-related industries. Tourism arrivals grew rapidly in the years leading up to the COVID-19 pandemic, with the number of tourists increasing from 170,000 in 2007 to 380,000 in 2019.[42] Most of this tourism occurs in Seychelles' coastal zones through its beaches and coral reefs. Most tourism revenue is generated from international travelers participating in leisure travel (70 percent of total revenues)[43]. Domestic leisure travel represents 6 percent of the total, while the remaining 22 percent corresponds to business travel (20 percent international, and 2 percent domestic). Climate change may affect tourism through disruptions caused by increased frequency and magnitude of extreme events (mainly heat events), as well as from changes in the suitability or attractiveness of the country for travelers.

Achieving sustainable, resilient, and inclusive growth and job creation will require a new growth strategy for the tourism industry that pairs environmental sustainability with a focus on higher value added per tourist arrival. Following the rapid growth in tourism arrivals the country is now approaching its environmental carrying capacity (about 400,000 annual visitors) due to a limited land area and a visitor-to-resident ratio of 3.6, which exceeds that of Mauritius (1.1) and is comparable to that of the Bahamas (4.1). The disproportionate volume of visitors relative to the local population, and its coastal concentration of tourism, places considerable pressure on Seychelles' natural ecosystems, infrastructure, and local communities. To ensure the sustainability of the sector and its continued contribution to growth and employment, Seychelles will need a stronger focus on a sustainable, value-driven growth model, with emphasis on robust public-private partnerships, policy frameworks, and investment environments. As outlined in the NDS 2024–2028, this approach prioritizes enhancing the quality of the visitor experience and increasing spending per tourist, while promoting sustainability.

Climate change poses a significant threat to the future of Seychelles' tourism sector—modeling for this CCDR indicates that tourism revenues could decline by 11 - 16 percent by 2050 in the *BAU Scenario*, as rising temperatures reduce tourist arrivals (Figure 6). Challenges include weather-related impacts such as higher temperatures, more frequent extreme events, and shifting seasonality; rising sea levels, habitat destruction, and coral reef degradation; resource constraints related to water, food, and energy; and damage to tourism infrastructure.[44] The modeling focuses on the potential impact on leisure tourism arrivals and departures due to changes in average climatic conditions, with net arrivals decreasing as temperatures rise.[45] The results reflect first-order impacts, and are based on a global model. Notwithstanding these limitations, the impact is projected to be substantial under both optimistic and pessimistic future climate scenarios—with the latter resulting in more severe impacts. The bulk of this effect is due to changes in international leisure tourism, with domestic tourism responsible for a much smaller proportion of the projected effect because of its relative size. For international travelers, revenues are projected to decline by 14–21 percent in 2050 under the various assumptions, relative to 2019 conditions. For domestic travelers, tourism revenue is projected to decline by 4 – 6 percent (**Figure 6**). A shock of this magnitude would have significant implications for economic activity, jobs, and the balance of payments.

[42] World Bank Group data. See: https://data.worldbank.org/indicator/ST.INT.ARVL?locations=SC.
[43] United Nations Economic Commission for Africa (UNECA). (2025). Evaluation of the Cruise Sector in Seychelles.
[44] The modeling does not consider the effect of global decarbonization which could disincentivize long-haul flights, further reducing tourism earnings.
[45] The modeling applies the approach developed by Hamilton, Maddison, and Tol (2005), which was also applied by Roson and Sartori (2016). Hamilton et al. (2005) identified a functional relationship between mean annual temperature and total visitor arrivals and departures, which is applied to leisure travel in the modeling. Business travelers are assumed to not be affected by changes in climate.

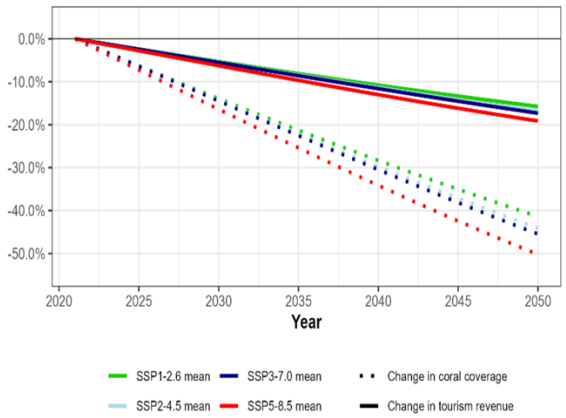
Figure 6: Change in revenue from leisure travelers, 2041-2050



Source: Industrial Economics, Incorporated (IEc).

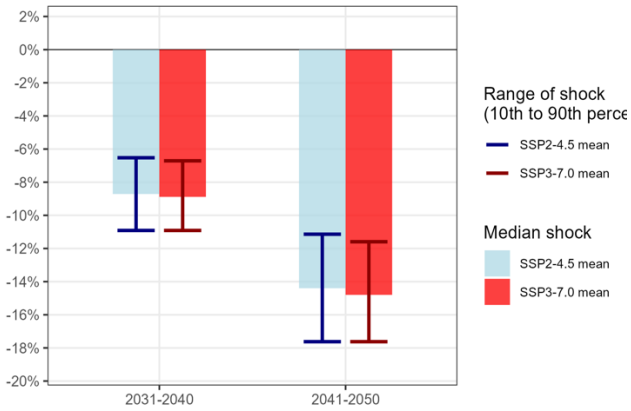
In addition to temperature-related shocks, damage to coral reefs due to rising sea temperatures could reduce coral reef tourism (valued at about 3 percent of GDP) by 11–18 percent in 2050 (Figure 7 and Figure 8). Most of Seychelles' islands are ringed by about 1.7 km^2 of coral reef. This significantly enhances the aesthetic and ecological value of the coastline, supports food security and livelihood stability, and offers natural coastal protection from extreme weather and sea level rise. Coral reef tourism revenue is estimated at US$73 million (about 3 percent of GDP) and attracts more than 30,000 visitors per year[46], accounting for roughly 9 percent of total tourism expenditure. However, these reefs are increasingly threatened by climate change.[47] Coral is highly sensitive to changes in sea surface temperatures, which can trigger bleaching events. Additional pressures such as sea level rise, ocean acidification, increased storm intensity, and sedimentation from runoff further compound these risks. Coral coverage is projected to decrease by 40 - 50 percent by 2050, depending on the climate scenario. This translates to a decline in coral reef revenue of 11 – 18 percent in 2050 (about 0.5 percent of GDP).

Figure 7: Change in coral coverage and revenue as compared to 2021



Source: IEc.

Figure 8: Shock to coral tourism revenue, 2041-2050



Source: IEc

These findings underscore the urgency of diversifying tourism offerings and accelerating climate adaptation efforts (that is, *Reorientating* key economic sectors and *Reducing* vulnerability in the 3Rs framework). Reducing reliance on sun-and-sea tourism by expanding inland, cultural, culinary, nature-based, and wellness experiences will not only help distribute environmental pressure but also enhance

[46] Gaines, S. et al. (2023). The Expected Impacts of Climate Change on the Ocean Economy. In *The Blue Compendium*, edited by J. Lubchenco and P. M. Haugan, 15–51. Springer.
[47] Corals are uniquely vulnerable to climate-related threats like increases in temperature, which led to mass bleaching during the 1998 El Niño Southern Oscillation event and decreased coral cover in Seychelles by 85 - 95 percent.

visitor value and resilience. This strategic shift is essential to maintaining Seychelles' long-term competitiveness in an increasingly climate-constrained world.

Seychelles has implemented several policies to address climate change and promote sustainable tourism. The NDC (2021–2030) set ambitious targets, including a 20 percent reduction in emissions per visitor by 2030 and the adoption of electric transport and sustainable practices across the tourism sector. The Seychelles Sustainable Tourism Policy Framework (2024–2034) marks a shift toward a value-driven model, emphasizing higher visitor spending, environmental conservation, and resilient infrastructure. Complementary regulations—such as the Tourism Development Act (2019) and the Environmental Protection Act (2016)—establish a legal foundation for responsible tourism, with a focus on sustainable coastal management, ecosystem protection, and climate-adaptive infrastructure. These efforts are supported by key institutions including the Ministry of Tourism and Culture, Civil Aviation, Ports, and Marine; the Ministry of Environment, Climate, Energy and Natural Resources (MECENR); and the Seychelles Tourism Board (STB). However, despite strong policy commitments, progress has been hampered by financial constraints, limited inter-agency coordination, data gaps, and infrastructure challenges.

The tourism sector also benefits from emerging support systems designed to mitigate the immediate risks posed by climate events. Early warning systems and risk management initiatives led by the SMA provide critical real-time data during extreme weather events, enhancing preparedness and response capacity. In parallel, localized coastal resilience projects—such as beach nourishment and mangrove restoration in high-value tourism areas like Beau Vallon on Mahé—have shown promising, replicable results in reducing climate vulnerability. However, while these efforts are valuable for risk mitigation, their coverage remains uneven and limited in scale. Notably, there is minimal integration of social safety nets and weather-related risk insurance mechanisms to protect tourism businesses from recurrent climate shocks, leaving many operators exposed to ongoing climate-related disruptions.

In line with Seychelles' desire to pursue a low-volume, high-value tourism model, the 2016 Carrying Capacity Study led to the introduction of a moratorium on large hotel developments—defined as projects with more than 24 rooms. This moratorium—which remained in effect for 4.5 years until it was lifted at the end of 2020 to stimulate the post-COVID recovery—was intended to prevent overdevelopment, support sustainable tourism growth, and address mounting environmental concerns, including climate change impacts. The policy yielded several positive outcomes, including enhanced control over new developments and a shift toward low-impact tourism, with an emphasis on boutique eco-friendly accommodations. Few other SIDS have successfully implemented such restrictive measures without adverse effects on tourism performance. However, an unintended consequence of the moratorium was the rapid expansion of self-catering establishments, which are less regulated and have raised new challenges—particularly in relation to waste management and water usage.

Efforts have been made through various initiatives to encourage environmentally responsible practices across the sector. The Seychelles Sustainable Tourism Label (SSTL)— a voluntary certification program—was the first initiative established in 2011, targeting hotels. However, uptake remains limited—only 27percent of hotel establishments are currently certified, falling short of the Tourism Master Plan's target of 50 percent certification for large hotels by 2023. While the SSTL offers both marketing advantages and sustainability benefits, its voluntary nature has not provided sufficient incentive for widespread adoption among private sector operators. Building on the SSTL, GoS adopted a rebranded and extensive certification program - the Sustainable Seychelles Recognition and Certification Program (SSRC). The SSRC extends beyond accommodation to restaurants and tour operators. As an

Source: Compilation from the Tourism Department (www.tourism.gov.sc)

improvement from the SSTL, the expanded scope allows for a more comprehensive approach to sustainable tourism, and the tiered recognition system promotes continuous commitment towards building a sustainable tourism sector. Both initiatives have been recognized by the Global Sustainable Tourism Council. The recognition award is valid for two years from the date of issue, after which businesses are subject to reassessment. Based on this, GoS aims to grandfather in new regulations that will make the SSRC mandatory, which is strongly encouraged. For tourism firms, increasing energy and water efficiency can also be a relevant source of productivity improvements, reducing costs while improving the environmental footprint.

Seychelles is making substantial investments in climate resilience to safeguard the future of its tourism industry, recognizing the critical link between sustainable tourism growth and effective climate adaptation. The 2025 National Budget included key initiatives to scale up RE production and revive the PV Rebate Scheme to incentivize solar energy uptake among small businesses and individuals [48], US$1.2 million for coastal rehabilitation in key tourism areas like Anse Consolation, Anse Royale, and Aux Cap, and US$8 million over three years for the protection of coastal roads. Further allocations include US$ 1.2 million for solid waste management and US$1 million for disaster risk reduction. Collectively, these adaptation measures not only address pressing climate risks but also enhance the destination's appeal to eco-conscious travelers—positioning Seychelles as a regional leader in sustainable tourism across the Indian Ocean.

Building on these efforts, Seychelles has also made notable strides in climate finance, positioning itself as a regional leader through innovative programs aimed at addressing climate change (that is, *Reinforcing* the foundations in the 3Rs framework). Financing mechanisms for tourism-related climate adaptation rely on a combination of public resources, international assistance, and emerging private sector participation. Multilateral institutions such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF) have partially financed projects focused on coastal protection and marine biodiversity conservation (US$20 million and US$13 million, respectively), although the scale of available funding remains insufficient relative to the growing adaptation needs. In the tourism sector specifically, GoS introduced the *Tourism Environmental Sustainability Levy* to generate domestic resources for environmental conservation (generating about US$12.7 million annually). Seychelles is also considering blue carbon initiatives, aimed at preserving coastal ecosystems such as mangroves and seagrasses, and has secured international funding to support coastal protection and broader climate adaptation efforts. However, innovative financing tools—including climate bonds and PPPs—remain at a nascent stage, and existing weather risk insurance schemes have not yet been expanded to adequately cover tourism assets, leaving the sector exposed to recurrent climate shocks.

Despite progress, climate and tourism policies are not fully addressing the scale, intensity, and urgency of climate risks. Persistent financing constraints, weak policy enforcement, and a fragmented institutional landscape continue to hamper implementation. While significant investments have been made in coastal protection and resilience, progress on key NDC targets—such as the adoption of electric transport and water recycling in hotels—has been slow, with Seychelles trailing behind SIDS peers like Barbados and the Maldives. Aside from economical sustainable aviation fuel to reduce the carbon footprint of long-haul flights, decarbonization of the domestic transport sector would also support the tourism sector to become more sustainable and productive.

The tourism sector is well positioned not only to pursue a robust climate adaptation pathway, but also to emerge as a global leader amongst SIDS on climate resilience. The country's strong sustainability track record, international visibility, and high-end tourism model offer a strategic advantage in transitioning toward a more sustainable industry. However, accelerating this transition is imperative given the substantial risks that climate change poses to the long-term viability of key tourism assets. Rising sea levels, biodiversity loss, infrastructure vulnerability, and shifting visitor expectations threaten the very foundation of Seychelles' competitiveness as a tourism destination. The sector must now choose between merely coping with climate shocks or positioning itself at the forefront of innovation,

[48] The photovoltaic (PV) Rebate Scheme allows for anybody in Seychelles to receive a 35 percent financial rebate on any PV system up to 3 kilowatt peak (kWp).

resilience, and global leadership. These two potential development scenarios are outlined below. In both scenarios, bold and urgent action is required to secure the future of tourism in Seychelles.

The priority is to ensure tourism remains sustainable and viable despite climate change and related changes in visitor demand. First, the destination should diversify its source markets to broaden its visitor base, attract shorter-haul markets to stay longer and build tourism products such as agritourism, ecotourism, and nature-based tourism which rely less on saturated coastal tourism and spread-out seasonality. Second, institutional frameworks—led by entities such as the Ministry of Tourism and Culture, Civil Aviation, Ports, and Marine; MECENR; and the STB—must focus on tighter cross-agency coordination to implement existing climate policies effectively. This includes strictly enforcing the Tourism Development Act (2019) and Environmental Protection Act (2016), accelerating the uptake of energy-saving technologies, and enhancing early warning systems in partnership with the Seychelles Meteorological Authority. On the financing side, GoS should continue to seek global funds (for example the GCF) to invest in green and grey infrastructure such as coral reef rehabilitation, mangrove restoration, and seawalls.[49] It should also seek to develop financial instruments that leverage the domestic financial system and the private sector and expand access to risk insurance mechanisms (Chapter 5). Third, streamlining environmental regulations and enhancing industry training programs will accelerate climate adaptation efforts. The eventual global transition to sustainable aviation fuels (SAF) will help unlock this key emissions burden for the Seychelles and similar SIDS. Collectively, these measures help "climate-proof" the sector, while maintaining existing visitor flows and protecting core revenue streams.

Going beyond adaptation, Seychelles can transform its tourism sector into a global benchmark for sustainability among SIDS and export that knowledge as a competitive advantage. First, institutions must adopt more forward-looking governance structures and inter-ministerial committees that integrate tourism development, climate adaptation, and marine conservation mandates under a single, high-level strategic framework. Policy and financing alignment could both mandate minimum sustainability and climate resilience standards for the private sector and incentivize voluntary climate-positive and regenerative tourism initiatives. Second, public financing could prioritize transformative projects such as artificial reefs, and widespread nature-based solutions (NBS). By embedding climate resilience as a cornerstone of its brand, Seychelles can tap into growing segments of eco-conscious travelers, generate new resilient and low carbon jobs in ecotourism and resource management, and attract global recognition—increasing visitor expenditure while reducing vulnerability.

The sector's ability to adapt and thrive depends on balancing environmental stewardship with inclusive economic development. Higher-value sustainable tourism would likely bolster job creation in areas such as sustainable hospitality, conservation, and marine research, particularly benefiting youth and small businesses. Yet, policymakers must also address potential winners and losers of this transition: for instance, larger resorts may more readily adopt cutting-edge climate measures, while small and medium-size local establishments could require financial and technical support to remain competitive. To preempt conflicts over land use and resource allocation—especially in coastal zones—inclusive land use planning, community-based tourism models and stakeholder engagement should be expanded. A more participatory approach can deepen local buy-in, align strategies across the public and private sectors, and ensure that benefits from climate-resilient tourism investments are felt by the broader population.

A shift toward a more climate-resilient, higher-quality tourism model will further increase demand for skilled labor—particularly in green jobs, sustainability management, digital marketing, marine tourism, and eco-certification services. These emerging needs reflect the sector's transition toward low-impact, experience-based tourism and greater environmental accountability. The shift presents an opportunity to redefine tourism employment in Seychelles, but it also demands urgent investment in workforce development. The transition will also require broader reskilling to align with evolving consumer expectations, new technologies, and sustainability standards. Building local capacity in these areas is

[49] Green infrastructure uses natural systems like forests and wetlands for adaptation measures, while grey infrastructure relies on built structures like groins and seawalls.

essential—not only to reduce dependence on expatriates, but also to expand economic opportunities for Seychellois and ensure the sector's long-term resilience and competitiveness.

Recommendations

#	Recommendations	Timing	Priority	Financing
1	Promote more climate-resilient and diverse tourism products including ecotourism, agrotourism, and cultural tourism *Entity: STB, MECENR, Private Sector*	Short, Medium and Longer Term	High	Private $$
2	Target new (including regional) source markets to diversify demand *Entity: STB, MoTC*	Short, Medium and Longer Term	High	Public $
3	Strengthen implementation of the existing tourism multi-hazard contingency plan and use the 2026–27 review process to incorporate new gaps and workstreams identified during implementation.*Entity: MECENR, STB, MoTC*	Short, Medium and Longer Term	High	N/A
4	Build capacity and raise awareness for climate-resilient tourism across (i) the local workforce and (ii) private operators/industry (SMEs and large hotels), with practical guidance on climate risk, adaptation, and mitigation measures.*Entity: MoEHRD, SQA, MECENR, Private sector*	Short, medium and Longer Term	High	Public & Private $
5	Establish clear climate-positive and regenerative tourism guidelines for current tourism businesses.*Entity: MoFEPTI, MECENR, STB*	Short Term	Medium	N/A
6	Strengthen the implementation and coordination of existing spatial and land use policies in coastal areas to improve transparency and reduce resource conflict across tourism, conservation, and infrastructure priorities.. *Entity:* MoMECENR, SPA	Medium term	Medium	N/A
7	Implement a reporting system with measurable GHG, energy, and water use key performance indicators (KPIs) for the tourism sector. *Entity: MECENR, STB*	Short Term	Low	Public $
8	Reduce aviation-related GHG emissions via sustainable aviation fuels integration and carbon offset programs. *Entity: MoTC, Air Seychelles, SCAA*	Medium Term	Low	N/A

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10million; $$ = US$10million–100million; $$$ = >US$100million.

3.2. Resilient fisheries, marine ecosystems, and ocean economy

Seychelles' EEZ is one of the largest in the Western Indian Ocean, covering approximately 1.37 million km²—nearly 1,000 times the land area of the archipelago itself. Seychelles' EEZ is about the size of France, Germany and Spain combined, while its combined land area is smaller than the city of Madrid. The EEZ includes diverse marine ecosystems that support a range of commercially important species such as tuna, billfishes, sharks, and reef fish.

Healthy oceans support the country's economic pillars of coastal tourism and the fisheries sector, which together account for 35 percent of GDP. The fisheries sector accounts for 10 percent of GDP, 11 percent of exports, and 8 percent of jobs—making it the second largest source of foreign exchange and employment. The sector is dominated by one of the largest tuna canneries in the Indian Ocean region, which employs over 2,000 people—approximately 4 percent of the national labor force—and plays a critical role in global seafood supply chains[50]. In addition to industrial tuna processing, Seychelles supports both deep-sea and coastal fishing operations that sustain local livelihoods and food security. The ocean economy is also expanding through the development of a nascent aquaculture industry,

[50] The cannery is a PPP with a 60/40 ownership structure between MW Brands, a subsidiary of Thai Union Group (a global seafood company) and GoS, and is actively adopting sustainable practices to meet leading international standards.

primarily geared towards export, signaling a broader shift toward diversification and value addition in the blue economy sector.

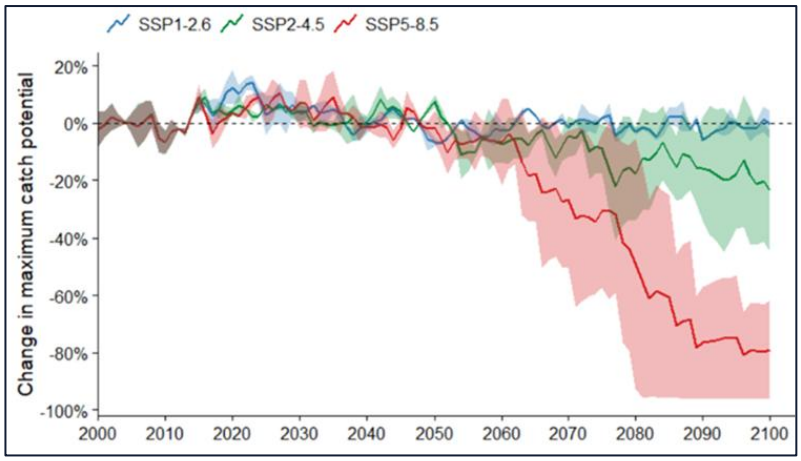
Seychelles has strengthened its positioning in ocean governance. In the context of its Blue Economy Strategy, and to safeguard its natural capital in the face of climate change, GoS committed to protecting 30 percent of the country's EEZ, a milestone that was achieved in 2020 through the development of a Marine Spatial Plan (MSP), which covers the entire EEZ. This commitment was formalized through the Seychelles Marine Spatial Plan Regulations (S.I. 18 of 2025), which provide a legal basis for the zoning framework and strengthen the enforceability of marine protections across sectors. Moreover, Seychelles further advanced its leadership in ocean governance by becoming the first country to meet the Fisheries Transparency Initiative (FiTI) Standards in March 2025. Transparency has improved through FiTI compliance and marine spatial planning, while investment in enforcement, co-management, and climate-resilient value chains is gradually emerging. Given its reliance on shared marine resources and exposure to ocean-based climate risks, Seychelles also engages in regional cooperation efforts, including through the Indian Ocean Tuna Commission and the Nairobi Convention, to support sustainable fisheries management, early warning systems, and the protection of marine ecosystems.

However, climate change threatens to undermine the potential of the ocean. Indeed, the West Indian Ocean is already experiencing more marine heatwaves, threatening coral reefs and marine life crucial for tourism, and affecting coastal communities that depend on marine living resources[51] leading to coastal flooding and saltwater contamination of freshwater supplies.[52] Extreme Sea level surge events are projected to become significantly more frequent across much of the tropics. In Seychelles, a sea level event with a 100-year return period, currently reaching 1.38 m, is expected to occur as often as once *every five years by 2050* under the RCP4.5 scenario, with approximately 2.4°C of warming.[53] Long-term planning is essential, as sea level rise and storm surge is inevitable, with only its extent and timing uncertain. To inform this CCDR, a modeling exercise was undertaken to assess the changes in maximum catch potential (MCP) under different climate change scenarios for key fisheries in the EEZ. In addition, a socioecological risk framework was developed to assess vulnerability at a national and subnational scale. According to the modeling results, the northern region is at risk of higher losses from slow-onset climate change, while the southern region is at higher risk to marine heatwaves. While some fish species may be able to adjust and cope with warmer ocean temperatures, they have less buffer against extreme temperatures that can reach lethal levels. The risks and impacts are projected to be widespread across the entire EEZ under the high emissions SSP5-8.5 scenario.

Due to these changes, fish biomass is expected to decline in Seychelles EEZ by about 24 percent by the period 2090–2099 under moderate global warming (SSP2-4.5) and by over 80 percent in an extreme scenario (SSP5-8.5) (**Figure 9**). In Seychelles' EEZ, declines in tuna stocks have already affected exports, with projections suggesting a potential migration of tuna stocks outside the EEZ after 2050, further threatening this key sector. Without a resilient natural base and healthy marine and coastal ecosystems, the long-term sustainability of both tourism and various sectors of the ocean economy are at risk, with potentially significant economic losses and impacts on the livelihoods of the most vulnerable.

Figure 9: Changes in maximum catch potential under different climate change scenarios

[51] NASA https://sealevel.nasa.gov/sea-level-evaluation-tool. Under the most pessimistic scenario, sea surface temperatures in Seychelles are expected to rise by 1.2°C by 2021-2040, 1.7°C by 2041-2060, and 3.2°C by 2081-2100. Sea level is projected to rise by 0.25 m by 2050 (0.78 m by 2100)
[52] Fiertz, N., et al. (2024). CORVI: Assessing Priority Climate Risks in Mauritius. Resilience & Sustainability.
[53] World Bank Climate Change Knowledge Portal (CCKP). Tittensor, D.P.,C. Novaglio, and C. S Harrison et al. 2021. Next-generation ensemble projections reveal higher climate risks for marine ecosystems. Nature Climate Change, 11, 973–981.



Source: British Columbia University.

The climate vulnerability index and climate risk index of a range of fish species under the SSP5-8.5 scenario indicate that the high proportion of reef-associated and pelagic[54] fish in Seychelles' catch increases the susceptibility of their fisheries to climate change impacts. The heightened climate risk for pelagic fish primarily arises from their extensive exposure to sea surface areas directly affected by climate change-induced environmental shifts, whereas reef-associated fish face significant climate risk due to their dependency on reef and coral habitats. Together, these factors contribute significantly to why reef-associated and pelagic fish in Seychelles exhibit markedly higher climate risk indices compared to demersal fish.

While fisheries revenues are projected to remain stable under mild global warming (SSP1-2.6), they could decrease by over 60 percent under more severe global warming (SSP5-8.5). Tuna makes up the bulk of annual industrial purse seine and longline catch from Seychelles' EEZ, accounting for an average of 96 percent of annual catch for 2012-2022.[55] In recent years (2019-2022), Seychelles flagged vessels accounted for an average of 33 percent and 24 percent of total annual industrial purse seine and longline catch taken from Seychelles' EEZ, respectively.[56] Data from the *Sea Around Us* indicated that the landed value of total fish catch from Seychelles' EEZ amounted to US$ 26.0 million in 2019, averaging US$ 30.8 million per year for 2009-2019 (in constant 2019 US$). Based on these landed values, the modeling for this CCDR found minimal change (a 1 percent decline) in projected fisheries revenue under SSP1-2.6 when comparing projections from the end of century (2091-2099) relative to the base period (1996-2015). However, under SSP5-8.5, the most pessimistic climate scenario, revenues are projected to decline by 62 percent by the end of the century.

These changes in MCP are expected to have an impact on the broader economy. MCP variations do not only result in changes in revenue but also lead to changes in economic and household income impacts. The fisheries sector in Seychelles has an estimated output multiplier of 2.3 and an employment multiplier of 0.94, meaning ***that every rupee of final demand generates more than double in economic output and nearly one job per SCR 1 million***.[57] Reorientating the sector by investing in climate-resilient and diversified fisheries—particularly through aquaculture, value addition, and improved resource management—offers an opportunity to increase value-added in the sector, and to expand employment, especially for youth and coastal communities, as demonstrated under SWIOFish3 through vocational training and long-term human capital planning. For example, modeling for SWIOFish3 found that development of the aquaculture industry could generate up to 2,500 jobs by 2040 (over 4 percent of the labor force).[58]

Acknowledging these changes, Seychelles has placed climate change adaptation at the center of its national agenda. The country's comprehensive approach is reflected in the NDS 2024-2028. GoS is

[54] Pelagic species are fish and marine organisms that live in the open water column of oceans or seas, rather than near the bottom (benthic zone) or close to the shore (coastal zone). They inhabit the pelagic zone, which can range from the surface to deep waters, depending on the species.
[55] Seychelles Fishing Authority 2022
[56] Seychelles Fishing Authority 2022
[57] Chassot, E., Guillotreau, P, Gastineau, B. (2018). Economic value assessment of Seychelles tuna fisheries. Publication prepared for The Nature Conservancy. Submitted to the Seychelles Marine Spatial Plan Initiative and Government of Seychelles.
[58] CH Academy. 2024. Human Capital Development Plan for the Aquaculture Sector of Seychelles.

focused on implementing a Blue Economy approach, with strategies that combine coastal management, biodiversity conservation, and fisheries sustainability.

Implications for marine spatial planning: The results of this analysis suggest that a range of different spatial management initiatives can be taken to manage and protect different parts of the country's EEZ from the projected impacts of climate hazards. The modeling results indicate that the northern and southern regions are priority areas for creating or enhancing habitat refugia to allow ecosystems to recover and build the resilience required to withstand future climate impacts, which is reflected in the MSP zoning system. Equally important is for management regulations to minimize fisheries and other extractive activities, wherever possible. Development of marine based sectors such as tourism and RE should take these high climate impact areas into consideration to minimize further anthropogenic pressures on vulnerable marine ecosystems. Finally, changes in salinity are expected to be greatest in the western EEZ. Therefore, it is crucial to ensure that land use practices in this area do not add pollutants that disrupt the biochemical balance of coastal habitats.

In this context, hybrid approaches such as blue barriers could complement spatial management efforts by providing both ecological and protective benefits. Blue barriers involve the construction of a submerged structure using natural non-toxic materials that can serve as a stable and hard substrate for coral colonization, supporting coral recovery and the development of more biodiverse benthic communities. Although high initial costs and limited technical capacity pose challenges, these structures could be strategically deployed in areas most vulnerable to wave action and coastal erosion**,** where their multi-functional benefits would be most impactful. In fact, the blue barrier concept not only enhances coastal resilience, but also supports coral recovery, fosters marine biodiversity, and contributes to tourism and fish stock regeneration.

Implications for fisheries: Reef fish are projected to fare better under climate change than pelagics. This suggests an opportunity to increase economic benefits from reef fisheries, while ensuring that sustainable practices are in place to maintain healthy levels of reef fish stocks. Most of the reef fish catch is currently used to meet local seafood demand, including for the tourism sector, with some grouper and snapper species exported.[59] Initiatives to increase economic benefits from the local market could include enhancing the mariculture opportunities that can partner with the tourism sector to promote sustainable local seafood at hotels and restaurants, improving the market value of reef fish through transformation of market value chains, and targeting premium export destinations for groupers and snappers. In parallel, investing in sustainable mariculture—such as the farming of sea cucumbers, seaweed, and reef-friendly fish—offers an additional avenue for resilient growth in the blue economy. However, unlocking this potential will require improving access to credit, especially for small-scale producers, through mechanisms such as a reformed and expanded Blue Investment Fund (BIF) and tailored financial instruments that lower entry barriers[60] for local entrepreneurs. Specifically, the impact of the BIF could be enhanced by expanding its scope to better support sectors such as fish processing, logistics, market development, and aquaculture. Additionally, revisiting certain financing terms—such as the minimum deal size of US$ 10,000 and the collateral requirement of 125 percent—could improve accessibility for a wider range of entrepreneurs.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Support development of the aquaculture industry and increase the value of catches landed in Seychelles (target and bycatch)** by reforming and expanding the Blue Investment Fund (BIF) and supporting the local bycatch processing sector. *Entity: Development Bank of Seychelles (DBS)*	Medium Term	High	Public and Private $

[59] Seychelles Fisheries Authority. (2022). Annual Report.
[60] Despite dedicated capital, uptake by small-scale fishers and SMEs has been constrained by application complexity, collateral requirements, and the need to meet new regulatory preconditions for example, licensing/ESIA). By 2024, about US$9 million had been approved across three Blue Investment Fund loans, but participation by small operators remained limited, prompting recommendations to simplify processes, align DBS and SFA templates, and consider rolling submissions.

2	**Support sustainable mariculture (aquaculture) investments** (including in outer islands) by improving access to credit by small scale produbers *Entity: DBS*	Medium Term	High	Public $
3	**Support the development of local, reef-based fisheries**, including through value chain improvement investments. *Entity: DBS, MECENR*	Medium Term	Medium	Public and Private $

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10million; $$ = US$10 million –100 million; $$$ = >US$100 million.

3.3. Accelerating the energy transition

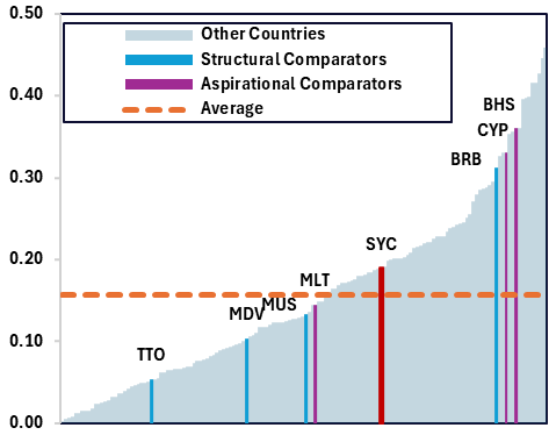
Seychelles' energy sector remains reliant on fossil fuel imports, posing risks to the macroeconomy and energy security. The country has 130 MW of installed capacity, with peak demand of about 60 MW. In 2023, 95 percent of the electricity supply was sourced from fossil-fuel fired generators (82.6 percent from heavy fuel oil and 12.5 percent from light-fuel oil).[61] In comparison, utility-scale renewable generation represented 3.1 percent and distributed solar energy 1.8 percent. In 2023, petroleum imports totaled US$357 million representing 23 percent of goods imports, up from US$165 million and 7.5 percent of imports in 2020. Imports for electricity generation accounted for close to a quarter of the petroleum import bill. This reliance on imported fossil fuels is not only a risk to the balance of payments but also exposes the country to climate-related maritime transport disruptions.

Due to high generation costs, electricity tariffs for businesses rank amongst the highest in Africa, undermining private sector competitiveness and hampering economic diversification. The weighted average tariff in 2023 was US$0.28 per kWh.[62] This tariff level is largely driven by the cost of thermal generation, approximately US$0.16 per kWh.[63] Residential customers pay a subsidized tariff (US$0.19 per kWh, **Figure 10**), cross-subsidized by higher rates charged to businesses (US$0.38 per kWh, **Figure 11**) and government (US$0.41 per kWh). Electricity revenues also cross-subsidize the provision of water and wastewater services. Moreover, the SOE utility maintains uniform tariffs across Mahé, Praslin, and La Digue, despite higher operational costs on Praslin and La Digue compared to Mahé. While these high business and government tariffs have helped reduce the cost burden on households, they have also undermined private sector competitiveness—hampering economic diversification—and the financial independence of the SOE utility. The residential electricity access rate is 100 percent.[64]

[61] PUC Annual Report, 2023
[62] World Bank estimates based on PUC data on tariff and energy consumption.
[63] PUC Financial statements - FY 2022 and FY 2023
[64] Tracking SDG7 report, 2024.

Figure 10: Seychelles' residential electricity tariff of US$0.19/kWh is close to the global average of US$0.16/kWh.

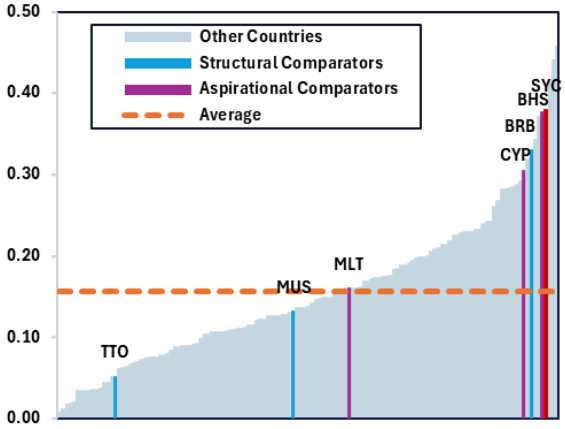
Household electricity rates in USD/kWh, 2023-2025 average by country



Source: GlobalPetrolPrices.com and World Bank data for SYC as of 2023.

Figure 11: With a business electricity tariff of US$0.38/kWh, Seychelles is among the highest in the world.

Business Electricity rates in USD/kWH, 2023-2025 average by country



Source: GlobalPetrolPrices.com and World Bank data for SYC as of 2023.

Recognizing these structural vulnerabilities, Seychelles has set RE targets for 2030 and 2050 to improve its energy security and combat climate change. In its National Energy Policy 2010-2030, published in 2010, the country set a target of reaching a 15 percent share of RE in its energy supply, as well as improving energy efficiency by 15.5 percent by 2030. Both targets were confirmed in the country's 2021 NDC. Moreover, through the Nationally Appropriate Mitigation Actions under the UNFCC framework, Seychelles has committed to becoming 100 percent renewable by 2050.

Despite these long-standing targets, the uptake of RE remains limited, with only 5 percent of energy generated from renewable sources. Thus far, no RE IPPs are operational, with one 5.8MWp floating solar PV project expected to start operations in 2026. This will meet nearly 10 percent of peak electricity demand and will expand total generation capacity by 4.5 percent. However, increasing the deployment of RE is limited by three key technical and financial constraints: (i) reliability and stability issues associated with the variability of RE in a small grid system; (ii) limited scale and available financing for RE projects (both for distributed renewable energy (DRE) and utility-scale projects); and (iii) a lack of available land or suitable sites.

Increasing RE penetration poses challenges to Seychelles grid system. Without significant upgrades and investments in modernization, small island grid systems lack the flexibility and resiliency to integrate significant amounts of RE without issues of stability, reliability, and power quality arising. To date, Seychelles grid absorption capacity has been a key obstacle to further RE integration, as Public Utilities Corporation (PUC) has had to limit the number of accepted applications, primarily for DRE projects, due to constrains to distribution lines and transformers.

Access to financing, for both utility-scale and DRE systems, remains an obstacle for scaling RE adoption. Seychelles' financial institutions currently lack the project finance experience and capital depth to finance a pipeline of utility-scale RE assets, which makes sector scale-up dependent on international investors. To date, interest from international financiers has been limited given the small market size and PUC's lack of a track record contracting with IPPs. In the DRE segment, initiatives such as the Seychelles Energy Efficiency & Renewable Energy Programme (SEEREP) made available low-interest loans for households and small and medium enterprises (SMEs) to invest in RE projects and energy efficiency. However, uptake was limited with only 187 applications received between 2014 and 2020, in part due to stringent loan conditions and collateral requirements established by the banks processing the loans under the program.

The limited availability of land and suitable sites for developing RE projects, primarily solar PV and onshore wind, contrain the alternatives available to Seychelles for an energy transition. The country's limited land severely restrict the potential for deploying the most mature and cost competitive RE technologies in the market, onshore wind and utility-scale solar PV. Recent research indicates the

median footprint for a MW_{ac} of solar PV ranges between 11km^2 and 17km^2 for fixed-tilt and single-ax tracker systems, respectively. As a result, the potential for developing ground-mounted utility-scale solar PV assets in Seychelles is limited.

Research conducted for this CCDR assessed the feasibility, costs, and benefits of various alternatives of least cost generation planning under two main scenarios: i) a BAU Scenario, which assumes a standardized set of economic conditions (demand, global prices, and so on.) and policies and investments that meet the GoS' stated RE target of 15 percent by 2030; and ii) an Aspirational Development (AD) Scenario, where the shift to RE is accelerated through investment and policy actions.[65] Under the AD Scenario, Mahé, Praslin and La Digue could harness RE—primarily rooftop, floating, and land-based solar power—to achieve significant progress in decarbonizating of the power grid, surpassing the 2030 target by achieving a 24.7 percent share of energy supplied from RE. This figure would rise to 41.5 percent by 2043. In the BAU Scenario, these figures stand at 15 percent and 30 percent, respectively. As a result, total emissions from the power sector over the 2024 - 2043 period would decrease in the AD Scenario by 2.3 MT of Co2 equivalent emissions.

Accelerating the RE transition and decarbonizing the power sector will require significant capital investment. The AD Scenario requires an additional US$260 million (in net present value (NPV)) terms, US$490 million in nominal terms) in capital investments compared to the BAU scenario.[66] Most of the additional cost is for capital expenditure (**Table 2**). Operational costs are similar, as higher operational and maintenance costs in the AD Scenario more than offset savings from lower fuel costs. The increase in investment is driven not only by growth in RE generation capacity, but also by the need to install additional flexible and firm capacity that allows the PUC to manage a grid that increasingly relies on variables sources of energy. As a result, under the AD Scenario, 91MW of battery energy storage systems (BESS) are expected to be installed, versus 54MW in the BAU Scenario. Similarly, higher levels of interconnectivity are required between grid systems in the AD scenario, with a sub-sea cable between the Praslin-La Digue and Mahé systems installed to allow excess RE generated in the former to be sent to Mahé.

Table 2: Overview of investment needs by scenario (US$millions, NPV).

	CAPEX	OPEX	TOTAL
(i) BAU	264	787	1,050
(ii) Aspirational Scenario	524	793	1,316
Difference (ii-i)	260	6	266

Source: ECA (2024) and WBG staff calculations. Note: assumes a discount rate of 6 percent. OPEX includes fuel, fixed and variable operations and maintenance, spinning reserve cost, and unserved energy.

While transitioning to RE requires higher upfront capital investments, it offers significant long-term benefits—reducing generation costs, enhancing energy security, and improving the environmental and financial sustainability of the power sector. First, RE is expected to lower the average cost of generation in Seychelles two main power grids. In 2024, the thermal units' marginal fuel cost of production was US$0.15 per kWh on Mahé.[67] RE assets would be expected to reduce these costs. To date, the country lacks a reference for a RE IPP, but the 5.8MWp floating solar project currently under development is expected to provide power at close to US$0.12 per kWh. As additional projects are implemented and a performance track record is established, future RE investments are likely to achieve even lower tariffs. Second, increasing the share of RE generation will reduce Seychelles' dependence on fossil fuels and exposure to price variability in global commodity markets, mitigating a key source of external shocks to the macroeconomy and budget. Lastly, the energy transition would cut GHG emissions from the power sector, helping the country meet its goals and international commitments on climate.

Reorientating Seychelles' energy system will require the participation of international lenders and investors in the sector. Given the significant investment required, the country must address its current limitations in attracting private capital to its energy sector. Due to Seychelles limited market size, attracting the private sector in a scalable manner will require providing investors with certainty about

[65] The energy generation options considered comprise solar (including land-based, rooftop, and floating), wind (onshore and offshore), biomass, thermal, Liquefied Natural Gas, Heavy Fuel Oil, hydrogen, and floating nuclear.
[66] Analysis of capital costs does not consider associated investments in transmission and distribution apart from the Mahe – Praslin undersea interconnector cable.
[67] World Bank calculation based on data provided by PUC.

available investment opportunities, adequate risk allocations, and visibility on the sector and offtaker's financial sustainability. Given the limited land available in the country, the GoS and PUC will need to take an active role in identifying and derisking projects at very early stages of development. GoS should also consider exploring the structuring of risk-sharing frameworks or blended finance facilities to facilitate the flow of private capital into the sector. Additionally, revising the sector's tariff setting mechanisms to provide certainty and transparency on the sector's financials should increase investor confidence in future returns. In addition, and where possible, the country should explore and leverage sources of climate finance (Chapter 5). Finally, the country needs to maximize the support from multilateral partners.

Alongside mobilizing private sector capital, Seychelles will need to increase consumer access to finance for DRE investments. Given the country's limited land availability, rooftop solar PV will be a crucial technology for Seychelles' energy transition. The AD Scenario foresees the installation of 179MW of rooftop solar versus 89MW of utility scale solar PV assets (44MW ground-mounted and 45MW of floating solar PV). As a result, ensuring that financing is available to commercial and residential prosumers (consumers who also contribute to the grid) is critical for the transition. Removing the existing issues related to collateral requirements and incentivizing bank participation and loan disbursements in the SEEREP program could substantially accelerate the deployment of rooftop solar. In addition, establishing the rates at which prosumers will sell energy back to the grid under the net billing and gross metering schemes approved in October 2024, will provide certainty for investments, and allow for a more rapid scale-up of rooftop solar while maintaining PUC's financial stability. Moreover, developing alternative arrangements, such as community solar projects—where a centralized solar installation serves several members of a community—can help overcome financing barriers, especially for consumers unable to install their own systems.

In addition to pursuing RE goals, Seychelles could also enhance energy efficiency initiatives to further reduce its dependence on fossil fuels. In the short term, the country could set minimum energy standards for products and buildings and require clear labels that show energy use and performance to help consumers make informed decisions. In the medium term, Seychelles could focus on industrial energy efficiency, such as energy audits and benchmarking across industries, equipment and systems upgrades, and efficient lighting systems.

Finally, targeted skills development programs will be essential to ensure that Seychelles can take advantage of the new jobs created by the energy transition. The transition to clean energy requires new competencies across the value chain—from power system design and grid integration to installation, maintenance, and energy efficiency services. However, the current education and training systems are not yet producing workers at the pace or scale needed to meet the sector's demands. Targeted programs to develop resilient and low carbon technical skills (including GoS tertiary scholarship program) and foster public-private collaboration are therefore essential.[68] Without such investments, the energy transition risks becoming a missed opportunity for domestic job creation and long-term capacity building. However, such programs will take time to deliver the required numbers of skilled Seychellois. In the short term, streamlining the GOP process for attracting foreign talent will be necessary to fill these skills gaps (Section 3.6).

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Support the scale-up of RE by removing remaining regulatory barriers**, including: (i) further streamlining and operationalizing recently introduced **licensing procedures** to ensure faster permitting; (ii) adopting and applying a **transparent multiyear electricity tariff methodology**; and (iii) establishing a transparent and cost-reflective tariff framework for DRE under both **net billing and gross metering regimes**. *Entity: Utility Regulatory Commission (URC), PUC, MECENR*	Short term	High	N/A. But will promote private capital $$$

[68] For example, Seychelles' Institute of Technology has integrated solar PV installations into its curriculum for electricians.

2	Develop a pipeline of bankable RE projects. *Entity: PUC, MECENR*	Short term	High	N/A. Will promote private $$$
3	Support the scale-up of RE by removing remaining technical barriers by investing in critical grid infrastructure and BESS to enhance grid stability and flexibility. *Entity: MECENR, URC*	Medium and Longer Term	High	Public $$ to promote Private $$$
4	To crowd in private capital, develop a risk-sharing or blended finance facility to lower the relative risk or borrowing cost for RE projects. *Entity: MECENR, MoFEPTI*	Medium Term	High	Public and Private $$$
5	Establish and enforce energy efficiency standards and labeling *Entity: MECENR*	Short term	Medium	Public $ marginal
6	Review SEEREP program and design interventions to increase lending for DRE *Entity: MECENR, URC*	Medium Term	Medium	Public and Private $
7	Develop and implement industrial energy efficiency interventions	Medium Term	Medium	Public and Private $$

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10 million; $$ = US$10 million –100 million; $$$ = >US$100 million.

3.4. Promoting resilient development through infrastructure

Infrastructure, energy, and digital systems lie at the core of Seychelles' structural transformation—enabling mobility, public service delivery, economic diversification, and digital innovation. Yet these systems are increasingly exposed to the impacts of climate change—from flooding and coastal erosion to power disruptions and digital vulnerabilities—making their resilience a critical development priority. A geospatial assessment[69] confirms that the most at-risk infrastructure includes transport networks, tourism establishments, and utilities—particularly water, sewage, electricity, and telecommunications. These assets are largely concentrated in low-lying coastal areas and on steep slopes, where climate hazards are intensifying. Damage to these systems can quickly cascade, disrupting access to clean water, power, digital connectivity, mobility, and emergency services—undermining both short-term response and long-term development. Reducing their exposure and vulnerability to climate change is thus the second pillar of the 3Rs framework to steer the economy onto a more resilient development path.

Flooding—both inland and coastal—as well as with sea level rise and storm surges, are the principal drivers of infrastructure vulnerability in Seychelles (Table 3). Coastal erosion is already damaging roads across all three main islands. In mountainous inland areas, intense rainfall increases the likelihood of landslides and drainage failures, affecting road surfaces, public buildings, and service access. Ports and airports face growing exposure to storm surges and sea level rise, threatening trade and tourism operations. Power, digital, and water infrastructure are increasingly at risk from saltwater intrusion and flooding, while buildings such as schools, health centers, and administrative offices are vulnerable to flood damage, service disruption, and food insecurity during emergencies. As these impacts grow in frequency and intensity, adaptation and risk reduction in infrastructure systems have become a central pillar of resilience and development planning.

Table 3: Summary of climate risks to infrastructure

[69] Maillard et al. 2020. Evaluating the Impacts of Sea Level Rise and Storm Surges on Seychelles' Critical Infrastructure.

Infrastructure type	Climate hazards	Potential impacts
Road networks (coastal and mountain)	Heavy rains, sea level rise, storm surges, landslides	Flooding, damage to road surfaces, roads, bridges, disruption of mobility and other services and economic activities
Roadside drainage	Heavy rains, landslides, accumulation of debris	Flooding of roads, damage to road surfaces, disruption of mobility and other services
Public buildings in coastal areas	Heavy rains, sea level rise, storm surges	Building damage, loss of services, economic impacts
Airports	Coastal flooding, high winds, storm surges, sea level rise	Disruption of services, economic activities and tourism
Ports	Storm surges, sea level rise	Disruption of shipping services and economic activities, particularly fisheries and tourism
Buildings – food storage, public housing, schools, hospitals, district administration buildings, fire stations, administrative offices	Flooding, landslides, storms, wind	Disruption of services and economic activities, potential injury and loss of life, food insecurity, damage to buildings
Energy infrastructure	Heavy rains, sea level rise, landslides, storms/wind	Disruption of services and economic activities, physical damage to infrastructure including saltwater corrosion, maintenance costs, increase in utility costs
Water and sewage infrastructure	Heavy rains, SLR, storm surges, coastal flooding	Saltwater corrosion from saltwater intrusion, contamination of water from sewage during floods, increase in utility costs, road flooding from overflow.
Telecommunications networks	Heavy rains, storms/wind	Interruption to services and economic activities, corrosion of infrastructure, maintenance costs, increase in telecommunications costs
Waste management facilities	Heavy rains, sea level rise , drought, wind, high temperatures[70]	Pollution, interruptions to services and economic activities, flooding, fire
Fisheries infrastructure	Sea level rise, high temperatures, storms/wind	Damage to buildings, interruptions to services and economic activities, potential closures due to reduced fish stocks from warmer ocean
Tourism infrastructure	Sea level rise, heavy rains, high temperatures, storms/ wind	Damage to beaches, parks, other coastal assets, and buildings. Damage to private sector tourism assets during extreme events could affect collateral-securing loans[71]. Damage to coral reefs from bleaching events will exacerbate coastal erosion on tourism properties.

Source: Summary of climate risks to infrastructure in Seychelles derived from several sources (GoS, 2023; IMF, 2025; JICA, 2013; Maillard et. al, 2020a; World Bank, 2019, etc.), considering infrastructure type, climate hazards and potential impacts to infrastructure.

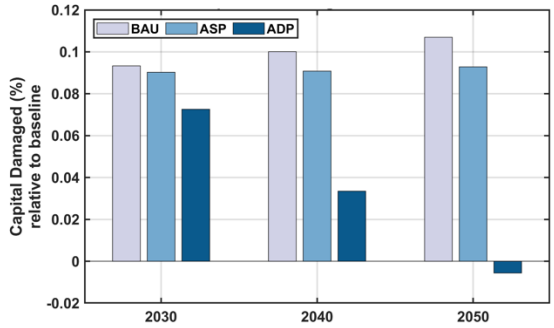
Climate change is expected to increase inland flood risks, with modeled projections showing a rise in the annual expected damage to capital stock of 0.1 percent by 2050 under a BAU Scenario. Although this figure may appear modest on an annual basis, the impact of more extreme events is substantial: a 100-year flood under a dry/hot climate future could damage more than 5 percent of the national capital stock. These findings highlight the scale of potential losses if current exposure trends persist. The analysis shows that targeted adaptation measures—such as relocating new development outside high-risk zones, improving drainage systems, and floodproofing critical infrastructure—could reduce flood-related capital losses to 0.07 percent in the 2030s and zero in the 2050s (**Figure 12**). These adaptation benefits are especially pronounced in high-impact scenarios, reinforcing the case for investing early in risk-informed spatial planning, resilient infrastructure design, and stronger enforcement of land-use regulations.

The impacts of sea level rise and storm surge are projected to be moderate by 2050 but rise rapidly by 2100, posing a growing and long-term threat to national development. Coastal roads, ports, housing, and public services are already at risk from tidal flooding and storm surges, and this exposure will increase sharply as sea levels continue to rise. Without action, annual damage to the national capital stock from sea-level rise and storm surges could reach 0.15 percent in 2030, 0.3 percent in 2040, and over 0.5 percent in 2050, driven largely by more frequent extreme events. In more severe climate futures—where sea level rises faster, resulting in permanent land loss sooner—the damage could be much worse, affecting up to 8 percent of Seychelles' capital stock by 2050 (**Figure 13**). These impacts would be concentrated in critical urban zones like Victoria and Providence, where infrastructure and services are densely clustered near the coast. The Aspirational Development Scenario, which assumes that new infrastructure is built at higher elevations, leads to modest but immediate reductions in damages. The Resilient Development Scenario (ADP in Figures 12 and 13), which combines elevation with targeted flood-proofing of vulnerable infrastructure, results in far greater impact. By 2050, this

[70] World Bank. 2019. Coastal Waste Management Infrastructure in a Changing Climate: Seychelles Risk Assessment Report
[71] International Monetary Fund. 2025. Seychelles: Macroprudential stress test and climate risk analysis.

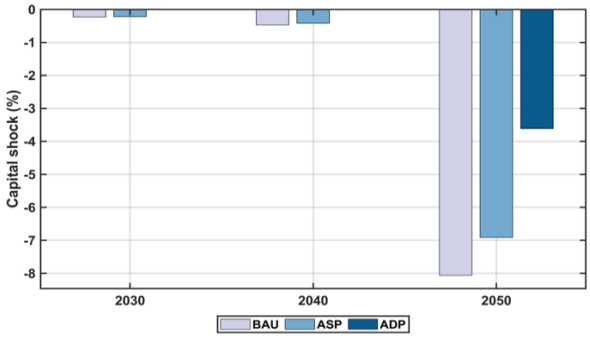
combined approach is projected to reduce capital damage to less than half of the losses expected under the BAU Scenario, highlighting the value of early, integrated adaptation efforts.

Figure 12: Expected annual flood damage under SSP3-7.0 relative to a historical baseline (1995-2020)



Source: IEc.

Figure 13: Expected annual damage from coastal flooding under SSP3-7.0 (80th percentile), for different development scenarios



Source: IEc

Resilience measures are also being considered for key infrastructure, particularly the port, in light of a major redevelopment initiative by the Seychelles Ports Authority. The Ports Authority Rehabilitation and Extension Project aims to modernize the country's existing cargo and passenger port facilities by extending the quay by 310m, dredging the port to allow for larger vessels, and upgrading port infrastructure.It is estimated that the design and build contract will cost EUR 82 million. Given the scale and strategic importance of this investment, incorporating robust climate resilience measures will be essential to ensure the port's long-term sustainability in the face of evolving climate risks.

The Seychelles International Airport is similarly vulnerable. Located along the shoreline on the highly exposed east coast of Mahé, the airport sits just 3 - 4 m above mean sea level. Resilience building measures, such as drainage system improvements, are crucial and it may soon become necessary to increase the height of the runway to mitigate the effects of rising sea levels and increasing frequency of coastal flooding.[72] Implementing these measures is critical to enhancing the airport's resilience against future climate-induced flooding events, ensuring the continuity of operations, and safeguarding this vital national infrastructure and enabler of the development of the country.

The road network on Mahé, Praslin and La Digue is at risk from coastal flooding, erosion and landslides and requires a coordinated, climate-risk informed plan. About 48 percent of the road network is at risk from coastal erosion and flooding from sea level rise and storm surges[73] while other areas experience flooding and landslides during heavy rains due to outdated and insufficient drainage systems. A 2023 study of coastal erosion road damage by Seychelles Land Transport Agency (SLTA) identified high priority coastal erosion sites on all three islands (for example Bel Ombre, Port Glaud and Au Cap on Mahé, and l'Amitié Rd on Praslin) and puts road repair and upgrade costs at US$24 million (1.1 percent pf GDP). Currently, legislation and policies governing road design and maintenance do not specifically address current and projected climate risks, and there is a need for a coordinated national plan to consider the range of climate resilient options for the road network including improved drainage, raising, reinforcing or relocating roads, and nature based and hybrid solutions (including bollards to protect dunes from parking vehicles, beach and mangrove restoration, offshore blue barriers or submerged barriers). The Coastal Management Plan and World Bank studies[74] provide guidance for the design and costing of some of these approaches to coastal erosion. Other projects to upgrade roadside drainage and prevent flooding and landslides from heavy rainfall are costed at an additional US$44 million (2.1 percent of GDP). The NDC costs a national transport strategy at US$16.4 million (0.8 percent of GDP), which could provide an opportunity to consider the road transportation system through an integrated climate adaptation lens.

Nature Based Solutions (NBS) is already recognized as a critical strategy for coastal protection, given the estimated impacts of climate change on coastal urban infrastructure and tourism. It reduces

[72] World Bank. (2018). Pointe Larue Flood Mitigation Options Appraisal Draft Final Report -December 2018
[73] GoS. (2019). Seychelles Coastal Management Plan 2019-2024. Ministry of Environment, Energy and Climate Change and the World Bank.
[74] World Bank. (2021). Coastal Modelling and Assessment of Potential solutions for Coastal Defence and adaptation at priority sites in Seychelles: Report on coastal flooding and erosion.

climate risks while enhancing biodiversity, ecosystem services and natural looking coastlines that appeal to tourists. NBS investments can be vital engines of job creation, with estimates suggesting that up to 750 full-time equivalent jobs can be created in developing countries for every US$1 million invested.[75] The design and implementation of NBS requires a systems approach that considers the landscape ecology, functions of grey infrastructure, and the location of the project. NBS can reduce flood risks in coastal areas through water infiltration, retention, and mitigation of surface runoff[76]. In urban areas, the reduction of flood risks can potentially stimulate investment and development.[77] Other NBS strategies include expanding restoration of coastal ecosystems like mangroves, dunes and coral reefs to prevent waves and storm surges from reaching the coastline. Without coral reefs, global research indicates that predicted annual damage from flooding would double, and the costs of damage from frequent storms would triple.[78] Estimates from a study of the benefit-cost ratio of coral reef and mangrove restoration efforts from the Caribbean islands indicate a benefit-cost ratio greater than 15:1 in many sites.[79] A study led by the World Bank in 2020 estimated that restoring 15 coral reef sites in Seychelles to reduce coastal risk and enhance biodiversity would cost US$18.4–US$26.7 million, with an additional US$1.3–1.8 million per year for maintenance, which could all be funded through PPPs.[80]

As extreme rainfall events increase, landslides will continue to pose a large risk to vulnerable areas. Areas that have been developed are at a greater risk of landslides due to the modification of the natural environment that affects drainage patterns, increasing surface run-off and the potential for landslides. Unlike most areas, the shallow nature of the soil on Mahé results in the development of a shallow root system, which ultimately has a detrimental effect on stability, particularly during periods of high rainfall. Landslides are most common in the humid tropics, where intense chemical weathering affects the rock mass.

While Seychelles has made progress with early warning systems, further policy actions and investments are needed for effective operations. While the mandates of the various stakeholders are legally defined, their roles and responsibilities in EWS are not clear, creating some duplications during operations. Some hydrometeorological hazard maps exist, but comprehensive vulnerability and risk mapping still needs to be developed to identify communities at risk. Hydrometeorological (weather, climate and water) information and early warning services are in place but scaling up investments with high performance hydromet observation equipment (e.g. weather radar) and impact-based forecasting will lead to improved lead time and accuracy of hydromet warnings which are critical for adaptation and resilience planning and investments. The Common Alerting Protocol (CAP) is used for dissemination and communication of hydromet information and early warning services; however, these are still not reaching the last mile communities and tourists due to a lack of a cell broadcast system. These investments will support basic decision-making, early warning, and planning for enhancing resilience in sectors important for climate resilience and economic growth in Seychelles, including tourism, energy, agriculture and fisheries, water, and transport (aviation and maritime). They will also boost the disaster preparedness and response capacity of GoS toward safer and resilient communities.

Institutional mechanisms could usefully ensure that climate change risks are systematically included in DRM, infrastructure, land use, and urban planning. Seychelles has taken significant steps to improve its resilience to flooding and sea-level rise disasters, including publishing the 2021-2030 National Disaster Risk Reduction Strategic Plan. However, important gaps remain,—particularly in enforcing and periodically updating building codes and design standards, especially for critical public infrastructure. Additionally, as highlighted in Chapter 2, institutional coordination also represents a persistent challenge. While multiple bodies—including MECENR, DRMD, SMA, and SLTA—have climate- and infrastructure-related mandates, collaboration is often ad hoc and fragmented. Most disaster risk and

[75] UNEP (United Nations Environment Programme), Smart, Sustainable and Resilient Cities: The Power of Nature-based Solutions. (Nairobi, Kenya: UNEP, 2021), https://wedocs.unep.org/bitstream/handle/20.500.11822/36586/SSRC.pdf?sequence=1&isAllowed=y.
[76] Examples include green roofs, permeable pavements, bioretention areas, mangrove management and enhancement, open spaces such as parks and connecting and restoring fragmented coastal wetlands to improve flow.
[77] Van Zanten et al., (2023). Assessing the Benefits and Costs of Nature-Based Solutions for Climate Resilience: A Guideline for Project Developers. © World Bank. http://hdl.handle.net/10986/39811
[78] Beck et al. 2018. The global flood protection savings provided by coral reefs. Nat Commun 9, 2186, https://www.nature.com/articles/s41467-018-04568-z.
[79] Beck et al. (2022). Return on investment for mangrove and reef flood protection. Ecosystem Services Volume 56 101440 https://www.sciencedirect.com/science/article/pii/S2212041622000365
[80] Rissik et al., 2020. Strategies for Large Scale Coral Reef Restoration for Coastal Resilience in the Seychelles. World Bank. https://documents1.worldbank.org/curated/en/213871605865766219/pdf/Strategies-for-Large-Scale-Coral-Reef-Restoration-for-Coastal-Resilience-in-the-Seychelles.pdf

adaptation measures in Seychelles are funded through the national budget, but domestic resources are insufficient to meet growing needs. Limited access to concessional finance further constrains options, making it essential for Seychelles to improve access to international climate finance to close the investment gap (Chapter 5).

Despite ambitious policy targets, the waste management sector in Seychelles faces challenges, posing risks to public health and the environment. GoS has set ambitious targets for zero waste and zero emissions from the waste sector by 2050. Yet—like many other SIDS—geographic isolation and limited space for landfills make it difficult to achieve economies of scale. Recycling rates languish at about one percent, due to the lack of a coordinated system for segregation and collection of recyclables. The existing infrastructure is stretched by growing waste volume (which exceed design capacities) and inadequate operation and maintenance, leading to landfill fires, air pollution, and safety risks to the Mahé airport. Hazardous chemicals and waste are disposed of at landfills, posing a significant threat to marine ecosystems and Mahé's main desalination plant, potentially compromising the quality of drinking water. Poor waste management is also starting to affect tourists' experience.[81]

In response, GoS aims to achieve a transition towards sustainable waste management, resource recovery, and circularity. Priorities include: (i) improving operations and increase of disposal capacity at Providence landfill; (ii) institutional strengthening to improve solid waste management and to promote circularity; (iii) policy reforms to ensure the financial sustainability of the sector and to increase recycling, treatment, and resource recovery; and (iv) an enabling environment to encourage the transition to a circular economy.

Despite significant progress in digital connectivity and infrastructure, vulnerabilities persist due to physical infrastructure limitations, geographic constraints, and insufficient redundancy planning. Seychelles' digital ecosystem is characterized by strong mobile penetration, expanding internet access, and growing adoption of advanced digital technologies. Yet, a World Bank ongoing analysis of geolocated cell sites reveals that the majority are situated within landslide risk zones, primarily due to the country's steep terrain; less than 5 percent of these sites face exposure to flood risk.[82] Other critical information and communication technology (ICT) infrastructure—including fiber cables, telecom hubs, and landing stations —is concentrated in low-lying coastal areas increasingly vulnerable to flash floods, storm surges and sea-level rise. On Mahé, fiber optic rings follow identical physical routes, limiting network redundancy and increasing vulnerability. The 2025 disruption of the PEACE submarine cable, though not climate-related, highlighted the fragility of international connectivity, resulting in temporary service degradation and estimated losses equal to 1.9 percent of daily GDP per day of total outage. Furthermore, Seychelles currently lacks formal climate-resilient design standards or building codes for ICT infrastructure. Strengthening physical protection and improving routing redundancy and power backup will be essential to ensure digital systems can withstand climate shocks and continue supporting national resilience efforts. In this context, establishing standby agreements with satellite network operators could provide an important layer of emergency backup, enabling rapid restoration of connectivity for critical services and affected communities in the event of a disruptive disaster.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Enhance awareness and enforcement of climate risk and mitigation related regulations under the Planning Act, including the 2024 Physical Planning (Building) Regulations:** This will ensure that development planning and new constructions are resilient to current and future climate impacts and prevent construction in zones vulnerable to flooding, erosion and landslides. Effective enforcement will require capacity building for oversight agencies. This will include retrofitting of health centers and schools.	Short Term	High	Public $

[81] Sustainable Travel International. 2023. Final Report: Tourism Carrying Capacity for the inner islands of Seychelles (Mahe and Praslin).
[82] A GIS exposure analysis was conducted overlaying flood probability and landslide susceptibility data with geolocated landing stations, submarine cables connecting Seychelles, and cell towers. The cell tower data from 2021 was aggregated into 1 km grid cells. Data source: Flood data from Fathom 3, NASA landslide susceptibility dataset, OpenCellID 2021 dataset.

	Entity:SPA, Ministry of Health, Ministry of Education			
2	**Improve sustainable management of Seychelles' landfills** (particularly on Mahé) to maximize climate resilience and reduce emissions, including by: (i) provide space for waste segregation, recycling and composting initiatives; and (ii) increasing solid waste disposal capacity in Providence landfill and upgrading leachate treatment system. *Entity: Landscape and Waste Management Agency (LWMA), MECENR*	Short and Medium Term	High	Public $
3	**Undertake climate-informed upgrades to Port Victoria, Seychelles International Airport, and the coastal road networks on Mahé, Praslin, and La Digue.** *Entity: Seychelles Planning Authority (SPA)*	Medium Term	High	Public and PPP $$$
4	**Update the Coastal Management Plan** to include new sites of coastal erosion and integrate hot spots and actions for coastal flooding from heavy rainfall in a more multi-hazard approach that integrates NBS. *Entity: MECENR*	Short Term	Medium	Public $ marginal
5	**Strengthen observation, forecasting and EWS for extreme events, including institutional strengthening and coordination.** Build increased capacity to limplement impact-based weather forecasting focused on flash floods and coastal inundation and establish a cell broadcast system. *Entity: DRMD/ SMA*	Short Term	Medium	Public $
6	**Finalize the Circular Economy Road Map,** with clear guidance and incentives for engagement with the private sector and job creation; and prepare and implement **Extended Producer Responsibility legislation**. *Entity: MECENR, LWMA*	Short Term	Medium	N/A
7	**Update the Environment Protection Act and regulations** to ensure that Environmental Impact Assessments address climate risks of new developments. *Entity: MECENR*	Medium Term	Medium	N/A
8	**Establish a national working group to coordinate climate-proof infrastructure planning, construction and maintenance** including key partners from government, the private sector and civil society. The group should report to the national climate change governance mechanism (see Chapter 2) and be co-chaired by MECENR and Seychelles Infrastructure Agency (SIA). *Entity: SIA and MECENR*	Medium and Long Term	Medium	N/A
9	**Build capacity for implementation of the NIEMP t**hrough sector training in DRM and establishment of improved facilities for a NEOC. *Entity: DRMD*	Long Term	Medium	Public $
10	**Build local capacity and partnerships for research, monitoring and evaluation of coastal infrastructure adaptation measures.** Continue to build on University of Seychelles collaborations with local, regional, and international partnerships. *Entity: MECENR*	Long Term	Medium	N/A

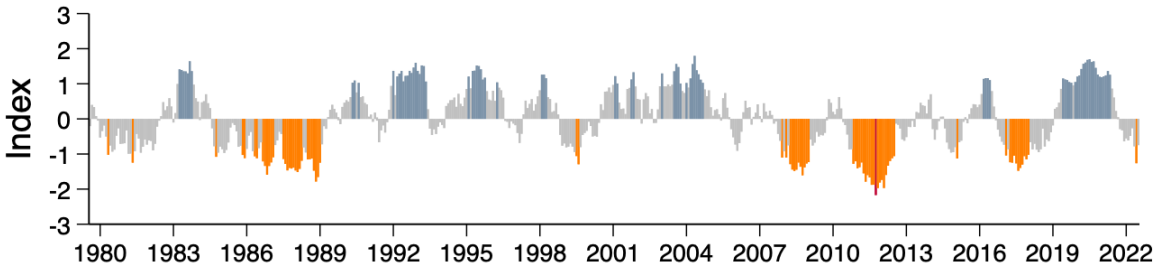
Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10 million; $$ = US$10 million–100 million; $$$ = >US$100 million.

3.5. Resilient water supply and agriculture production through integrated landscapes

Resilient water supply is emerging as a critical development priority for Seychelles, as the country faces intensifying climate-related stress from prolonged dry seasons, extreme rainfall, and storm-induced flooding (Figure 14). Droughts are occurring more frequently and with greater severity: during 2010–2019, dry shocks lasted longer and were 15 percent more intense than in the previous decade. In June

2025, PUC reported that La Gogue reservoir level dropped to 61 percent, prompting daily supply cuts and the deployment of containerized desalination units in South Mahé. Although wet conditions are becoming less frequent, they continue to pose significant risks. High-intensity rainfall and flash flooding—such as the December 2023 event that resulted in multiple fatalities and major infrastructure damage—underscore the dual challenge of managing both water scarcity and excess. This highlights the need for a more dynamic, climate-resilient water supply strategy that adapts to both heavy rainfall and drought, while maximizing all available sources. Looking ahead, rising temperatures are likely to further drive-up water demand across all sectors.

Figure 14: Dry and wet shocks, Standardized Precipitation Evapotranspiration Index (SPEI)



Source: Own analysis and extraction of information from the Global SPEI dataset. Global SPEI dataset. SPEIbase v.2.9. Accessed in July, 2024. https://digital.csic.es/handle/10261/332007. The time scale used is 18 months.
Note: Note: The colors denote dry and wet shocks according to values of the SPEI Index. Dark blue denotes a SPEI greater than +2, an extremely wet shock; light blue one between +1 and +2, a wet shock; grey one between -1 and +1, normal conditions; orange one between -1 and -2, a dry shock; finally red denotes a SPEI lower than -2, an extremely dry shock.

These growing climate pressures are straining the already limited capacity of Seychelles' water infrastructure. Despite recent investments—including the expansion of the La Gogue dam by 60 percent—management of seasonal water scarcity remains a persistent challenge. In addition, the lack of an on-site treatment plant means transporting water to distant facilities, reducing efficiency and placing additional strain on existing treatment plants. Despite the increase in storage capacity, per capita dam capacity stands at just 10.3 m^3, far below the SIDS average of 128.5 m^3, underscoring the country's limited buffering capacity. Groundwater resources are extremely limited due to the granitic nature of islands, accounting for only a small fraction of total supply. As a result, Seychelles relies heavily on surface water (73 percent), and desalination (27 percent)[83], provided through six desalination plants —four on Mahé, one on Praslin, and one on La Digue— with a combined production capacity of 28,550m^3/day. These plants are crucial for maintaining supply during the dry season and droughts, as well as when water quality from dams declines during the rainy season. Furthermore, desalination plants are also improving energy efficiency and reducing energy losses.

Securing water supply is fundamental to sustain Seychelles' economy. Reliable water access underpins key sectors that drive growth, employment, and foreign exchange earnings. Tourism is a major consumer of water resources and highly exposed to seasonal shortages, especially during the dry season that coincides with peak tourist arrivals. In 2009, tourism accommodation accounted for 17.8 per cent of Seychelles water consumption, with particularly high shares on La Digue (47.8 percent), Praslin (31.5 percent), and Mahé (14.6 percent).[84]

Water is equally critical to Seychelles' export economy, which heavily relies on water-intensive production. The country specializes in water-intensive goods, with processed fish accounting for over 75 percent of goods exports.[85] However, there is significant room for improvement, as industrial water use efficiency remains among the lowest compared to SIDS peers[86], highlighting opportunities for efficiency improvements and resource savings through targeted reforms and technological upgrades.

Beyond its economic significance in tourism and exports, water is essential for public health. Access to safe and reliable water underpins basic health services, sanitation, and disease prevention. While 96 percent of the population has access to at least basic water services and 100 percent to basic sanitation, 80 percent of the entire population relies on septic tanks with soak pits to dispose of

[83] Public Utilities Corporation (PUC) (2023). Annual report.
[84] Tourism Master Plan 2018 update.
[85] Fish processing is water-intensive because water is essential for maintaining hygiene, food safety, and product quality at every stage of the production and transportation process.
[86] CLEAR Water dashboard

sewage, creating a significant risk of contamination due to soil and unfavorable hydrogeological conditions. Most infrastructure (water and sewer mains, wastewater treatment plants, etc.) is located in the coastal areas which are the most vulnerable to climate change risks. Sewerage infrastructure on the east coast and parts of the north coast of Mahé is exposed to climate risks, mainly storm and sea water ingress in the sewers and corrosion from saline and sea water. Some major projects in the sector include replacing 2 km of pipeline in Central Victoria and constructing a wastewater network in La Digue servicing 90 percent of domestic wastewater generation[5].

Investing in water infrastructure is central to resilience and achieving the 3Rs. Recognizing the role of resilient water supply as a key socioeconomic driver, Seychelles is pursuing a combination of short- and long-term measures aimed at enhancing water resilience and supply reliability. In the near term, the Public Utilities Corporation (PUC) intends to develop additional desalination plants to manage dry-season shortfalls and mitigate risks during droughts. In parallel, the construction of a dam at Grand Anse is under consideration to improve storage capacity and reduce dependence on desalination. At the same time, managing seasonal water scarcity also requires improving wastewater management to reduce the clean water demand-supply gap during drier months.

Recognizing the structural vulnerabilities of desalination, investing in technology and exploring further storage options could be a complementary longer-term option. All six desalination plants are located along the coast, along with much of the country's water and sanitation infrastructure—including water and sewer mains, pumping stations, and treatment plants. This makes critical assets highly exposed to flooding, saline intrusion, and storm surges. Moreover, as a SIDS, Seychelles relies heavily on imported fossil fuels to power its energy-intensive desalination systems, increasing exposure to fuel price volatility and thus driving up operational costs. Emerging technologies, however, could improve the energy efficiency of desalination, offering opportunities to reduce both costs and climate vulnerability. In addition to technological upgrades, expanding storage through dams offers an important long-term complementary option. Indeed, climate projections indicate more intense but less frequent rainfall, underscoring the need for increased water storage to adapt to growing seasonal variability. A feasibility study has been completed for a dam at Grand Anse, and support in this direction could help address implementation challenges.

Transitioning to RE for water production is also critical. Given the high energy intensity of desalination and the country's dependence on imported fossil fuels, integrating solar and other clean energy sources into the water supply chain would reduce operating costs and align the sector with national climate commitments. Currently, Seychelles performs below the SIDS average in renewable electricity generation, and targeted investments in the water-energy nexus could yield both mitigation and adaptation benefits.

Given the importance of desalination plants to meet Seychelles water supply needs, the interlinkages between water and energy remain critical for the country's energy security and transition. In 2023, 27 percent of the water supply in the three main islands was sourced from desalinated water.[87] Given the high energy intensity of desalination processes, lowering non-revenue water and increasing freshwater supply will contribute to reducing Seychelles' energy intensity and overall consumption. In collaboration with multilateral partners, the country is implementing projects to refurbish and expand existing water production and treatment, as well as to reduce non-revenue water. Further initiatives in this regard, such as the construction of a dam at Grand Anse, can enhance the country's resilience to climate change-related hazards and simultaneously improve its energy security.

This agenda is clearly reflected in the Seychelles NDC, which prioritizes water security as a central pillar of the country's climate adaptation and mitigation efforts. The NDC outlines a comprehensive vision for water resilience, including implementation of the Seychelles Water Supply Development Plan, expansion of water reuse, rainwater harvesting, and adoption of energy-efficient technologies for water mobilization. It also emphasizes the importance of developing a National Drought Strategic Plan, improving groundwater harvesting technologies, and promoting water-efficient irrigation in the agricultural sector.

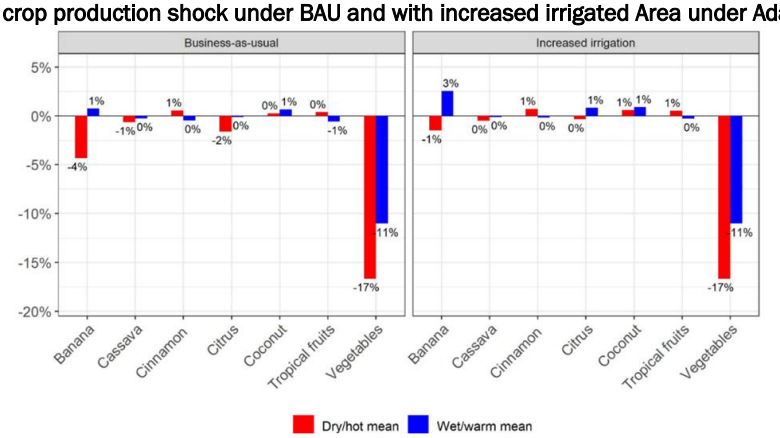
[87] PUC. (2023). Annual report.

Agriculture and food security

Ensuring food security in Seychelles increasingly depends on strengthening the resilience of its agricultural sector, which faces mounting constraints from limited land availability and growing climate-related water stress. Imports account for about 70 percent of food consumption,[88] and local food production is constrained by both limited arable land and climate-related water stress. Only 3.4 percent of Seychelles' total land area is agricultural.[89] Moreover, some of these agricultural zones are located in flood-prone areas with poor drainage, where extreme rainfall has led to significant crop losses over the past decade.[90] The potential irrigable area equipped with irrigation stands at just 26 percent, far below the best-performing SIDS average of 88.2 percent, exposing the sector to further vulnerability as droughts and heat stress become more frequent. [91]

Against this backdrop, this CCDR has quantified the impact of climate change on crop yields, driven by altered rainfall patterns, rising temperatures, and increased evaporative demand. By 2050, climate change is anticipated to cause relatively small positive or negative production shocks for majority of rainfed crops under a BAU Scenario (**Figure 15**), with shocks ranging from -4 percent to +1 percent, depending on the crop and the climate scenario. Vegetables are the notable exception, experiencing much larger crop production losses of 11-17 percent under the Wet/Warm mean and Dry/Hot mean scenarios, respectively. With domestically produced vegetables accounting for over half of domestic consumption (with the remainder imported), these losses are important for food security.[92]

Figure 15: Rainfed crop production shock under BAU and with increased irrigated Area under Adaptation, 2041-2050



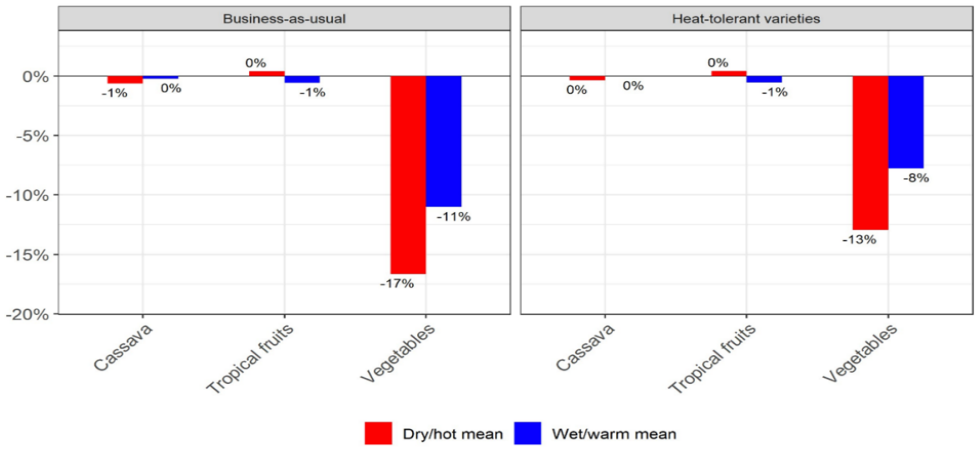
Source: IEc

Adaptation measures—primarily expanded drip irrigation and the adoption of heat-tolerant crop varieties—can help cushion the effects of climate change on yields. Sustainable irrigation investments, estimated at US$ 3,000 per hectare, are projected to cost US$ 1.7 million by 2050 and offer modest gains for crops like bananas, cassava, and citrus. For vegetables, where losses are primarily temperature-driven, switching to heat-tolerant varieties reduces shocks by 3–4 percent (**Figure 16**). Yet even with these measures, yield losses remain significant—reaching -13 percent under the Dry/Hot scenario and -8 percent under the Wet/Warm scenario—underscoring the need for more robust strategies tailored to highly climate-sensitive crops.

The Adaptation Scenario includes more widespread use of drip irrigation as well as increased adoption of heat-tolerant crop varieties. These adaptation measures aim to reduce the water availability and heat stress components of the production shock. An important assumption to note is that the expansion of irrigation in the country assumes sufficient water is available from surface water, groundwater, or other sources, to fulfil all the proposed irrigation plans.

Figure 16: Rainfed crop production shock under BAU and with Investment in heat-tolerant varieties under adaptation, 2041-2050

[88] FAO. 2022. Bioenergy and food security (BEFS) assessment – Seychelles. Environment and Natural Resources Management Working Paper No. 92.
[89] Food and Agriculture Organization. (2018). FAOSTAT Database. Available at: http://faostat3.fao.org/download/Q/QV/E
[90] International Monetary Fund. (2017). Climate Change Policy Assessment: Seychelles. Country Report No. 17/162.
[91] Food and Agriculture Organization. (2018). FAOSTAT Database. Available at: http://faostat3.fao.org/download/Q/QV/E
[92] FAO. 2013. Seychelles Bioenergy and Food Security Projects Country Brief.



Source: IEc

Climate change is also expected to increase soil erosion risk, with significant implications for agricultural productivity. Projections under the Dry/Hot and Wet/Warm scenarios estimate erosion-induced crop production losses of 1-9 percent over the 2041–2050 period. However, adopting conservation tillage and retaining crop residue after harvest could limit these losses to about 0.5 percent by mid-century. To further reduce erosion-related impacts, broader implementation of these practices—or complementary adaptation strategies—will be essential.

Improving access to insurance and financial services can help manage climate risks and strengthen resilience. In light of Seychelles' progress in digital connectivity, digital wallets offer a way to expand finance and insurance for farmers, SMEs, and vulnerable groups. However, barriers like small farm size, informality, low financial literacy, and limited suitable insurance products hinder progress. Tackling these challenges is key to advancing inclusive rural finance in Seychelles.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Assess options to protect desalination plants** from flooding, saline intrusion and storm surges and to introduce non fossil fuel-based energy systems. *Entity: PUC*	Short Term	High	Public $
2	**Construct and operate a water treatment plant at La Gogue dam site to ensure sustainable water quality** *Entity: PUC, MoFEPTI, potentially PPP partner(s)*	Medium & Longer Term	High	Public $
3	**Assess feasibility and designs for additional desalination plants** to manage dry-season shortfalls. *Entity: PUC*	Medium Term	Medium	Public $ marginal
4	**Construct a dam at Grand Anse** to improve storage capacity and reduce dependence on desalination *Entity: PUC, MoFEPTI, potentially PPP partner(s)*	Longer Term	Medium	Public $$$
5	**Explore digital solutions to enhance financial literacy and access to finance and insurance products** of farmers via the Agricultural Development Fund. *Entity: DBS*	Medium Term	Low	Public $

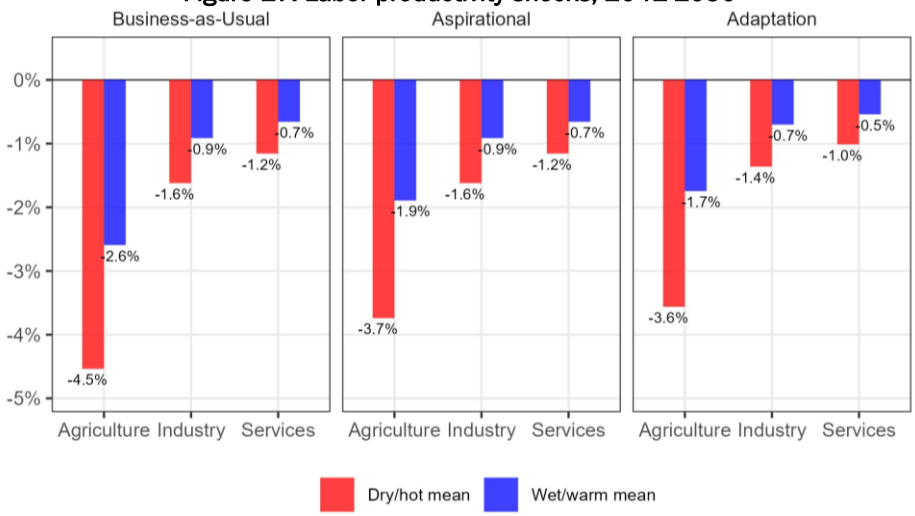
Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10 million; $$ = US$10 million –100 million; $$$ = >US$100 million.

3.6. Human capital for resilient and sustainable development

As climate risks increasingly intersect with the delivery of education, health, and social protection services, investing in resilient human capital systems becomes essential to safeguard lives, reduce vulnerabilities, and sustain development gains. The climate-human development nexus is especially acute in Seychelles, where over 90 percent of the population and most public services are concentrated in low-lying coastal zones exposed to multiple climate hazards. Investing in the resilience and adaptive capacity of people—through health, education, and social protection systems aligned with local authorities—will be essential to sustain development progress and manage growing climate risks.

Climate change is expected to affect labor productivity in Seychelles by raising workday temperatures and reducing the number of hours individuals can safely perform work. While the overall national impact is projected to remain moderate, this is largely due to Seychelles' relatively high air-conditioning coverage (34 percent) and the small size of the agricultural workforce. At the sector level, however, losses could be more significant. As shown in Figure 17, agriculture is expected to face the largest decline in productivity—up to 4.5 percent by 2050 under a BAU Scenario—due to the physically demanding and outdoor nature of the work, compared to losses in the industry and services sectors. Some of these losses could be offset by integration of cooling resources and conditions for rural workers (shading, ventilation, AC) and possibly the use of passive design strategies that reduce indoor heat gain without significant energy use.

Figure 17: Labor productivity shocks, 2041-2050



Under the Adaptation Scenario, expanding access to cooling technologies to **50 percent of workers by 2050 could reduce the impact on total labor productivity.** With such measures, sclimate-related losses could be reduced to about 3.7 percent in agriculture,[93] and projected losses in the industry and services sectors, projected losses could also be smaller, ranging between -0.7 percent and -1.6 percent. Total costs (that is both capital as well as operating costs) related to this adaptation interventions are expected to reach about USD 13.5 million through 2050, of which US$ 1.6 million is capital costs and US$ 11.9 million is operational costs.

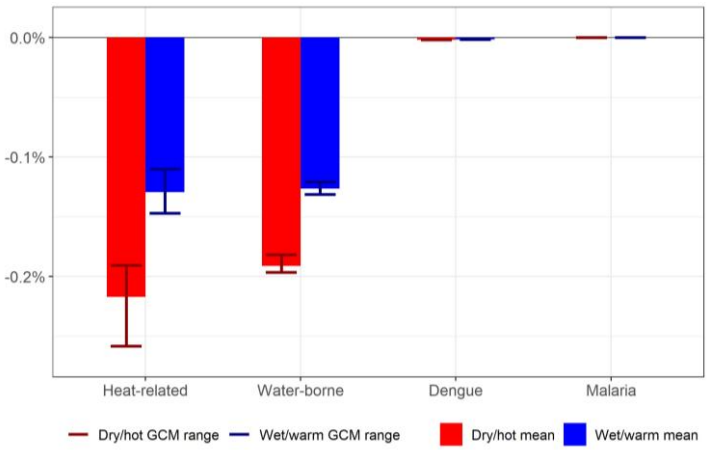
Climate change is also expected to affect labor supply, primarily through increased incidence of climate-sensitive diseases. Rising temperatures and extreme weather events are projected to heighten the spread of heat-related illnesses, waterborne diseases, and vector-borne diseases (malaria and dengue) which reduce workers' ability to participate in the labor force. Also, the combined effect of aging, obesity and high diabetes prevalence in Seychelles would trigger further reductions in labor supply and productivity. By 2050, the combined effect of these health risks could lead to a labor supply shock of up to 0.5 percent under a BAU Scenario (**Figure 18**).[94] While relatively small at the macroeconomic level,

[93] The total impacts to labor productivity are estimated for the agriculture, service, and industry sectors for a BAU, Aspirational, and Resilient Development Scenario. The BAU Scenario assumes that mechanization in the agriculture sector and air conditioning coverage remains at current values through 2050, while the Aspirational Scenario assumes increasing mechanization of the agricultural sector. The Resilient Development Scenario considers the joint impact of increases to mechanization and air conditioning coverage.

[94] The BAU Scenario assumes a continuation of the current death and incidence rates for malaria, dengue, waterborne and heat-related diseases, with changes driven only by changing climatic conditions.

these impacts may carry more serious consequences for household welfare and public health systems—especially if heat and sanitation risks intensify. Continued investment in preventive health services, climate-informed disease surveillance, and improved access to clean water and sanitation will be critical to reduce vulnerability.

Figure 18: Average labor supply shock by disease, under the BAU Scenario, 2041-2050



Climate change is placing increasing pressure on Seychelles' public health system, yet in the absence of a dedicated Health National Adaptation Plan, the response remains fragmented. The National Health Strategic Plan 2022-2026 recognizes the direct and indirect impacts of climate change on health risk factors and outcomes, combined with socioeconomic conditions, demand specific policy actions. These include vulnerability assessments and infrastructure retrofitting, the development of the National Health Adaptation Plan, and increased access to global climate finance for the sector. Specific steps have been undertaken to strengthen resilience. The Ministry of Health relocated Logan Hospital on La Digue, which was exposed to flooding and sea-level rise, demonstrating proactive adaptation of health infrastructure. In 2023, a national air quality monitoring system was introduced, enabling real-time tracking of pollution—proving especially useful during the February 2025 overseas wildfire smoke event. Surveillance systems for climate-sensitive diseases have also been expanded and linked to the Indian Ocean Commission's regional disease monitoring network. These efforts reflect institutional engagement and growing technical capacity. However, without an overarching plan and adequate financing, investments remain ad hoc, and the health sector continues to face challenges related to outdated infrastructure, limited data systems, and a lack of long-term planning for climate risks.

Climate change is also increasingly disrupting education, undermining long-term human capital accumulation and the resilience of future generations. Past extreme weather events in Seychelles have already led to school closures and infrastructure damage, interrupting learning and exposing gaps in preparedness. While full nationwide closures are rarer, intense rainfall events have shut down several schools due to direct flooding or landslides that interrupt access.[95] While preparedness measures like rainwater harvesting, resilient spaces, and school evacuation plans have been introduced, adaptive capacity is constrained by outdated infrastructure, limited monitoring systems, and a lack of dedicated resources for climate-proofing school environments.

Education and human capital development will be essential to ensure that Seychellois workers can reap the full benefit from the nation's green transition. The Seychellois education system has attained almost universal coverage but faces quality challenges across levels and high dropout rates in Upper Secondary years. While Seychelles has taken a global lead in integrating climate change across its national curriculum, this mainstreaming has not yet been matched by a systemic upgrade of technical and vocational education and training (TVET). As a result, the current education and training systems struggle to produce graduates with the skills demanded by evolving sectors such as renewable energy, sustainable agriculture, blue economy services, digital services, and sustainable tourism. With a more

[95] For example, the Pointe Larue schools were closed in October 2019 due to campus flooding and a national state of emergency was declared in January 2022 when extreme rains and flooding struck Mahé Island. https://www.aljazeera.com/news/2023/12/7/seychelles-declares-state-of-emergency-after-flood-and-explosion#:~:text=Seychelles%20declares%20state%20of%20emergency,%E2%80%9D%20Footage%20broadcast%20on

coordinated and forward-looking human capital strategy—anchored in strong public-private partnerships and labor market intelligence—Seychelles could fully harness the opportunity of a resilient and sustainable path while ensuring that Seychellois are equipped to take advantage of these new employment opportunities.

Yet, in the short term, meeting the demand for these specialized skills will require foreign labor, reinforcing the need to reform the Gainful Occupation Permit (GOP) system to make it more efficient and less costly for business. The GOP system was reformed in 2021 to help get Seychellois workers back into the workforce during the peak of the COVID-19-induced economic downturn. These reforms made the system more cumbersome, slower, and more costly for businesses, especially in the most dynamic sectors - like fisheries - where two thirds of the employment in high value added activities is foreign labor. In many cases where Seychellois do not have the required skills or are not interested in the jobs, the system is effectively a tax on businesses, making them—and the economy—less competitive. Adopting an online GOP application and approval process, streamlining the requirements, and reviewing the fees can help ensure that skilled labor does not become a binding constraint to the resilient and sustainable transformation. Moreover, the proposed reorientation of the growth drivers will require foreign skilled labor that could also be used in complementary training for domestic workers and even using digital technology to enhance productivity among older workers.

Climate shocks also demand social protection systems that can enhance resilience among the most vulnerable in the short term. In this context, social protection plays a crucial role in shielding vulnerable populations from shocks, yet its adaptive capacity is still evolving. The Agency for Social Protection (ASP) demonstrated strong response capabilities during the December 2023 disaster, adapting its internal processes to expedite the emergency support to over 800 affected households.[96] However, current programs are not systematically tailored to account for climate-related risks so ASP does not know how many program beneficiaries - such as the Home Care Program that covers individuals with mobility constraints - live in disaster prone areas that would require special evacuation protocols. There is no targeting mechanism based on hazard exposure, and data systems lack the integration of geospatial risk profiles. Institutional fragmentation, the absence of formal scale-up protocols, and the lack of clarity on the contingent financing mechanisms available to ASP further limit the ability of social protection to serve as a proactive and climate-responsive safety net. However, the universal use of bank accounts for social protection payments should be linked to digital banking and mobile payment mechanisms to maximize households' capacity to respond to shocks and build precautionary savings.

To build a resilient and adaptive society, Seychelles will need to invest in the adaptive capacity of its human capital systems—strengthening the institutions, data systems, infrastructure, financing, and skills that enable people and services to anticipate, absorb, and recover from shocks. This includes integrating climate risks into sectoral planning and budgeting, improving early warning systems, building climate literacy into curricula and professional training, and ensuring inclusive access to social services. The government's digital economy priority is an opportunity to enhance these information activities. The proposed actions to supporting a more resilient, flexible human capital stock will require addressing critical social issues like teenage pregnancy that affects female labor force participation and substance abuse that reduces the incentives to hire domestic labor. Tackling these challenges are essential to not only reduce vulnerability but also create the foundation for a more resilient, equitable, and sustainable development pathway.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Reform the GOP** process to reduce the barriers to accessing foreign skilled labor to fill skills gaps. *Entity: Ministry of Employment and Human Resource Planning*	Short Term	High	N/A
2	**Revise ASP operational protocols** for programs during emergency. These adjustments should include changes in	Short Term	High	N/A

[96] Agency for Social Protection. (2023). Internal Procedures of 7th December Processes.

	registration, delivery of benefits and administrative processes to ensure expedited processes. *Entity: ASP*			
3	**Health facility climate risk mapping** :Conduct a risk mapping assessment and develop Facility-level preparedness and adaptation plans *Entity: Ministry of Health*	Short Term	High	Public $
4	**Health Worker Climate Training**: Develop training programs for health workers on climate adaptation, heat exposure, and disease surveillance. *Entity: Ministry of Health*	Short term	Medium	Public $
5	**Develop a social protection adaptation plan** for the next five years and allocate resources for its gradual implementation. This should include a social protection extension of the National Disaster Risk Financing Strategy, with estimates of contingent financing needs for the sector. *Entity: MoFEPTI, ASP*	Short Term	Medium	Public $ marginal
6	**Integrate climate change and disaster risk reduction across curriculum and improve climate literacy**: support teachers to implement the recently introduced Climate Change Curriculum Guide, include content for early grades, and expand the eco-clubs. *Entity: Ministry of Education and Human Resource Development (MoE)*	Medium term	Medium	Public $
7	**Prepare future workforce for a resilient and sustainable economy:** Align secondary and tertiary education programs, including TVET, with the skills needed for climate resilience and low-carbon development. Update technical/vocational curricula to include renewable energy technicians, sustainable construction, digital services, water management, and other green trades. *Entity: MoE, Seychelles Institute of Technology, Tourism Academy, and Maritime Academy*	Medium term	Medium	Public $
8	**Strengthen health surveillance system:** Include climate-health metrics into national health information systems *Entity: Ministry of Health*	Medium term	Medium	Public $

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10million; $$ = US$10million–100million; $$$ = >US$100million..

4. Economy-wide Implications of Climate Actions

This chapter summarizes the potential macroeconomic and distributional impacts of development and climate change in Seychelles over the next 25 years. It first analyzes the potential impacts of climate change in a scenario where no action is taken (the Impact Scenario under the BAU, see Box 1 and Annex 2 for a detailed discussion of the scenarios). It then considers the investment needs and potential impacts of Seychelles achieving a key set of development objectives, as laid out in the NDS 2024-2028 (the *Aspirational Development Scenario*). Attention then turns to the investment needs and potential impacts of Seychelles pursuing a more resilient development pathway, in which key adaptation measures are taken alongside the key reforms and investments to spur economic development (the *Resilient Development Scenario*). The chapter then summarizes the estimated investment needs for Seychelles to implement the measures that promote economic diversification and respond to climate change outlined in this report. It concludes with a discussion of the catalytic role of public finances to achieve Seychelles' development and climate goals.

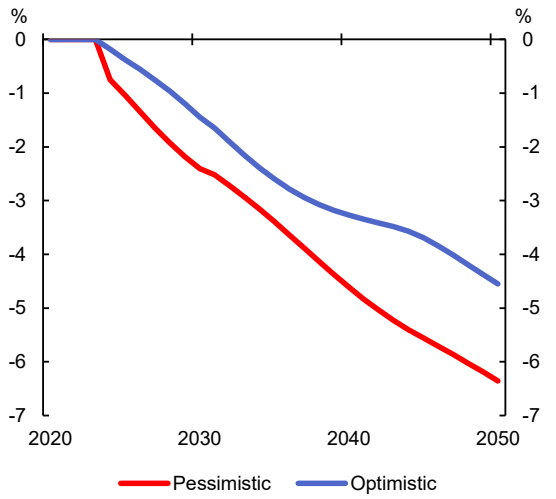
4.1. Climate change could have significant macroeconomic and distributional implications

Macroeconomic modeling suggests that, without action, the impacts of climate change quantified in this CCDR would reduce Seychelles' GDP by 4 to 7 percent by 2050 (Figure 19a).[97] Overall GDP losses are assessed from all nine damage channels over 2025–2050. Losses from climate change are measured as the percentage deviation of GDP compared to a BAU scenario without climate change. Output losses due to climate change are expected to be significant by 2030 (about 1.4–2.4 percentage point deviation) but could triple by 2050 without offsetting actions. When broken down by climate channels (Figure 19b), results indicate that tourism accounts for almost 90 percent of losses by 2030 under both global climate scenarios. However, this proportion drops to about 50–60 percent by 2050, as sea level rise and flooding cause escalating damages (about 30 percent of total losses). Notwithstanding the increased uncertainty of long-term sea level rise projections, there is consensus across climate models that sea level rise will accelerate in Seychelles post-2050 (particularly from 2070-2100). Consequently, this increase in GDP losses is likely to accelerate post-2050, in the absence of action.

Figure 19: Climate change could lower GDP by 4.6–6.4 percent by 2050

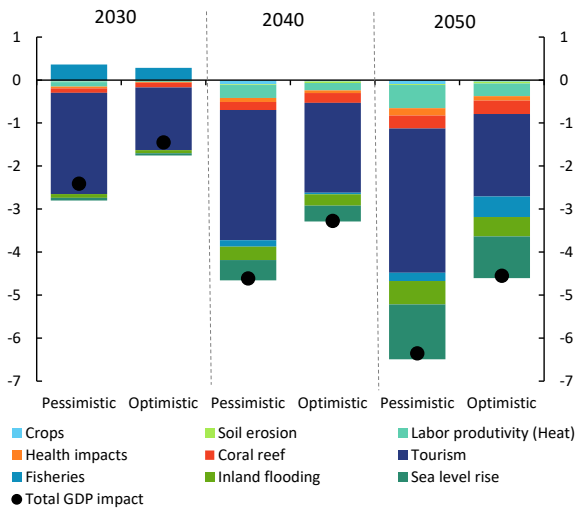
(a) Overall GDP losses

(Losses in BAU scenario under a pessimistic and optimistic global scenarios)



(b) Sectoral breakdown of output losses

(Losses in BAU Scenario under a pessimistic and optimistic global scenarios)



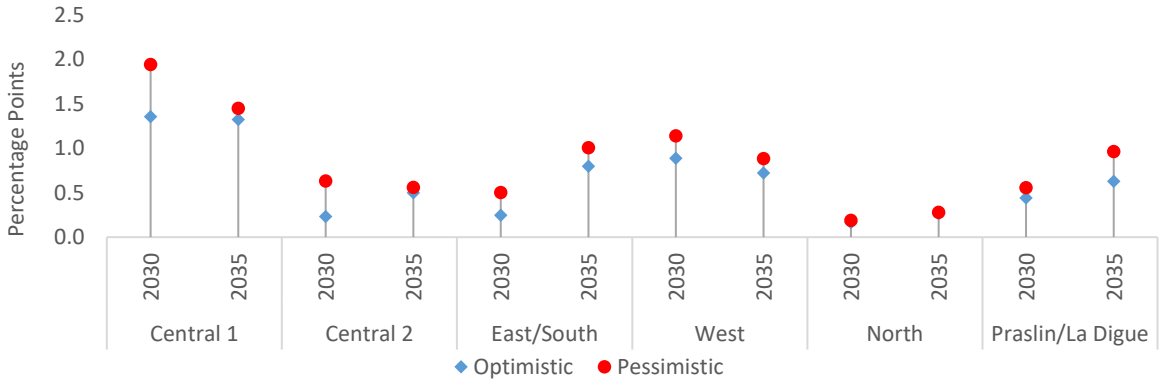
Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model.

Without adaptation, the impacts of climate change on poverty could range from 0.7 to 0.9 percentage points by 2035, depending on the climate scenario. This impact is primarily driven by stronger declines in earnings in the service and agricultural sectors, which disproportionately affect poorer households.

[97] The model and climate scenarios are described in Box 1 (Chapter 1) and more detailed technical information on the models is provided in Annex 1.

At the sub-national level, the adverse impacts of climate change on poverty are estimated to be highest in the Central 1 region followed by East/South, and Praslin/La Digue regions (Figure **20**)—primarily due to the larger concentration of households about the poverty line in these regions. However, these estimates should be considered the minimum potential impact, as the modeling approach is limited to capturing longer-term effects on poverty through the impact channels incorporated in the macro modeling. Additionally, it only accounts for the average impacts of various climate change scenarios, excluding extreme yet plausible scenarios.[98] In addition, these estimates only consider domestic shocks. Seychelles' reliance on imported food makes the country vulnerable to global food price inflation due to climate change impacts, which could exacerbate the domestic impacts on poverty.[99]

Figure 20: Impact of climate on poverty (national poverty line)—deviations from the BAU Scenario (percentage point change) by region



Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model and the 2018 Seychelles Household Budget Survey.

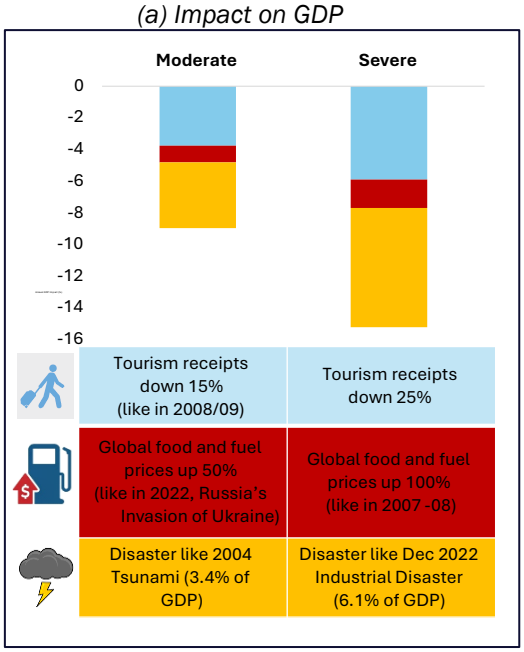
The increasing frequency of climate events raises the risk of multiple shocks occurring in quick succession, with potentially large aggregate impacts—up to 15 percent of GDP under a 'Compound Shocks Scenario' (**Figure 21**)**.** Such scenarios, while unlikely, are increasingly recognized as important planning tools to stress-test systems and identify pathways to manage critical risks.[100] The Compound Shock Scenario described in **Box 1** estimates the potential compounding impacts of multiple severe events occurring in close succession. These include a sharp drop in tourism earnings (as experienced in 2008/09), a spike in global food and fuel prices (similar to 2007-08 and 2022), and a significant disaster (comparable to the 2004 Pacific Ocean Tsunami or the December 2023 industrial disaster in Mahé) all layered on top of ongoing climate change impacts.

All the major sectors in Seychelles' economy would be affected. GDP losses could reach 15 percent in a single year and the proportion of households living below the national poverty line could rise by over 9 percentage points (from 27.1 percent to 36.3 percent) (**Figure 21**). Although some of the effects would be temporary, a loss in tourism export earnings would put pressure on the *rupee* at a time when food and fuel imports would become more expensive. Similarly, tax revenue losses from lower tourism earnings, government support for recovery and reconstruction, and a potential need to shelter the economy and households from the impact of higher food and fuel prices would put considerable pressure on public balances. The loss of welfare would be substantial and there could be a risk of financial crisis, further increasing losses in GDP and real incomes. With the world economy becoming more shock-prone and climate shocks more frequent and intense, the risk of compounding shocks is increasing, necessitating action to strengthen Seychelles' economic resilience.

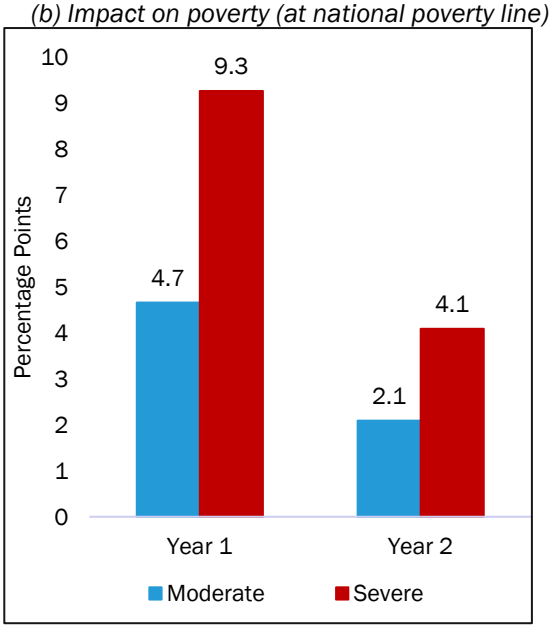
[98] Abalo, et al. 2025. "The Macroeconomic Implications of Climate Change Impacts and Adaptation Options", World Bank Policy Research Working Paper 11133.
[99] Hallegatte, et al. 2016. Shock Waves: Managing the Impacts of Climate Change on Poverty. World Bank.
[100] Trust. S., Joshi, S., Lenton, T., and J. Oliver. 2023. Limitations and assumptions of commonly used climate-change scenarios in financial services.

Figure 21: Impacts of the Compound Shock Scenario on economic indicators (% change from BAU)

(a) Impact on GDP



(b) Impact on poverty (at national poverty line)



Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model and the 2018 Seychelles Household Budget Survey.

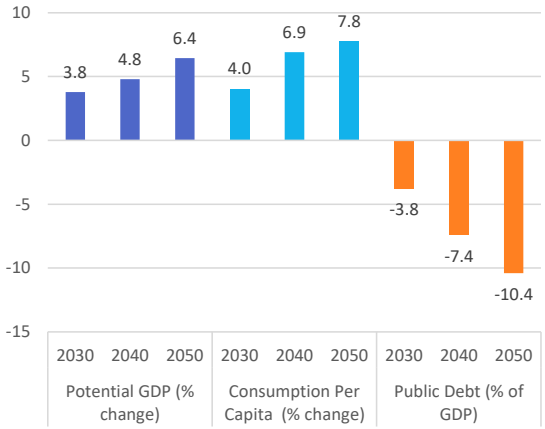
4.2. Accelerating economic development and the energy transition is feasible, but will require considerable private sector investment

Achieving Seychelles' development and climate objectives will require complementary reforms and investments across the economy. The NDS 2024-2028 outlines Seychelles' priorities to achieve diversified, inclusive, and climate-resilient development. Aligned with the NDS 2024-2028, this CCDR models an *Aspirational Development Scenario* that assesses the impacts of key investments and reforms designed to catalyze economic transformation and the RE transition. The selected development measures include upgrades and extensions to the Victoria port and Mahé airport, diversification of the tourism sector, sustainable fisheries management and aquaculture development, and investments to boost human capital and address youth issues and drugs. Transformation of the electricity sector towards RE is included in this scenario, given that Seychelles is primarily pursuing the energy transition for energy security and economic diversification, rather than to reduce emissions. Nevertheless, for consistency with international common practice, these energy transition costs are included as *climate change mitigation* actions in Chapter 5 (on Climate Finance) and in Section 4.4 (Figure **27**), which summarizes Seychelles' development and climate investment needs.

Model-based estimates indicate that additional investments under the *Aspirational Development Scenario* would boost GDP by over 6 percent by 2050, compared to the BAU Scenario (Figure 22). This improvement is attributed to: (i) strategic public infrastructure investments that bolster trade competitiveness and reduce costs (including electricity costs due to the shift to RE); (ii) priority actions that develop the Fish Processing Zone and the aquaculture supply chain; and (iii) investments in human capital that raise productivity and household welfare. The modeling assumes that the additional investments are financed in the ratio of 30 percent by the public sector and 70 percent by the private sector. Under these conditions, the additional public revenues generated by higher output partially offset the fiscal impact of higher spending. Faster GDP growth moderates the increase in the public debt-to-GDP ratio, keeping it below the GoS' 50 percent target in 2030, —while faster growth over the longer term sees public debt decline compared to the BAU (to 35 percent of GDP by 2050), despite the significant increase in public investment. The increase in RE generation reduces fuel imports by about 5 percentage points of GDP. However, this is partially offset by increased imports related to higher investment—resulting in a mild narrowing of the current account deficit. If additional fiscal reforms that

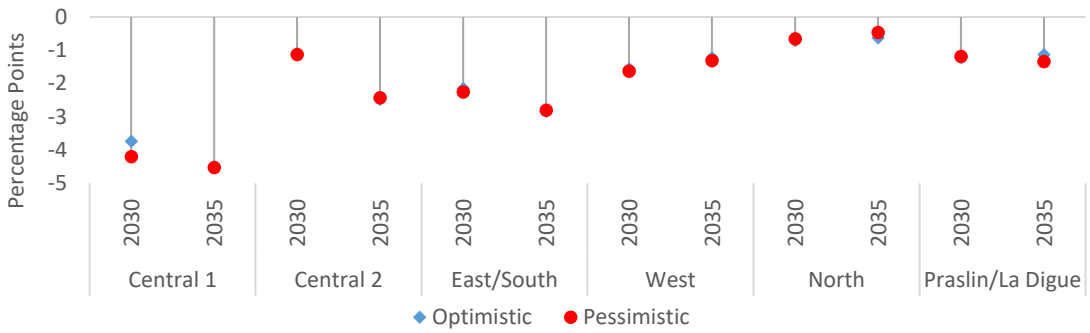
generate fiscal space are implemented (Section 4.5), the public sector share of these additional investments could rise without compromising macroeconomic stability and fiscal sustainability.

Figure 22: The *Aspirational Development Scenario* can deliver higher GDP and welfare while also increasing fiscal space by 2050, compared to the BAU Scenario



Key investments and reforms in the Aspirational Development Scenario are projected to reduce poverty by 2.1 percentage points in 2035, compared to the BAU Scenario. By 2035, the poverty rate could drop from 22.1 percent to about 20 percent (a 10 percent reduction) as key reforms and investments improve the resilience of infrastructure and agriculture (for example sustainable fishing), boosting income sources and reducing losses due to climatic events. The largest poverty reduction is in Central 1 region, though poverty is projected to fall across all regions (Figure **23**). The Central 1 region is expected to see the largest poverty reduction for two reasons: (i) its high concentration of households near the poverty line; and (ii) its projected increase in economic activity, as it encompasses the capital city, Victoria.

Figure 23: Impact of Aspirational Development Scenario on poverty (national poverty line)—deviations from the corresponding BAU Climate Scenario (percentage point change), by region



Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model and the 2018 Seychelles Household Budget Survey.

4.3. Adaptation measures could lower the economic impact of climate change

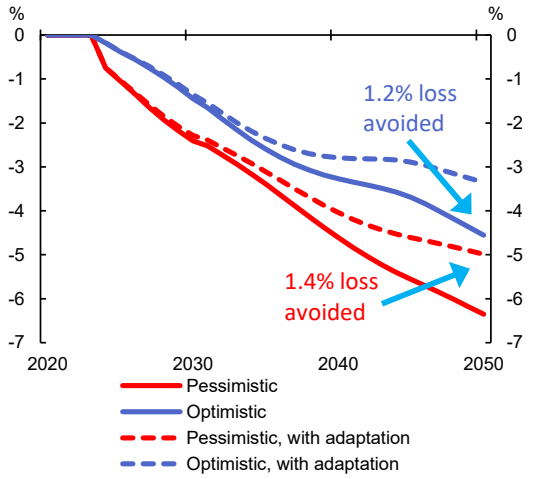
Model-based estimates indicate that well-targeted adaptation measures could reduce the GDP losses from climate change by 22–26 percent (Figure 24). Although adaptation measures can never fully offset the wide-ranging impacts of climate change, they can attenuate many of the negative effects. In Chapter 3, this CCDR identifies a range of measures that both GoS and private entities could take to lower the impacts of climate change. This section evaluates the macroeconomic consequences of a select number of adaptation options that were feasible to incorporate into the macroeconomic modeling frameworks. These include the benefits of floodproofing the most vulnerable existing infrastructure, building outside the floodplain, reducing erosion through conservation agriculture practices, increasing irrigation, and implementing cooling measures to protect the health of indoor

workers. The results in Figure **24** show that, overall, these measures could reduce the impacts of climate change on GDP by 22–26 percent. Specifically, GDP losses in 2050 could be reduced from 4.6 percent to 3.4 percent (a 26 percent reduction) in the optimistic global climate change scenario or from 6.4 percent to 5.0 percent (a 22 percent reduction) in the pessimistic scenario.

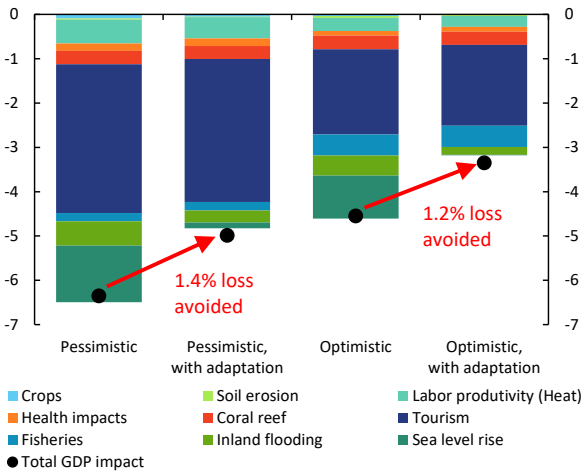
Figure 24: Adaptation measures could reduce the GDP losses from climate change by one quarter

Impacts of climate change on GDP relative to a no-climate change BAU, with and without adaptation (%)

(a) Overall GDP losses and adaptation benefits



(b) Sectoral breakdown of output losses and adaptation benefits in 2050



Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model.

Adaptation actions alone are cost effective; combining them with strategic development investments can deliver even greater economic benefits and reduce the short-term cost. The business case for resilience investments is compelling, with global studies indicating that each US$1 spent results in long-term savings of US$4–7 (UNDRR, 2015). Cost–benefit analyses conducted for the Asia and Pacific region have shown that benefits are 2–55 times the cost of adaptation investments (ADB, 2013). Nevertheless, the macroeconomic modeling for Seychelles in this CCDR indicates that adaptation investments can impose a cost on the fiscal balance and an opportunity cost for growth, insofar as these investments require a tradeoff with other spending (Figure **25**). Nevertheless, when compared to the BAU Scenario, the *Resilient Development Scenario* delivers higher GDP and household consumption, while still reducing public debt (Figure **26**). This is attributed to the higher output and public revenues induced by the investments in the *Aspirational Development Scenario*, combined with the reduction in expected losses in the *Resilient Development Scenario*. The modeling assumes that the selected additional investments in the *Resilient Development Scenario* are financed in equal share by the public and private sectors.

Figure 25: The *Resilient Development Scenario* can deliver slightly higher output and consumption at a moderate fiscal cost, compared to the *Aspirational Development Scenario*...

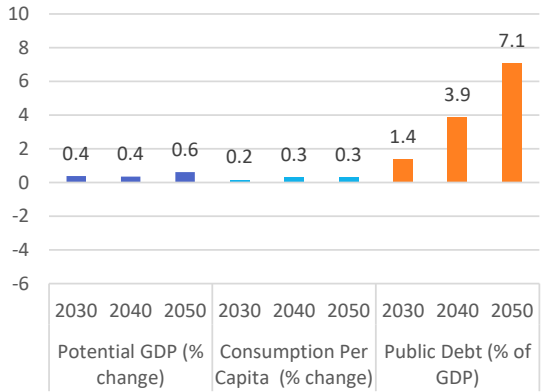
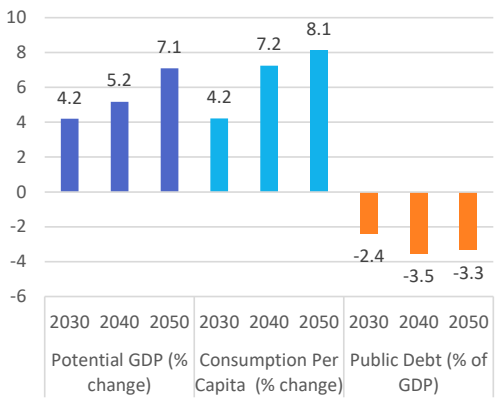


Figure 26: ...while compared to the BAU, the scenario delivers significantly higher GDP and welfare, at a lower fiscal cost.



Source: World Bank staff calculations based on simulations from the CC-MFMOD macroeconomic model.

This scenario is estimated to reduce poverty by an additional 0.1 percentage points in 2035 compared to the *Aspirational Development Scenario.* By 2035, the Resilient Development Scenario is projected to decrease poverty by 2.2 percentage points compared to the BAU Scenario for both global climate change scenarios considered, representing a 10 percent reduction in poverty.

It will be crucial to engage the private sector in climate adaptation, and targeted policies by the government could catalyze private adaptation. Despite the overall economic benefits, private sector investment in adaptation is lagging. There are several barriers to attracting private finance. One set of barriers is the nature of adaptation investments themselves. They are often long-term, complex, comparatively small, have high transaction costs, and lack clear cash flow—all factors that discourage private investment at scale. Another set of barriers relates to knowledge and information about risks, costs, and benefits. These barriers prevent investors from prioritizing their resources to such investments. 'Triple Dividend' cost-benefit analysis—which calculates the avoided losses from climate change (First Dividend), induced economic benefits (Second Dividend), and environmental and social benefits (Third Dividend)—can help lower these barriers by improving the understanding of both the public (economic) and private (financial) benefits of investing. Furthermore, a private benefit mapping by investment type can form the basis for increasing private participation in adaptation investments through blended finance and de-risking mechanisms.

Government-led adaptation measures with large positive externalities and public good elements, such as information about spatial climate risks and emergency preparedness plans, could catalyze private sector adaptation investments. In addition, measures that address other market imperfections t affecting the economy's functioning could also spur private adaptation. For example, credit market constraints often hamper opportunities for farmers to invest in and adopt new crops that are more suitable to the new climate. The government can also implement regulations that help avoid underinvestment in adaptation and excessive risk-taking by the private sector because it does not fully internalize risks. Examples include land use planning that prohibits construction in flood zones, improved building codes, and mandatory insurance. Blended finance and publicly financed derisking instruments can also increase the attractiveness of climate adaptation investments for the private sector. These are discussed in Chapter 5.

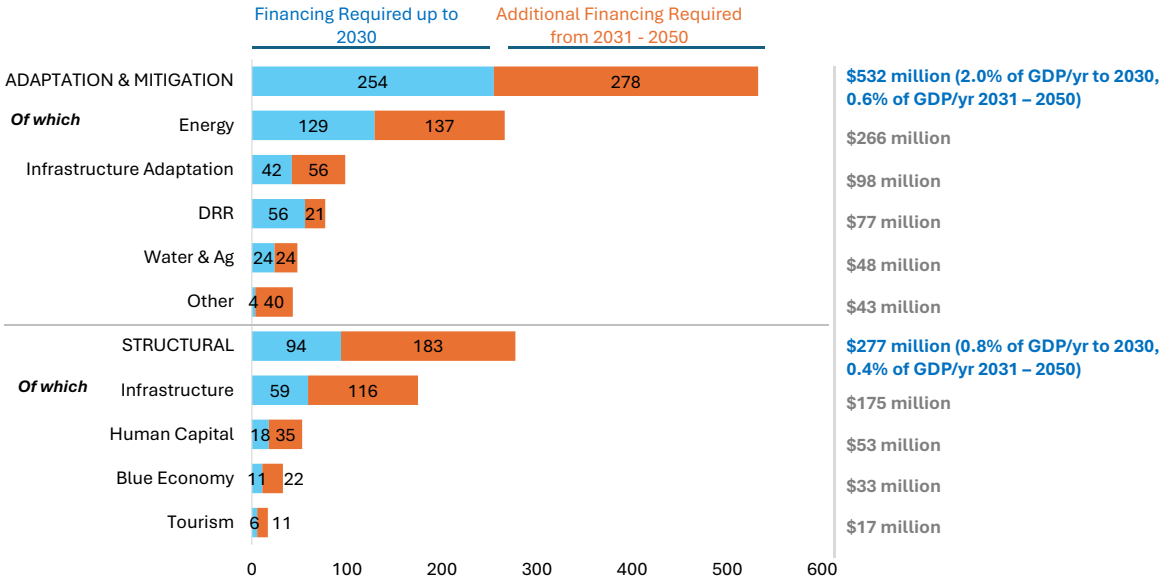
4.4. Investment needs for climate resilient and sustainable development

This CCDR estimates that the measures to respond to climate change outlined in this report require US$532 million (NPV, US$986 million in nominal terms) in *additional* investment from the private and public sectors over the next 25 years—including US$254 million (NPV, US$305 million in nominal terms) over the next five years to 2030 (**'Adaptation & Mitigation'** investments in **Figure 27**). This is an *additional* investment from public and private sources needed for the climate adaptation and mitigation measures outlined in this analysis, relative to the current BAU Scenario of existing policies and investments already in place to achieve climate goals. The sectoral analyses in this report identified needs for new investment, although it is often difficult to produce quantitative estimates because of: i) separating climate investment from broader economic development needs; and ii) accessing necessary data. Despite these caveats, Figure 27 presents an estimate of the additional investment needed. The energy sector accounts for half of the total financing required, with key adaptation measures for infrastructure, disaster risk reduction, water and agriculture accounting for 42 percent. All the estimates are first-order magnitude and should be interpreted with caution, due to uncertainties about the future evolution of technologies, costs and other parameters, including the magnitude of climate projections, business and household behaviors, and government policies.

Complementary structural investments to catalyze economic diversification are estimates to require a further US$277 million (NPV, US$562 million in nominal terms) of additional investment by the public and private sector, on top of the needs to respond to climate change. This includes investments for the upgrade and extension of the Victoria port and Mahé airport, diversification of the tourism sector, sustainable fisheries management and aquaculture development, and investments to boost human capital and address youth issues and drugs.

Figure 27: Achieving resilient and sustainable development requires US$532 million (NPV) in incremental investment between 2026 and2050, while a further US$277 million (NPV) is required for complementary structural measures to catalyze economic development.

Cumulative incremental investment needs 2026–2050



Source: World Bank staff analysis.

Note: Estimates are in NPV terms, with a 6 percent discount rate used for future investments. Investments are incremental, relative to the reference scenario of current policies or investments already in place and planned. Estimates for energy mitigation measures are from the economic modeling in Section 3.3, estimates adaptation measures are from the Seychelles 2021 NDC report (GoS, 2021), the Seychelles Climate Finance Resource Mobilisation Strategy 2025 – 2030 (MoFNPT, 2025), the Seychelles Land Transport Agency 2023 study on coastal erosion (SLTA, 2023), Government projects, and World Bank staff calculations.

4.5. Public finances should act as a catalyst

Public financing for these development and climate needs is constrained, with an ongoing fiscal consolidation required to preserve macroeconomic and financial sustainability. After spiking to 77 percent of GDP in 2020 due to the pandemic, public debt has declined since 2021 as GoS implemented a multiyear fiscal consolidation, supported by an International Monetary Fund (IMF) Extended Fund Facility (EFF) and Resilience and Sustainability Facility (RSF), and consecutive annual World Bank Development Policy Operations. The medium-term fiscal consolidation is underpinned by the GoS' commitment to achieve a public debt-to-GDP ratio of 50 percent no later than 2030. By end-2024, public debt stood at 60 percent of GDP. Debt Sustainability Analysis indicates that Seychelles' debt is sustainable and sovereign risk perceptions are positive.[101]

Nevertheless, public finance can play a catalytic role to crowd in private finance. As part of its debt strategy, GoS can rely on borrowing instruments specifically dedicated to financing climate informed projects, such as green and sustainable bonds or targeted concessional finance (Chapter 5). The recent strengthening of the PPP legal framework should help increase the use of PPPs, especially for large infrastructure projects (including the port and airport), and should also be explored for adaptation and mitigation investments. Though it will be important to monitor the contingent risks associated with the use of PPP, as well as the financial situation of SOEs. Finally, GoS can act as a catalyst for private financing by adopting derisking instruments (Chapter 5).

Further fiscal reforms can create some space for GoS to contribute to the (collective) investments necessary to meet Seychelles' development and climate needs. The macroeconomic modeling indicates that GoS could finance about 30 percent of the selected development and mitigation needs and 50 percent of the adaptation needs over the next 25 years while maintaining fiscal sustainability. However, additional fiscal measures could create the fiscal space to increase the public sector's share offinancing and/or to bolster fiscal buffers by reducing public debt. For example, revenue mobilization through tax base broadening, tax administration modernization, and land tax reform, combined with

[101] On March 07, 2025, Fitch maintained Seychelles' sovereign risk rating of 'BB-'with a positive outlook, supported by relatively high income levels, strong governance indicators, and support from multilateral creditors.

pension reform and spending efficiency improvements, could yield up to an additional 14.5 percent of GDP (Table **4**)—though it is not feasible nor desirable to raise all of this additional revenue. In addition, the planned functional review of the public sector should help enhance efficiency while containing the wage bill, including by informing the design of a systematic approach to annual wage adjustments, and limiting the growth of entitlements and arrears.

A carbon tax could support the achievement of climate change targets and generate revenues to meet Seychelles' investment needs. Future debates about tax reform proposals could explore energy taxes, including carbon taxation. This would involve levying a tax on carbon emissions, thus incentivizing individuals and businesses to adopt more environment friendly practices and reduce their carbon footprint, which would help meet the country's climate goals and contribute to the resources needed to meet its development goals. However, any reforms to energy taxes should be considered only after the electricity tariff structure is reformedand DRE net billing and gross metering regimes are introduced (see Section 3.3).

Simulations for this CCDR indicate that a carbon tax could be welfare and growth enhancing. Although the design of a carbon tax is beyond the scope of this CCDR, simulations show that an economy-wide carbon tax starting in 2031 and rising linearly to US$50 per ton CO2 by 2035 could raise up to 0.9 percent of GDP in tax revenue and reduce emissions by over 5 percent, while reducing annual growth by a maximum of 0.15 percentage points compared to the BAU Scenario (**see Box 2**). Compensation measures for the poor against negative impacts from the carbon tax, like increased energy costs, might require 0.5 percent of GDP. With careful design, the net impacts of the carbon tax and new public spending on household transfers and public investment would be welfare enhancing. In the longer term, the economy would grow faster than in the BAU scenario, as the additional public investment financed by the carbon tax revenue expands the economy's productive capacity.

Table 4: Additional fiscal measures could create significant additional fiscal space

Measure	Impact (% of GDP)
Revenue	**Up to 13.5 percent of GDP**
Reforms to limit business income tax (BIT) avoidance and evasion, including strengthening transfer pricing rules	Up to 8 percent of GDP[102]
Rationalizing tax expenditures for the value-added tax (VAT) and BIT	Up to 3.8 percent of GDP[103]
Digitalizing customs revenue collection by upgrading the Automated System for Customs Data (ASYCUDA) World system	0.1 to 0.6 percent of GDP, based on cross-country experience[104]
Land taxes: Strengthening the approach for land valuation and maintenance of relevant databases	0.1 percent of GDP
Carbon tax revenues (though accompanied by measures to mitigate the effect on vulnerable households)	Up to 0.4 percent of GDP in net terms (0.9 percent of GDP in gross revenues and 0.5 percent of GDP on mitigating expenditure measures)
Expenditure	**At least 1 percent of GDP**
Universal pension scheme reform: (i) raise the retirement age to 67-68; (ii) apply means-testing; and (iii) index benefits to inflation or wages.	Reduce budget subsidy to the pension system by at least 1 percentage point of GDP over the medium term.
Greater allocative efficiency in education spending (that is from tertiary scholarships to primary and secondary education) and technical efficiency in health spending (that is on the overseas treatment scheme).	Budget neutral, but would redirect spending to address sector priorities, such as interventions to address risky behavior by youth.
TOTAL	**Up to 14.5 percent of GDP**

Sources: World Bank (2024), IMF (2024), UNCTAD (2024), WB staff calculations.

Box 2: Implications of a carbon tax: Scenario results

[102] The World Bank's 2024 Public Expenditure Review for Seychelles estimates fiscal gains of up to 8 percent of GDP could be achieved if the larger hotels paid income taxes in proportion to their contribution to value added.
[103] An IMF technical assistance mission estimated that tax expenditures for the VAT and the BIT (excluding those given to SOEs) amounted to about 3.8 percent of GDP in 2023. Source: International Monetary Fund. 2024. Country Report No. 24/340.
[104] Cross-country experience indicates that upgrading the ASYCUDA system can lead to an increase in customs revenue of 10-50 percent (UNCTAD, 2024). Based on 2024 customs duties collection from MoFEPTI, this represents 0.1 – 0.6 percent of GDP.

While the design of a carbon tax is beyond the scope of this CCDR, the Climate Policy Assessment Tool (CPAT) was used to simulate the potential impacts of a carbon tax under a range of scenarios.[105] Four policy scenarios are evaluated, differentiated by the level of carbon taxation (US$10 versus US$50/ton CO_2 by 2035) and the use of revenues (Table 5). In each scenario, the carbon price starts at US$0 in 2030 and increases linearly each year until 2035 (that is an increase of US$2/US$10 per year in the Low/High Ambition scenarios). All scenarios assume full sector and fuel coverage and a constant real carbon price beyond 2035. Revenue recycling via household transfers is targeted at the bottom four deciles of the income distribution. The modeled 20 percent allocation to household transfers was calibrated based on the amount of carbon tax revenues required to ensure that the bottom 40 percent of households were not worse off (in terms of household consumption) due to the carbon tax.[106]

Table 5: Carbon tax policy design scenarios modeled for this CCDR

Scenario	Carbon tax (US$/$tCO_2$)		Revenue use (%)	
	2030	2035	Public investment	Household transfers
Low Ambition (50-50)	0	10	50	50
Low Ambition (80-20)	0	10	80	20
High Ambition (50-50)	0	50	50	50
High Ambition (80-20)	0	50	80	20

The analysis highlights that the introduction of a carbon tax could boost revenues, reduce emissions, and deliver net progressive welfare outcomes through revenue recycling, at a small—and temporary—cost to growth. Fiscal revenues would increase by 0.4 and 0.9 percent of GDP in 2035 under the Low and High Ambition scenarios, respectively (Figure 28). This would primarily be due to the tax collected on the use of non-road oil products (i.e., for electricity generation) and gasoline (Figure 29). The induced behavior change away from fossil fuels would lead to a reduction in CO_2 emissions by 2.3 and 5.3 percent in 2035 under the Low and High Ambition scenarios (**Figure 30**). The tax would temporarily reduce annual economic growth by a maximum of 0.15 percentage points over the first 6 – 8 years, though it would then rise to above the BAU Scenario growth trajectory due to higher public investment financed by revenue recycling (**Figure 31**). Even a modest carbon tax can improve household welfare in 2035 if the revenues are used to finance targeted household transfers (to offset higher energy prices) and increased public investment, with stronger and more progressive gains under Higher Ambition scenarios (Figure 32). Both the Low and High Ambition (50-50) scenarios yield large positive gains for the first four deciles (40 percent) of the population and smaller gains for the next five deciles (41st to 90th percentile) of the population. In contrast, the scenarios that assume an 80-20 split deliver net benefits to all households, with benefits more evenly distributed across households due to the reduced allocation to transfers to the bottom four deciles, and increased spending on public infrastructure, which benefits all households.[107]

Figure 28: Fiscal revenues raised by scenario, 2025 - 2040

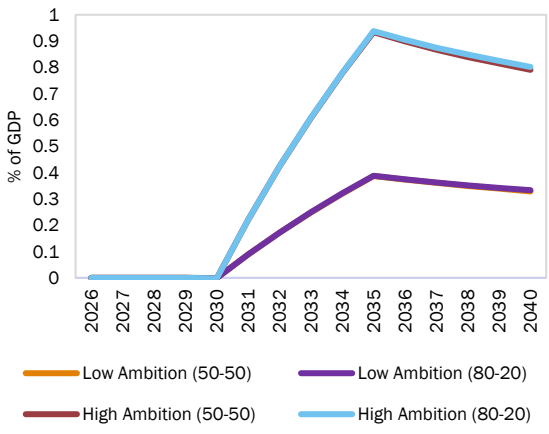
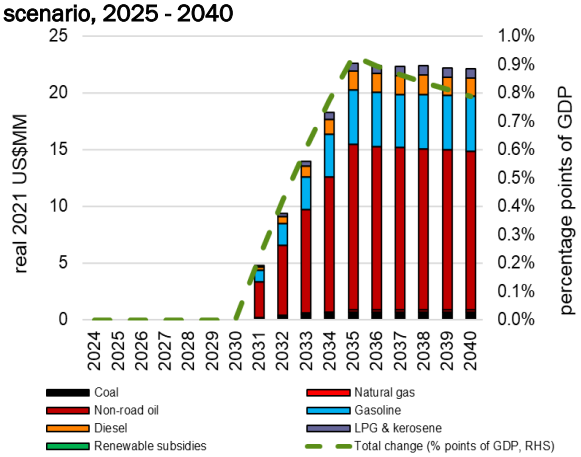


Figure 29: Additional fiscal revenues raised (net of subsidies) by fuel source under the High Ambition scenario, 2025 - 2040



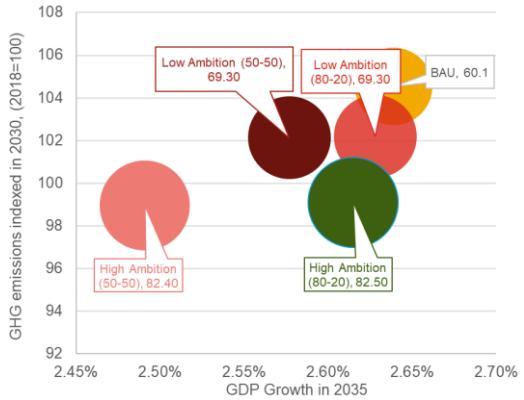
[105] CPAT is a spreadsheet-based model designed to estimate the potential impacts of climate mitigation policies across nearly 200 countries. It enables an assessment of carbon pricing and fossil fuel subsidy reform on a wide range of outcomes, including macroeconomic indicators, fuel use, emissions, air quality, household welfare, and inequality while ensuring consistency with global energy and economic datasets.

[106] CPAT modeling assumes no change in the energy generation mix. To the extent that Mauritius succeeds in accelerating its RE transition, this would lower the estimated impacts. Nevertheless, the exercise remains useful to indicate the potential net impacts of a carbon tax on the economy—particularly given that a carbon tax could help accelerate the RE transition. A carbon tax is not included in the Aspirational Development or Resilient Development Scenarios modeled in the CCDR.

[107] Due to a lack of country-specific information on public infrastructure multipliers for different income deciles, average multipliers from Seychelles' income group are used (high-income countries). The type of public investment assumed can also impact this calculation, as the economic returns for revenue recycled for public transport infrastructure (for example) would be different from coastal protection adaptation investments.

Source: World Bank staff calculations based on CPAT model

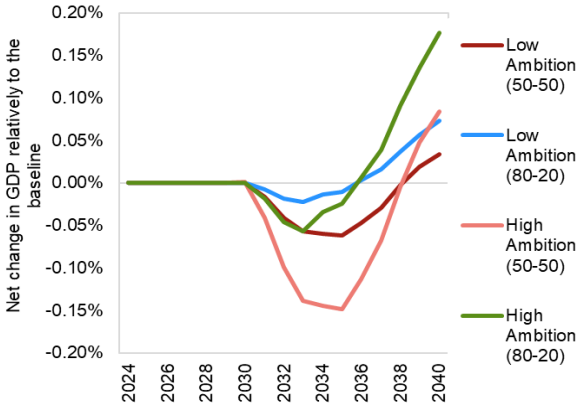
Figure 30: Impact on GDP growth and GHG emission in 2035 by scenario



Source: World Bank *staff calculations based on CPAT model. Note: Bubble size reflects fossil-fuel-related fiscal revenues, real 2021 US$ millions.*

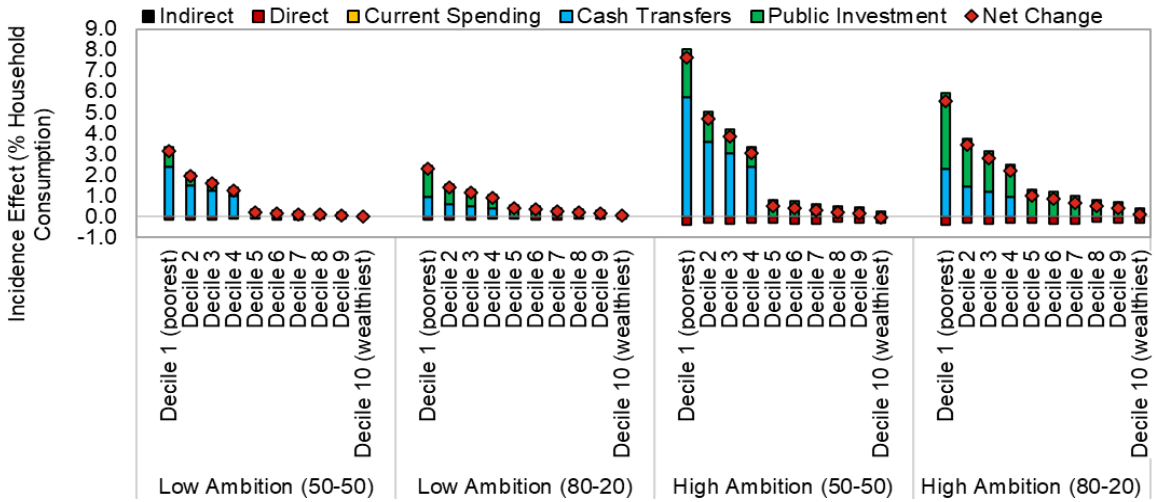
Source: WB staff calculations based on CPAT model

Figure 31: Impact on GDP growth by scenario, 2025–2040.



Source: World Bank *staff calculations based on CPAT model*

Figure 32: Mean household incidence of carbon tax after revenue recycling in 2035, by effect type and welfare decile



Source: World Bank staff calculations based on CPAT model

These fiscal reforms should be complemented by actions to strengthen public investment management (PIM) and integrate climate considerations into the PIM system. Compared to its peers, Seychelles is lagging in several metrics in the World Bank Climate Change Governance Indicators, which track the integration of climate considerations in public financial management (PFM) (Figure 33). Under-execution of infrastructure investment, particularly on projects addressing climate risks such as coastal protection, has been a recurring problem for Seychelles. A 2023 IMF assessment highlighted key gaps in climate resilience within the public investment management framework. First, climate change considerations are not adequately integrated into the national and sectoral investment planning process, creating a risk of misalignment between infrastructure investments and strategies to manage climate risks. Second, there are significant gaps in integrating the country's climate strategies into investment appraisal, selection, and budgeting. Third, fiscal risk management could be improved by incorporating a robust analysis of fiscal risks from climate change and natural disasters, and by preparing for sufficient fiscal responses (see Section 5.6). By mainstreaming climate into PIM, Seychelles has an opportunity to enhance climate adaptation and strengthen its PIM system simultaneously.

Figure 33: Seychelles is yet to adopt several core climate change governance measures

Peer Group	Country	Framework Law for Climate Change	Long-term Strategy (LTS) or 2050+ CC Plan	National Adaptation Plan (NAP)	Coordination Mechanism	Local-Level Risk Assessments	Fiscal Risk Statement[1]	Budget Guidelines[2]	CC in Budget[3]	Project Screening[4]	SOE TFCD Framework Compliance[5]
Target	**Seychelles**	**No**	**No**	**No**	**Yes**	**No**	**Yes**	**Yes**	**Partial**	**No**	**No**
Structural	Antigua and Barbuda	No	No	No	Yes	Partial	Yes	Yes	No	No	No
Structural	St. Kitts and Nevis	No	No	Yes	Partial	Yes	Info not found	Yes	No	No	No
Structural	St. Lucia	No	No	Yes	No	Yes	Info not found	No	No	No	No
Structural	Trinidad and Tobago	No	No	Yes	Yes	Yes	Info not found	Yes	No	No	No
Structural	Mauritius	Yes	No	No	Partial	No	Info not found	Yes	No	No	No
Aspirational	Cyprus	No	Yes	Yes	Partial	No	Yes	Yes	No	Yes	No

Source: World Bank Climate Global Governance Indicators, 2024.

Notes: (1) Government publishes a fiscal risk statement that incorporates climate risks; (2) Budget guidelines require ministries to align spending proposals with national climate strategies; (3) Budget system includes climate tagging to identify and track climate-relevant expenditures; (4) Climate aspects are included in public investment project screening; (5) Are SOE climate-related financial disclosures aligned with the Task Force on Climate-related Financial Disclosures (TCFD) framework?

Greening public procurement is a powerful tool to encourage more resilient and sustainable practices. Accounting for about 50 percent of public spending and 15 percent of GDP annually, public procurement can catalyze a shift in the domestic economy by adopting sustainable and resilient measures in rated criteria for public purchases. Yet, Seychelles' public procurement system currently does not include any of the core indicators for green public procurement (Figure 34). The authorities are planning to revise the Public Procurement Act in 2026. The revision should include a comprehensive review of procurement institutions, policy framework, and practices, as well as measures to strengthen e-procurement and sustainable/green public procurement (GPP).

Figure 34: Seychelles is yet to adopt any of the core metrics for resilient and sustainable public procurement

Peer Group	Country	GPP in Plans and Strategies	GPP Practices in Law	GPP Practices Mandatory	Standardized Environmental Criteria for GPP Categories	GPP Strategies for Sectors	GPP Information Collection	GPP Implementation Reporting
Target	**Seychelles**	No	No	No	No	No	No	No
Structural	Antigua and Barbuda	Yes	Yes	No	No	Yes	Info not found	No
Structural	St. Kitts and Nevis	No	No	No	No	No	No	No
Structural	St. Lucia	No	Yes	No	Yes	Yes	Info not found	Info not found
Structural	Maldives	No	Yes	No	Yes	Yes	No	No
Structural	Mauritius	Yes	No	No	No	No	No	No

Source: World Bank Climate Global Governance Indicators, 2021. Seychelles data updated to 2025.

Implementation of climate budget tagging (CBT) would support better tracking of expenditures related to climate change. Seychelles' current Integrated Financial Management and Information System (IFMIS) lacks the ability to tag, monitor, or report climate-related expenditures. This impedes the tracking and planning of climate-related spending priorities. A framework for CBT was developed and piloted during the 2025 budget process, outside of the IFMIS. GoS is currently upgrading the IFMIS, with the aim of being fully operational for the 2027 budget. Integrating CBT into the new IFMIS would help mainstream climate action, enhance transparency and accountability, and provide a strong signal to investors and partners of the government's financial commitment to climate issues.

Recommendations

#	Recommendation	Timing	Priority	Financing
1	**Implement additional tax and expenditure reforms** (such as reducing tax expenditures, improving tax administration, and advancing pension reform) to create additional fiscal space. *Entity: MoFEPTI, Seychelles Revenue Commission (SRC)*	Short to Medium Term	High	N/A
2	**Revise the Procurement Act** to incorporate principles that support e-procurement and sustainable/green public procurement. *Entity: MoFEPTI*	Short Term	Medium	N/A
3	**Strengthen the integration of climate considerations into the PFM system**, including in public investment appraisal, selection, and budgeting methodologies, and incorporate CBT in the new Financial Management and Information System (FMIS). *Entity: MoFEPTI*	Short to Medium Term	Medium	N/A

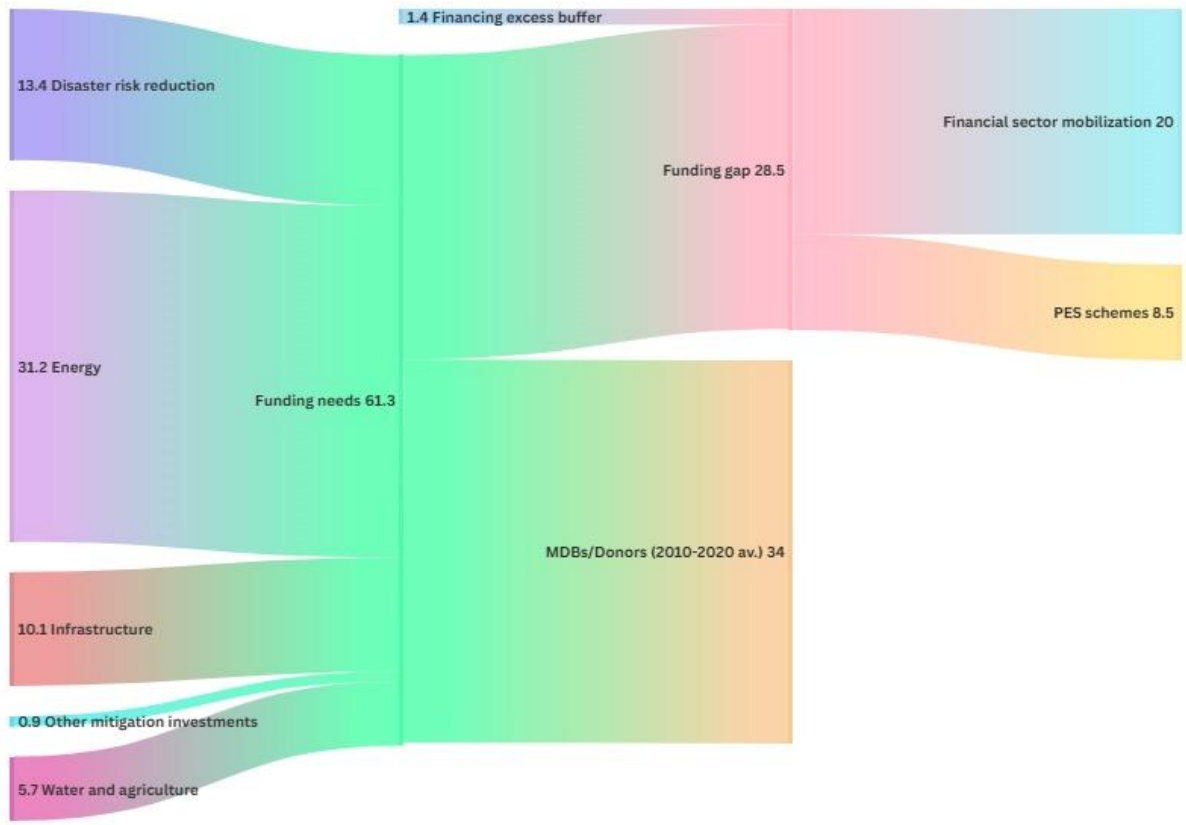
4	**Consider energy tax reform, including a carbon tax**, to incentivize behavior change, support the RE transition, boost revenues, reduce emissions, and deliver net progressive welfare outcomes through revenue recycling. *Entity: MoFEPTI, SRC, URC*	Longer Term	Low	N/A

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10 million; $$ = US$10 million –100million; $$$ = >US$100 million.

5. Financing Resilient and Sustainable Development

Seychelles is estimated to have an annual climate financing gap of US$27 million over the next five years to 2030. As outlined in Section 4.4, the measures to respond to climate change outlined in this report will require US$254 million (NPV, US$305 million in nominal terms, equivalent to US$61 million per year) in additional investment from the private and public sectors by 2030.[108] About 57 percent of this is required for the energy transition and other mitigation efforts, with the remainder required for key adaptation actions (predominantly in infrastructure, coastal management and disaster risk reduction). Section 4.5 highlights that GoS has limited fiscal capacity to finance these investments (along with other development priorities) and emphasizes the catalytic role of public finances to crowd in private investment to meet these financing needs. Given that Seychelles received, on average, US$34 million annually during 2010 – 2020,[109] this implies a climate finance gap of about US$27 million per year up to 2030. This chapter identifies viable sources to bridge this financing gap and provides prioritized recommendations to mobilize these resources **(Figure 35).**

Figure 35: Climate finance needs and sources (US$ millions)



Source: World Bank staff analysis.
Notes: Estimates are in nominal terms. Estimates for energy mitigation measures are from the economic modeling in Section 3.3, estimates adaptation measures are from the Seychelles 2021 NDC report (GoS, 2021), the Seychelles Climate Finance Resource Mobilisation Strategy 2025 – 2030 (MoFNPT, 2025), the Seychelles Land Transport Agency 2023 study on coastal erosion (SLTA, 2023), Government projects, and World Bank staff calculations.

Given GoS' limited fiscal space, the private sector has an important role in closing the climate financing gap. In December 2024, GoS adopted the Climate Finance Resource Mobilisation Strategy 2025-2030. This strategy outlined the roles of ministries, possible financing instruments and sources, barriers, and strategies. However, the document does not highlight the important role of the financial sector (banks, insurance companies, pension fund, capital market) in funding the climate finance gap and lacks a

[108] This refers to the resilient and Sustainable investment needs in Figure 27.
[109] Climate finance received by GoS over the period 2010-2020 according to AfDB (2023). This figure is used by GoS in the Seychelles Climate Finance Resource Mobilization Strategy 2025 – 2030.

practical roadmap (timeline, policy reforms, and preconditions) to ensure the timely mobilization of the sources identified.

Analysis for this CCDR indicates that the financial sector and payments for ecosystem services (PES) could generate sufficient climate finance to fill Seychelles' climate finance gap.[110] Table 6 outlines an example of a feasible climate finance strategy that would meet Seychelles' estimated climate finance needs over the coming five years to 2030.

Table 6: Financial sector funding and PES could generate sufficient climate finance to fill Seychelles' climate finance gap

Source	Potential Financing
1. 4% of the banking sector assets	US$ 86 million (US$ 17.1 million/ year)
2. 4% of the value of the annual services rendered by coral reefs and beaches for tourism/recreation activities (that is PES)	4% * US$ 211.5 million/year = (US$ 8.5 million/year)
3. 4% of the assets managed by the Seychelles Pension Fund	US$ 10.8 million (2.2 million/year)
4. 4% of the assets managed by insurance companies	US$ 3.6 million (0.7 million/year)
TOTAL	**US$ 28.5 million/year**

5.1. Possible public finance instruments

Given its limited fiscal space, GoS is exploring a potential sustainability linked bond (SLB) or loan (SLL) to finance a new round of needed climate investments. This would build on Seychelles' reputation for innovation, sustainable finance, and transparent use of proceeds[111] through issuing the world's first sovereign Blue Bond (**Box 3**). Following other sovereigns such as Chile and Uruguay, GoS expressed interest in the SLB or SLL concept because: it (i) reduces the compliance complexities related to 'use of proceeds' bonds (for example blue or green bonds); and (ii) matches policy targets with financial incentives.[112] The SLB/SLL structure would include embedded coupon/interest rate reductions, whereby if the GoS meets an ambitious performance target, it will receive a step down in the coupon or interest rate for the remainder of the life of the debt. Such reductions are typically small (0.3 percent in the case of Uruguay), so GoS is seeking credit enhancement from development partners to improve the pricing and tenor of the SLB/SLL.

Given the GoS' commitment to reduce the public debt ratio to 50 percent by 2030, credit enhancement may be critical to the success of any new sustainable financing approach. An SLB/SLL would build on the work GoS has done on climate targets and policies, as well as the strong precedents set by the Blue Bond, which also carried significant credit enhancement. A detailed assessment is required to develop a potential SLB/SLL structure, including the scale of funding, level of enhancement, investors, and potential financial terms. However, it is estimated that GoS could tap external funding of US$50 million or more in the coming years through such an instrument.

Box 3: The first sovereign Blue Bond in Seychelles – Lessons learned

On October 29, 2018, the Government of Seychelles announced the issuance of the world's first sovereign Blue Bond for US$15 million in proceeds, under the South West Ocean Fisheries Governance and Shared Growth project (SWIOFish3)[113]. The proceeds from the bond funded marine protection, fishery management and other projects to safeguard the ocean economy that the country depends on. Grants and loans for the individual projects are being channeled through the Blue Grants Fund and Blue Investment Fund (BIF), managed respectively by the Seychelles' Conservation and Climate Adaptation Trust (SeyCCAT) and the Development Bank of Seychelles (DBS). The Blue Bond had a custom ten-year maturity schedule that aligned with project funding needs and Seychelles' liability profile and integrated a World Bank partial credit guarantee of US$5 million into the Blue Bond, which lowered Seychelles' borrowing cost by at least 2 percent per year. In addition, US$5 million in concessional financing from the Global Environmental Facility, was arranged to further lower Seychelles' net borrowing cost by over 3 percent per year. Also,

[110] Historically, philanthropic funding sources to Seychelles have been relatively small and volatile. They are thus not a reliable source of future funding.

[111] Notably by transferring funds to a dedicated trust such as SeyCCAT.

[112] Nevertheless, successful SLB/SLLs require robust and transparent KPI selection and monitoring and verification frameworks to avoid greenwashing.

[113] For the SWIOFish3 Implementation Completion Report, see: https://documents1.worldbank.org/curated/en/099122324124015943/pdf/BOSIB-6896b0f8-c334-4569-b36a-3848d798b5b6.pdf and for the full documentation on the project, see: https://projects.worldbank.org/en/projects-operations/project-detail/P155642

a donation from Rockefeller Foundation to cover most of the transaction costs was arranged and the Blue Bond was privately placed with three impact investors: Calvert Impact Capital, Nuveen, and Prudential Investments.

The SWIOFish3 project closed in 2024, receiving a very positive rating in terms of outcomes and impacts.[114] The project far exceeded many intended outcomes, including expanding the management coverage of MPAs from 5 million ha to about 22 million ha, improving outcomes in the fisheries sector in terms of monitoring and efficiency, and expanding access to domestic finance for fisheries in Seychelles. The DBS, with government support, carried out extensive communication campaigns to enhance the BIF's visibility, supported capacity-building programs to allow applicants to develop fundable proposals, and helped create partnerships between applicants and relevant entities. This comprehensive effort established the BIF as a useful pilot and proof of concept, which resulted in significantly increased investor confidence toward the end of the project. Some implementation challenges are being addressed, particularly on the funding for fisheries via domestic financial institutions. However, building an internal market takes time. Outside Seychelles, the project demonstrated proof of concept for the first sovereign Blue Bond in the world, which received strong global interest thanks to a sustained communication effort, as expressed during international conferences and conventions. As a result, other countries, including Belize and Fiji, have issued their own blue bonds, demonstrating the project's broader impact on global sustainable financing trends.

GoS could also consider a debt-for-development (DfD) swap. In 2014, GoS performed a Debt-for-Nature (DfN) swap operation to transform a debt of US$ 21.6 million owed to Paris Club creditors into finance for climate action. As of 2025, Seychelles has an outstanding debt of US$ 36 million[115] (SCR 543 million) with the Paris Club countries. However, GoS plans to fully repay this debt by 2026 . Nevertheless, to the extent that GoS has other commercial or only marginally concessional bilateral debt, a DfD swap could be considered.[116]

5.2. Unlocking the financial sector's capacity for climate investments

The financial sector shows both potential and interest in implementing climate-related projects. Seychelles has 11 credit granting institutions, one pension fund and five insurance companies, which together represent 123 percent of GDP. Banks represent 86 percent of financial sector assets (4 percent for insurance companies and 10 percent for the Seychelles Pension Fund) and have significant capacity to invest in the economy with liquid assets representing 63.5 percent of their balance sheet as of February 20-24, while credit remains narrow with less than one third of their portfolio dedicated to lending operations. The banking sector also appears well positioned to invest, since its capitalization is in line/slightly below Southern Africa peers[117] (19.8 percent capital adequacy ratio as of December 2024 and a regulatory minimum of 12 percent), but more profitable (28.6 percent return on equity (ROE) as of December 2024), with acceptable risk levels as demonstrated by low non-performing loan ratios (5.5 percent as of December 2024).

Beyond capacity, the financial sector is interested in climate-related investments but opportunities to finance adaptation and mitigation projects have remained limited. Although not confirmed with comprehensive granular data at the institutions' level, current banks' involvement in financing solar PVs installation for households/SMEs/corporates is likely less than 5 percent of their loan portfolio. Long term asset investors such as pension funds and insurers have not yet started to invest in climate-related projects but show interest. Pension fund regulation was recently revised to allow funds to allocate up to 5 percent of their assets (US$ 13.5 million) for alternative investments, among which variable renewable energy (VRE) projects are usually included, but have not yet been identified as suitable investments. Insurance companies have assets of US$ 91 million, but the regulation does not currently allow long-term investors to invest in alternative assets. If adequate regulation was implemented, insurance companies could invest up to US$ 4.6 million in climate-related projects. The financial sector could also gain confidence in financing climate-related investments if adequate capacity on climate finance instruments was developed, as well as a green taxonomy to build investor confidence and improve transparency.

The financial sector would be keen to engage in financing renewable energy deals but lacks both small and large investment opportunities, mainly because of poor adoption incentives. VRE projects have

[114] For the full documentation on the SWIOFish3 project, see https://projects.worldbank.org/en/projects-operations/project-detail/P155642
[115] Debt management strategy 2025-2027, Ministry of Finance, National Planning and Trade, Republic of Seychelles, October 2024.
[116] See https://seyccat.org/wp-content/uploads/2025/03/SeychellesDebtSwapCaseStudy_webversion.pdf for more details of the DfD swap modality.
[117] South Africa region average 2023 : 22 percent capital adequacy ratio (CAR), 6.4 percent non-perfroming loan (NPL) to gross loans, 19.7 percent ROE Finance in Africa - Chapter 4 : Regional Banking performance, EIB, 2024.

remained few in Seychelles mainly because of demand-driven issues. Regarding large scale projects, the slow transition of PUC to VRE has not allowed for the creation of a pipeline of bankable projects. According to financial institutions, the few[118] large PV and off-grid projects have been financed by international investors at rates lowered than those offered by local commercial banks. For smaller projects, commercial and households show limited understanding of solar energy projects and lack incentives to install VRE production capacities. Several GoS schemes delivered via the DBS—such as SEEREP,[119] the PV Rebate Scheme[120] and the SME loan scheme[121]—have provided VRE installation financing but generated limited buyer interest overall. The lack of banking products tailored to the financing of small-scale VRE solutions may also contribute to the low uptake of these technologies (only one bank—MCB—has a green loan product).

Besides the development of pipeline projects aligned with the energy transition, large VRE/infrastructure projects would also require appropriate vehicles and derisking instruments to allow participation of banks, and long-term investors. Long-term investors such as pension funds, insurance companies, and wealthy individuals have financing capacities and interest in financing VRE/infrastructure projects. Given their lack of expertise, they would prefer to rely on an asset-manager to select and manage the long-term infrastructure projects. Seychelles currently has no project finance asset manager, but GoS could consider tasking a private asset manager with a sustainability mandate to structure a blended finance infrastructure/VRE funds.[122] For banks, GoS could help with the structuring of special purpose vehicles in which GoS would have a derisking role, to crowd in banks to finance VRE projects, and progressively build banks' exposure and knowledge of VREs. **Box 4** provides international examples of derisking mechanisms to support private sector investment in climate projects.

Box 4: Examples of public instruments to derisk climate investments

Several countries have designed innovative instruments to derisk investments in climate adaptation and mitigation to attract commercial banks. Below are two examples that have demonstrated significant impacts:

Water for climate adaptation: In Kenya, the Microfinance for Water Service Project (Maji ni Maisha) combined multiple derisking mechanisms to scale-up investment in climate adaptation. The mechanism (based on supply and demand) included credit guarantees to increase commercial banks' interest, output-based aid subsidies to secure private co-financing, and community equity mobilization. This means providing financing and funding at the same time. The mechanism helped support 35 water projects, provide 3.4 million in loans, and generate US$2-10 return for every US$ 1 invested. Only 3 out of 35 projects defaulted. The implementation of this instrument was also supported by technical assistance to design projects that would be bankable in an enabling environment.

Renewable Energy: in Argentina, the government established a dedicated public trust fund FODER (Trust Fund for Renewable Energy) under its RenovAR program to finance and support renewable energy projects. Although this fund was dismantled in November 2024, following a change in climate action by the new government, FODER was instrumental in increasing investor confidence by providing financial guarantees to enhance the bankability of the Power Purchase Agreements and protect the projects against risks of non-payment by the national operator (CAMMESA) for generated and delivered electricity. As of December 2023, 152 RE projects were in operation, and 38 were under construction.

Capital markets remain small and underdeveloped,[123] but can be considered as catalysts for private domestic resource mobilization and alternative domestic investments. GoS will need to develop and implement a roadmap for capital markets to unlock their fundraising capacity. Although the Seychellois capital market holds potential for innovation and sustainable financing, it faces challenges including small-scale operations, a limited domestic investor base, reliance on external funding, regulatory and

[118] Off-grid projects in the islands of the Archipelago have mostly been self-financed by the Island Development Corporation (IDC). This private company is in charge of the economic development of 17 islands.

[119] Seychelles Energy Efficiency and Renewable Energy Program (SEEREP) implemented in 2014 with US$ 1.4 million funding from GoS (50 percent) and GEF (50 percent) offered subsidized loans to households and SMEs to improve energy efficiency and invest in VRE technologies. Applicants were allowed to borrow up to SCR150,000 at a low 5% interest rate over a period of 5 years. After meeting a moderate success between 2014 and 2020 (187 applications in six years), the number of applicants dropped to 2 in 2020 (pandemic year) and zero in 2021.

[120] The was first introduced in 2010 offering rebates between 15 and 25% for households and MSMEs. The scheme met immediate success with demand exceeding targets. The rebate offered was however capped in amount (US$ 6,190) and power installed (max 15kWp). The scheme was revamped in 2025 with the government subsidizing the cost of solar PVs (USD 0.6 million budgeted) and of the interest on bank loans (US$ 130,000 budgeted).

[121] Offered by the DBS, the SME scheme allows VRE projects financing. However, the DBS has not received applications for such projects, as grants would be needed to increase affordability of technologies.

[122] Multilateral development banks could support GoS to prepare the asset manager's mandate and derisking mechanisms (guarantees, concessional loans) that the asset manager could use along with own capital and public funds to finance climate projects.

[123] US$59 million of local bonds have been traded on the market since its creation in 2021.

capacity gaps, the lack of a functional secondary market and increased domestic government borrowing. GoS has however expressed its commitment to developing a capital market masterplan which will aim to: (i) identify actions to strengthen the domestic capital market while aligning it with international standards, including disclosure requirements and best practice; (ii) improve resource mobilization mechanisms to support national development priorities and job creation; (iii) foster private sector participation; (iv) build institutional capacity; and (vii) promote sensitization, literacy and awareness of domestic business.

Box 5: Exposure of the financial sector to climate risks

The financial sector appears to be mostly exposed to physical risk, but granular data are insufficient to provide a comprehensive diagnostic. The Central Bank of Seychelles (CBS) conducted a preliminary assessment of banks' exposure to climate-related risks in 2021. It met several challenges conducting this assessment as banks had difficulties in understanding these new concepts and providing the data required because they lacked information on location of assets financed (physical risk) and activities financed (transition risk). Although still a rough estimation, this first assessment revealed high exposure of the financial sector to physical risks, especially infrastructure (airport, port) and real estate. The financial sector is particularly exposed to the old real estate financed, owned or insured in disaster-prone areas (the pension fund has 30 percent of its assets invested in real estate) as new construction projects are required to undergo an environmental diagnostic, that includes a risk analysis. Transition risks have been more difficult to estimate due to a lack of adequate data and the use of a sectoral-based proxy approach for the evaluation. Nonetheless, this risk is expected to be medium to low given that banks mostly finance the domestic market (including the Public Utility Company, fuel import and retail distribution, cargo ships, and the national airline company).

The CBS has been proactive on climate-related risks and opportunities and should increase coordination with the Financial Services Authority (FSA), which appears less advanced. The CBS has adhered to the Network for Greening the Financial System (NGFS) and prepared guidelines on climate-related risk management to be issued in Q1 2025. It s currently discussing a supervision strategy on these risks with the Financial Stability Committee (FSC) and plans to adopt a regulation requiring reporting and disclosure of these risks in the next three years. In the context of the IMF RSF, the CBS has also requested World Bank support to issue draft guidelines on management and supervision of climate-related financial risks. The IMF RSF list of reforms also includes the preparation of climate stress-tests and the development of a green taxonomy. The FSA is following CBS's work through its participation in the FSC and plans to integrate a climate risk assessment in its strategic plan for 2025, but no guidelines on climate-related risks have been issued or assessments undertaken yet. The CBS and FSA should combine their efforts on developing of a common risk assessment and supervision framework and green taxonomy. While tailored to local circumstances as needed, this taxonomy should be drawn from regional or other leading models for easier implementation.

5.3. Additional financing sources for adaptation and mitigation

Payment for Ecosystem Services

Payment for Ecosystem Services (PES) for coral reef restoration and maintenance could generate US$8.5 million a year to support key coastal and coral reef adaptation measures. PES involves arrangements between buyers and sellers of environmental goods and services, where those benefiting from the ecosystem services pay those providing the services[124]. Mostly used for water services in Africa, a public/private/philanthropic scheme could be elaborated around coral reefs in Seychelles. Coral reef is present on up to 90 percent of Seychelles' shoreline (1,149 km), offers direct protection to 18.5 percent of the population living in low-lying coastal areas and is estimated to yield ~US$ 51.5 million per year from on-reef activities (snorkeling, diving)[125]. Protection offered also reduces coastal erosion of beaches, which is yielding about US$ 160 million/year in tourism expenditures. Coral reefs are essential to hotels, fisheries, and tour/scuba diving companies to protect beaches and resorts from coastal erosion and maintain/increase fish populations in coral reefs. These natural ecosystem services buyers could pay nongovernmental organizations (NGOs) s to restore/maintain coral reefs, and therefore protect/increase their income, foster biodiversity and create jobs, under a circular economy framework. Several hotel resorts are already providing grants to NGOs to restore coral reef in the frame of their corporate social responsibility (CSR) activities. With SeyCCAT and the support of international organization like GEF, which has has experience in setting up national-level PES schemes (that is Costa-Rica, and Mexico), GoS could investigate the creation of a

[124] The transactions can be direct or indirect, and the sellers engage in resource use practices designed to secure the provision of the services. Payment for ecosystem services, Jaime Cavelier, Ian Munro Gray, World Bank, 2012

[125] The nature conservancy. 2022. Seychelles MPAS Ecosystem Services Final Report (20220413), Mapping Ocean Wealth in Seychelles,.

national PES scheme around coral reefs[126] building on the work already completed on the value of ecosystem services and hazard reduction by coral reefs. A contract equivalent to 4 percent of the yearly revenues generated by ecosystem services (reefs and beaches) would bring as much as US$ 8.5 million per year.

Blue economy and SME finance for adaptation

The 2018 Blue Bond showcased Seychelles' strong ability to attract international funding for ocean ecosystem enhancement, but additional efforts are needed to scale up and expand the impact of such funds. The Blue Bond proceeds were divided between the Blue Grant Fund (BGF – US$3 million) managed by SeyCCAT and BIF (US$12 million) managed by the DBS to develop sustainable fishery value chains. While BGF funded almost 90 projects,[127] BIF funding has so far resulted in a smaller number of projects (three), with one project effectively financed as of 2024—even though it accounted for a commitment of 50 percent of BIF capital (US$6 million). To maximize the effectiveness, scalability, and long-term impact of the BIF scheme, it will be important for Seychelles to continue assessing and addressing key implementation challenges. Potential areas for refinement may include expanding the scope to better support sectors such as fish processing, logistics, market development, and aquaculture. Additionally, revisiting certain financing terms—such as the minimum deal size of US$10,000 and the collateral requirement of 125 percent—could enhance accessibility for a wider range of stakeholders. Providing further support for developing comprehensive Environmental and Social Management Plans as well as streamlining the approval process (currently extending beyond six months) may also improve efficiency and uptake. Finally, introducing more flexible repayment options, such as a two-year grace period, could offer valuable support to project developers during the early stages of implementation.

To further support the blue economy, raising awareness around value chains and markets and developing bankable projects appears critical and can also facilitate SMEs' adaptation to climate change:

- **Promoting the sustainable use of marine resources is essential for climate adaptation, yet the concept remains relatively unfamiliar to much of the financial sector.** In 2018, the Ministry of of Fisheries, Agriculture and Blue Economy developed a strategic framework to scale up the blue economy and identified 45 emerging sectors for development. While efforts have been made to build the financial sector's understanding—such as through capacity-building initiatives and securing private sector funding for select projects—many banks still lack a full grasp of blue economy value chains and business models. Initial institutional capacity-building efforts under the successful SWIOFish3 project laid important groundwork, but further support is needed. This includes the introduction of tailored financial instruments, such as SME-specific financing, and the promotion of regional cooperation through integration into regional value chains to reduce transaction costs. Although there has not been any formal study to assess the sector's scaling needs, common challenges faced by start-ups in accessing finance include high interest rates, significant personal contribution requirements, and overcollateralization.
- **Adapting Seychelles' agriculture is critical for food security but still considered very risky by the banking sector.** While most food is imported, the domestic agriculture sector remains important for food security, particularly of eggs, root crops, fruits, and vegetables. Yet, these sectors are exposed to climate change (see Section 3.5). Solutions include improving yields through drip irrigation and introducing heat-tolerant crop varieties. Yet, agriculture is a risky sector, with the sector accounting for 10 percent of total banking sector NPLs, with most financing provided by the Agriculture Development Fund, managed by DBS.

The efficiency of SME support schemes offered by DBS to finance risky projects in agriculture, the blue economy, and start-ups should be assessed. The DBS currently offers several financial schemes to provide affordable funding to risky businesses[128] operating in different sectors and underwrites loans

[126] Angelique Brathwaite, Nicolas Pascal, Eric Clua. When are payment for ecosystems services suitable for coral reef derived coastal protection?: A review of scientific requirements. Ecosystem Services, 2021, 49, pp.101261. ff10.1016/j.ecoser.2021.101261ff. ffhal-03196751f
[127] See IMF. 2024. *Article IV Report – Seychelles*.
[128] DBS notably offers a SME scheme, the SBFA scheme for small businesses, the Fisheries development fund, and the Agricultural fund.

that the financial sector does not consider. When inefficient, these schemes could be complemented and/or restructured into a Partial Portfolio Guarantee (PPG) scheme with silent guarantees[129] provided to banks for the financing of specific entities/situations such as agriculture, the blue economy, small businesses, or emergency liquidity in case of natural disasters. Technical support for the financial institutions would be helpful to build awareness of these projects and the right knowledge to assess them. A PPG has a multiplier effect on public money by attracting private sector funding to finance projects, while mobilizing only a fraction of the public money otherwise needed in a public lending scheme. Additionally –and unlike the 70 percent non-silent government guarantee provided for DBS' SME scheme– a silent guarantee would avoid moral hazards for both banks and borrowers. Such a scheme could also be beneficial for banks willing to support clients' adaptation investments, decreasing their physical risks and increasing customers' resilience.

Box 6: Derisking instrument to encourage SME finance in a resilient and sustainable economy

Several countries have established derisking mechanisms or risk-sharing facilities to encourage the financial sector to lend to micro,-small and medium enterprises (MSMEs) that are ready to invest in climate adaptation and mitigation.

- **In 2018, Madagascar** established a Partial Portfolio Guarantee, capitalized with public money and managed independently by a private entity, to encourage lending to MSMEs. The authorities are now designing a green window in the PPG for SMEs affected by climate shocks or engaged in climate adaptation investments.
- In 2015, **India** established a Partial Risk Sharing Facility with the support from the World Bank, GEF, and the Clean Technology Fund. The facility provides partial credit guarantees to cover a share of default risk faced by participating financial institutions in extending loans to eligible energy efficiency projects implemented through energy service companies, most of which are MSMEs.

In these projects, public resources are used to crowd-in lenders and mobilize private capital to unleash climate financing at scale. A few other examples of successful cases of green public credit guarantee schemes in the East Asia and Pacific Region include the Korea Credit Guarantee Fund (KODIT) and the Malaysian Green Technology Financing Scheme (GTFS).

Carbon markets

Despite growing global interest, blue carbon markets have yet to deliver significant climate finance at the national level for SIDS like Seychelles[130]. Although Seychelles is home to extensive seagrass meadows (approximately 2,000-2,500 km^2) and mangrove forests (covering about 25-32 km^2) -- ecosystems with high blue carbon potential—efforts to monetize these assets through carbon credits face key challenges. These include limited carbon volumes, uncertain net financial benefits due to volatile credit prices and high upfront costs, and long lead times before revenues are realized (typically 5–7 years). Collectively, these constraints suggest that blue carbon credits are unlikely to provide substantial financing for Seychelles over the next five years. Moreover, establishing the institutional framework needed to access carbon markets—such as regulatory systems and robust monitoring, reporting, and verification (MRV) mechanisms—requires significant administrative and technical capacity. Given the Government of Seychelles' limited institutional bandwidth, dedicating resources to this complex endeavor would entail a high opportunity cost (see Annex 3 for additional analysis). In the short term, more stable and accessible financing options may lie in the banking sector, payments for ecosystem services (PES), the Seychelles Pension Fund, and insurance markets, which could help close the national climate finance gap more effectively.

Nonetheless, at the project level, mechanisms such as small grants and concessional loans managed by SeyCCAT—financed through Seychelles' innovative blue economy instruments—are key investments to advance 'beyond carbon benefits' via nature-based solutions (NbS) and suport community-level jobs and livelihoods. These initiatives generating tangible local benefits in areas such as marine conservation, sustainable fisheries, and blue economy entrepreneurship. In the long term, as Seychelles strengthens its technical readiness and demonstrates the feasibility of such efforts, the country could be well-positioned to participate meaningfully in blue carbon markets.

[129] A silent guarantee means that the borrower does not know that its loans is subject to a guarantee (otherwise, the incentive to repay the loan would be reduced).
[130] Blue carbon currently shows medium to low attractiveness for both voluntary (ICP) and Article 6 markets. In the voluntary carbon market (VCM), blue carbon represents a niche market with signs of increased attractiveness for project developers and investors interested in the ocean economy, adaptation, and biodiversity benefits. Article 6 cooperative approaches have focused, so far, mostly on emissions reduction projects with lower uncertainty and risk profiles.

Based on a readiness assessment of Seychelles capacity and readiness for engaging in carbon markets[131], GoS would need to increase its institutional capacity for core processes necessary for full carbon participation and attractiveness for carbon market engagement. These include developing sectoral strategies for carbon market participation and challenges for the regulation of carbon markets (including safeguards mechanisms), appointing of a dedicated authority to oversee carbon markets engagements, allocating of dedicated financial and human resources, and ensuring clarity on interministerial capacity and coordination mechanisms to support cross-sectoral engagement and decision meeting. Continued awareness raising among sector ministries, the private sector, and civil society will also be important for fostering inclusive carbon market engagement.

5.4. Disaster risk finance[132]

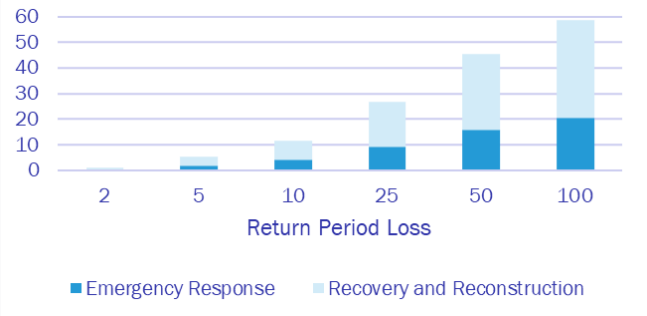
Financial impacts of disasters and funding needs[133]

Due to its geographical location and hydroclimatic profile, Seychelles is exposed to floods, landslides, strong winds and storms, tsunamis, and to a lesser extent to drought and forest fire. Historically, floods and storms have been the costliest hazards**.** Although Seychelles is ranked 186in the INFORM index (very low risk),[134] Its vulnerability to disasters is heightened by geographic concentration of assets, reliance on imports, and limited disaster management experience. Climate change could further exacerbate the frequency and severity of extreme events, with increased precipitation, sea level rise, and heightened cyclone activity.

Key sectoral exposures include tourism, agriculture, and SOEs. For instance, following COVID-19, public subsidies were provided to support tourism through the Department of tourism (SCR 105 million), farmers through the Ministry of Fisheries, Agriculture and Blue Economy (SCR 55 million), SOEs such as Air Seychelles (SCR 110 million), and firms though the Micro-Small and Medium Entreprises (MSMEs) relief scheme. Exposures in term of build assets are dominated by residential (50 percent of combined modelled loss), followed by commercial (35 percent) and industrial (15 percent).[135]

A recent IMF study estimates that total funding needs for all risks are between US$1.2 million (for a 1-in-2 year event) and US$59 million (a 1-in-100 year event) (equivalent to 0.2 to 8.4 percent of total annual expenditures) (Figure 36).[136] Emergency response needs were estimated between US$0.4 million (1-in-2 year) to US$20.6 million (1-in-100 year); while recovery and reconstruction needs were estimated between US$0.8 million (1-in-2 year) to US$38.2 million (1-in-100 year).[137] It is important to acknowledge that this is a very small level of risk in SIDS.

Figure 36: Multi-hazard Disaster Risk Financing Needs for Seychelles (US$ millions) [138]



[131] World Bank. 2024, Navigating Decisions on Carbon Markets (English). Washington, D.C.: World Bank Group.

[132] This section focuses on natural disaster risks. However, as noted in Chapter 1, Seychelles is also exposed to broader macroeconomic risks due to its narrow economic base, reliance on imported fuel and food, and concentration of tourism demand from Europe. As a result, this analysis reflects one part of a broader risk and exposure analysis required for long-term planning.

[133] Based on IMF. 2025. Seychelles Disaster Risk Financing Strategy: Technical Assistance Report.

[134] https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Risk/Country-Risk-Profile

[135] Global Facility for Disaster Reduction and Recovery GFDRR (2016). Disaster Risk Profile for Seychelles.

[136] IMF. 2025. Seychelles Disaster Risk Financing Strategy: Technical Assistance Report.

[137] The breakdown between emergency response and recovery and reconstruction is estimated per expert judgement, using international experience of past disasters.

[138] The underlying multi-hazard risk curve was estimated using a statistical analysis of past disaster events including Desinventar observations and PDNAs of Storm/Flood of Felleng in 2013 and Cyclone Fantala in 2016.

Available financial resilience instruments

Traditionally, when disasters hit, GoS mostly relies on a generic budget line (contingency appropriation) or on ex-post instruments such as budgetary reallocations, concessional borrowing, or the creation of special accounts. The contingency appropriation is the main risk retention instrument used by GoS to respond to shocks. It is mandated by the PFM Act, with a maximum allocation of 3 percent of annual spending but has been kept at a low level, just under 0.5 percent. While insurance products are offered on the market, risk transfer solutions are still relatively undeveloped for natural disasters.

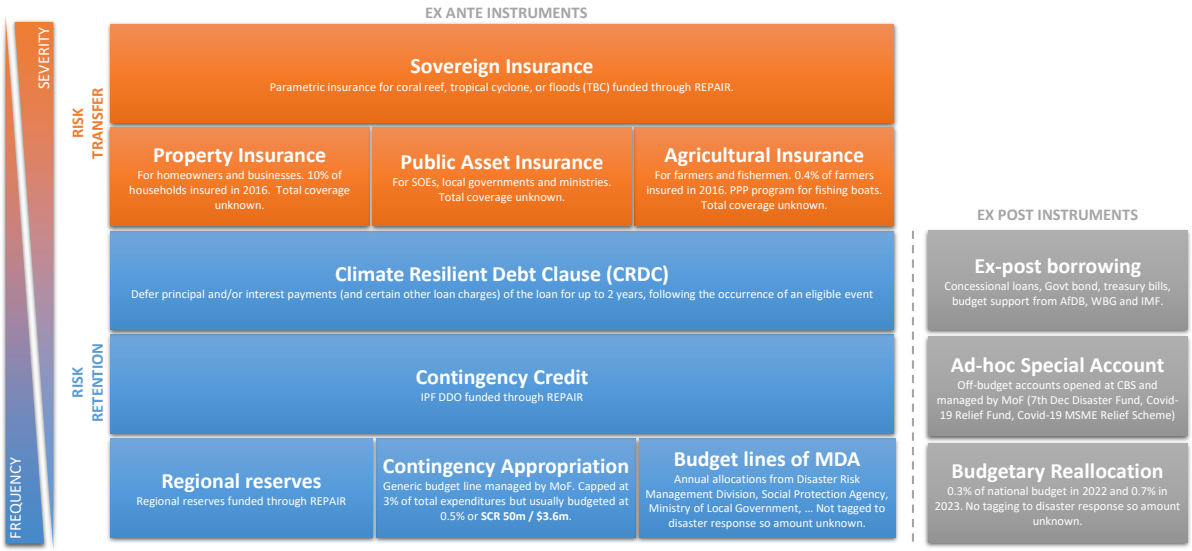
This mostly ex-post / ad-hoc approach does not allow to cover all shocks, especially for the most important return periods. This potential funding gap can affect public finances, economic stability, households' welfare and hamper development gains**.** Based on available funding (contingency appropriation of US$3.6 million), GoS can cover up to 1-in-3 years events. The funding gap is estimated at about US$1.5 million for small scale events (1-in-5 years) and up to US$55m for major events (1-in-100 years). By stretching the contingency appropriation to its legal cap of 3 percent, GoS could leverage an additional US$2 million, which would allow to cover moderate severity events (1-in-20 years). This would still leave a funding gap of about US$4 million for 1-in-25 years events and up to US$35 million for major events (1-in-100 years). In other words, each year there is a 4 percent chance that reallocation needs reach US$4 million (that is 0.6 percent of total annual expenditures), and a 1 percent chance that reallocation needs reach $55 million (that is 7.8 percent of total annual expenditures).

Closing the funding gap

By putting in place new DRF instruments, GoS could reduce the probability of reallocating scarce public resources to fund emergency needs and reconstruction. This would shift the approach from being reactive to proactive. In line with the DRF Strategy, GoS could consider complementing existing tools (**Figure 37**) with the following instruments:

- *The Regional Emergency Preparedness and Access to Inclusive Recovery Program (REPAIR),* a World Bank funded regional risk pool providing beneficiary countries with three sovereign instruments: reserves to cope with the smaller shocks, contingency credit to face major events, and parametric insurance to cover catastrophic shocks for specific risks.
- *The Crisis Resilience Debt Clause (CRDC),* a mechanism that allows beneficiary countries to defer principal and/or interest payments (and certain other loan charges) of loans for up to 2 years, following the occurrence of an eligible event. This can provide countries with fiscal space to fund recovery and reconstruction needs.
- *Enhancing and right sizing the contingency appropriation.* By streamlining and institutionalizing data collection on disaster-related expense and investing in modeling capacities, GoS could better quantify the funding needs for the mechanism (as well as for other DRF instruments).

Figure 37: Disaster Risk Financing instruments including REPAIR and the CRDC



Recommendations

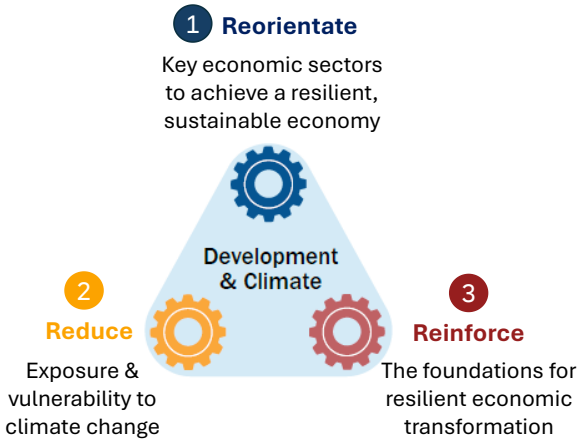
#	Recommendation	Timing	Priority	Financing
1	Add the financial sector to the climate finance resources mobilization strategy among climate finance potential sources. Draft roadmaps with clear timelines to effectively mobilize the priority public and private climate finance sources identified (banking sector assets, PES, pension fund assets, insurance company assets, a sustainability-linked instrument). *Entity: MoFEPTI, MECENR*	Short Term	High	Public $ marginal . But plan will mobilize private capital $$$
2	Analyze the efficiency of the financial schemes offered by the DBS and assess the opportunity to develop a Partial Portfolio Guarantee to replace part of these schemes. *Entity: MoFEPTI, DBS*	Short to Medium Term	High	Public $ marginal
3	Invest in DRF instruments such as REPAIR and the CRDC, in line with the national DRF Strategy, to close the funding gap. *Entity: MoFETPI*	Short Term	High	Public $
4	Revise insurance regulations to allow insurance companies to invest up to 5 percent of their assets in alternative investments. *Entity: FSA*	Short Term	High	N/A
5	Study the feasibility of a PES scheme around coral reefs and the capacity to mobilize the private sector around this concept. *Entity: MECENR, SeyCCAT*	Medium Term	High	Public u$ marginal
6	Explore the creation of an infrastructure asset-manager in the form of a PPP to incentivize long-term financial sector actors investing in VRE and large adaptation projects. *Entity: MoFEPTI*	Medium Term	High	N/A. But could lead to Public ($) and Private capital ($$$)
7	As part of the upcoming capital market masterplan, develop a comprehensive framework for sustainable and climate financing including green bonds through both public issuances and private placements, as well as incentives to attract private sector participation. *Entity: MoFEPTI, FSA CBS*	Short Term	Medium	Public $ marginal
8	The FSA and CBS develop a common risk assessment and supervision framework of climate-related risks. Together with the MoF, both supervisors should develop a green taxonomy, validated by the FSC. *Entity: CBS, FSA, MoFEPTI*	Short to Medium Term	Medium	Public $ marginal
9	Implement an appropriate framework for natural capital monetization and the development of carbon projects blue/forestry) *Entity: MECENR*	Longer Term	Low	Public $

Note: Short term (< 2 years), Medium term (2 – 4 years), Longer term (4+ years). $ = <US$10million; $$ = US$10 million–100 million; $$$ = >US$100 million.

6. From Analysis to Action

This report identifies actions to steer Seychelles' economy to a more resilient development pathway. First, Seychelles will need to ***reorientate*** its key economic sectors—tourism and the ocean economy—as well as energy, towards more climate resilient and sustainable development models. At the same time, the country will need to ***reduce*** exposure and vulnerability to the physical impacts of stronger storms, erratic precipitations, increased heatwaves, and sea level rise. Finally, Seychelles will need to ***reinforce*** the foundations that will enable this resilient economic transformation through targeted reforms and partnerships. This CCDR focuses on these 3Rs—*reorientate, reduce, reinforce*—to help Seychelles achieve its ambitious development vision while addressing the growing threats from global warming (Figure 38).

Figure 38: Achieving resilient and sustainable growth will require Seychelles to address three interrelated development and climate priorities



This chapter summarizes the report's key recommendations following the 3R's framework (Table 7). These key recommendations synthesize the longer list of detailed recommendations identified throughout the report at the end of the individual chapters/sections. Only high-priority actions are included here, though lower-priority actions are presented in the other chapters. Short-term actions are recommended to be carried out in the next two years, medium-term actions refer to a two- to four-year time frame, and longer-term actions extend beyond four years. The expected source of financing (public, private, PPP) and indicative cost ($ = <US$10 million; $$ = US$10million–100 million; $$$ = >US$100 million) are also included. These key recommendations are grouped under 10 Recommendations or High-Level Objectives (HLOs), which are presented following the 3Rs framework. Table 7 proposes the sequencing of actions *within* each HLO based on the urgency rating, which also reflects that some recommendations are a prerequisite for subsequent actions. The table does not prioritize *among* HLOs given that all HLOs are relevant to achieving Seychelles' development and climate aspirations.

Table 7: CCDR key recommendations and 10 High-Level Objectives (HLO)

Objective	Priority Action	Timing	Financing
PILLAR 1: REORIENTATE key sectors to achieve a resilient and sustainable economy			
1. Accelerate adoption of a sustainable, high-value tourism model	To diversify tourism demand and increase visitor length of stay by: (i) **developing a more diverse tourism product offering**, including ecotourism, agrotourism, and cultural tourism; and (ii) **expanding into new (including regional) source markets** (Section 3.1, pg. 24) *Entity: STB, MECENR, Private sector*	Short, Medium, & Longer Term	Public ($) & Private ($$)
	Strengthen implementation of the existing tourism multi-hazard contingency plan and use the 2026–27 review process to incorporate new gaps and workstreams identified during implementation (Section 3.1, pg. 24) *Entity: MECENR, STB, MoTC*	Short and MediumTerm	margiN/A
2. Further develop a resilient and diversified blue economy	**Increase the value of catches landed in Seychelles (target and bycatch)** by expanding the Blue Investment Fund and supporting the local bycatch processing sector. (Section 3.2, pg. 29) *Entity: MECENR, DBS*	Medium Term	Public & Private $
	Support sustainable mariculture investments (including in outer islands) by improving access to credit. (Section 3.2, pg. 29) *Entity: MECENR, DBS*	Medium Term	Public $
3. Accelerate the renewable energy transition to achieve 25 percent RE generation by 2030 and 40 percent by 2040	**Support the scale-up of RE by removing remaining regulatory barriers**, including: (i) further streamlining and operationalizing recently introduced **licensing procedures** to ensure faster permitting; (ii) adopting and applying a **transparent multi-year electricity tariff methodology**; and (iii) establishing a transparent and cost-reflective tariff framework for DRE under both **net billing and gross metering regimes**. (Section 3.3, pg. 33) *Entity: URC, PUC, MECENR.*	Short Term	N/A. But will promote Private $$$
	Support the scale-up of RE by removing remaining technical barriers by **investing in critical grid infrastructure and strategic public investments in BESS** to enhance grid stability and flexibility. (Section 3.3, pg. 33) *Entity: PUC, MECENR, URC*	Medium & Longer Term	Public ($$) to promote Private ($$$)
	To crowd in private capital, **develop a risk-sharing or blended finance facility to de-risk RE investments** and reduce the cost of capital, potentially structured as a PPP with a private sector entity serving as the fund or asset manager. (Section 3.3, pg. 33) *Entity: MECENR*	Medium Term	Public & Private $$$
PILLAR 2: REDUCE exposure and vulnerability to climate change			

4. Enhance Disaster Risk Reduction	**Develop a National Adaptation Plan with a detailed and costed set of priority adaptation projects,** providing a clear, actionable roadmap for achieving climate resilience across sectors and guidance on the role of DRMD in climate resilience. (Section 2.2, pg. 20) *Entity: MoFEPTI, MECENR, DRMD,*	Short Term	Public $ marginal. But plan will outline Public, Private, & PPP options $$$
	To protect key assets, **undertake prioritized coastal protection investments** consistent with a National Adaptation Plan including seawalls, mangrove restoration, and coral reef rehabilitation. (Section 3.4, pg. 37) *Entity: MoFEPTI, MECENR, SIA*	Short, Medium, & Longer Term	Public, Private & PPP $$$
5. Enhance infrastructure resilience and disaster risk management	**Enhance awareness and enforcement of climate risk and mitigation related regulations** under the Planning Act, including the newly revised building regulations. (Section 2.2, pg. 20) *Entity: SPA*	Short Term	Public $
	To enhance resilience to climate impacts, **undertake climate-informed upgrades to Port Victoria, Seychelles International Airport, and the coastal road networks on Mahé, Praslin, and La Digue.** (Section 3.4, pg. 37) *Entity: MoFEPTI, MECENR, PPP partner(s)*	Medium & Longer Term	Public & PPP $$$
6. Improve water management	To secure the water supply, **assess options to protect desalination plants** from flooding, saline intrusion, and storm surges, and to introduce non fossil fuel-based energy systems. (Section 3.5, pg. 42) *Entity: PUC*	Short Term	Public $
	To improve efficiency, **construct and operate a water treatment plant at La Gogue dam site** to treat water on site and reduce the strain on existing treatment plants. (Section 3.5, pg. 42) *Entity: PUC, MoFEPTI, potentially PPP partner(s)*	Medium & Longer Term	Public $
7. Strengthen social protection	**Revise the Agency for Social Protection's operational protocols for programs during emergencies**. These adjustments should include changes in registration, delivery of benefits and administrative processes to ensure expedited processes. (Section 3.6, pg. 47) *Entity: ASP*	Short- term	N/A
PILLAR 3: REINFORCE the foundations for resilient economic transformation			
8. Reduce public debt to 50 percent of	**Implement additional tax and expenditure reforms** (such as reducing tax expenditures, improving tax administration, and advancing pension reform) to reduce public debt and create additional fiscal space. (Section 4.5, pg. 57) *Entity: MoFEPTI, SRC*	Short to Medium Term	N/A

GDP by 2030 and create fiscal space to finance climate action	**Strengthen the integration of climate considerations in the PFM system**, including: (i) in public investment appraisal, selection, and budgeting methodologies; (ii) by revising the Procurement Act to incorporate principles that support e-procurement and sustainable/low carbon public procurement; and (iii) by incorporating climate budget tagging in the new FMIS. (Section 4.5, pg. 57) *Entity: MoFEPTI*	Short to Medium Term	N/A
9. Mobilize US$28.5 million annually over the next five years to finance the transformation	**Revise the Climate Finance Resources Mobilisation Strategy** to include the financial sector among potential financing sources. Draft roadmaps with clear timelines to effectively mobilize the priority public and private climate finance sources identified (banking sector assets, PES, pension fund assets, insurance company assets, and a sustainability-linked instrument). (Section 5.1, pg. 64) *Entity: MoFEPTI, MECENR*	Short Term	Public $ marginal. But plan will mobilize private capital $$$
	Analyze the efficiency of the financial schemes offered by DBS and assess the opportunity to develop a **Partial Portfolio Guarantee** to replace part of these schemes. (Section 5.2, pg. 65) *Entity: MoFEPTI, DBS*	Short Term	Public $ marginal
	Invest in disaster risk finance instruments such as REPAIR and the CRDC, in line with the national DRF Strategy. (Section 5.4, pg. 70) *Entity: MoFEPTI,*	Short Term	Public $
	Revise insurance regulations to allow insurance companies to invest up to 5 percent of their assets in alternative investments. (Section 5.2, pg. 65) *Entity: FSA*	Short Term	N/A
	Study the feasibility of a PES scheme for coral reefs, the capacity to mobilize the private sector around this concept, and potential institutional setups. (Section 5.3, pg. 67) *Entity: MECENR, SEYCAT*	Medium Term	Public $ marginal
	Explore the creation of an **infrastructure asset-manager in the form of a PPP** to incentivize long-term financial sector actors investing in VRE and large adaptation projects. (Section 5.2, pg. 65) *Entity: MoFEPTI*	Medium Term	Public $ marginal. But could lead to Public ($) and Private capital ($$$)
10. Close the skills gap	**Reform the GOP** process to reduce the barriers to accessing foreign skilled labor to fill skills gaps. (Section 3.6, pg. 47) *Entity: Ministry of Employment and* Human Resource Planning	Short term	N/A

Foot note (<2 years), Medium term (2–4 years), Longer term (4+ years). $= <US$10 million; $$ = US$10–100 million; $$$ = >US$100 million.

Annex 1: Legal and Institutional Framework for Climate Change Governance

Seychelles' does not have a dedicated piece of climate change legislation but the country's commitment to climate action is evidenced in many national documents and plans, and climate considerations are gradually being integrated into legislation across diverse sectors. Seychelles' National Climate Change Policy, adopted by Cabinet in 2020, seeks to provide a framework for this ongoing and complex work integrating and connecting climate mitigation and adaptation actions across the legislation of diverse sectors. This annex provides supplementary information about climate related legislation and governance that reflects current progress.

Disaster Risk Management

The Disaster Risk Management Division (DRMD) is ramping up efforts to integrate climate risks into its programs and collaborate with key local partners. The DRMD Act makes only one specific reference to climate change—in reference to the education and awareness functions of the division. The act requires DRMD to develop and maintain a database on vulnerable areas and disaster-related information including climate change, accessible to stakeholders. The DRMD Act emphasizes that DRMD's work is to be carried out in collaboration with other departments and agencies, laying a solid foundation for collaboration with key partners on climate change adaptation. However, these partner agencies may not have the same commitment to collaborate and have often sidelined DRMD in much of the climate adaptation work done over the past two decades.

The DRMD is beginning to play a more active and prominent role in national climate adaptation efforts. Severe flooding events in recent years have put the DRMD at the center of Seychelles' response, raising its profile. Targeted outreach efforts to improve communication and collaboration with key partners such as the Climate Change Division, the Meteorological Authority, and the Red Cross, are also beginning to pay off and help the DRMD gain recognition as a key partner in climate adaptation. These efforts have laid excellent groundwork for a new US$2 million DRMD project announced in July 2025, funded by United Nations Development Programme (UNDP) and the China International Development Cooperation Agency. This new 12-month initiative which builds on the CREWS project will help the DRMD, working closely with key local partner agencies, to enhance climate resilience by strengthening disaster preparedness and response systems using digital technology and improving governance and community outreach.[139] It is also well aligned with Seychelles' 2021 NDC which calls for improved EWS to support climate adaptation and the NDS (2024–2029) vision of transforming the public service through digitalization.

Marine Spatial Planning

The MSP is now law and addresses the value of marine protection for climate adaptation. In March 2025 the Nature Reserves and Conservancy (Marine Spatial Plan) regulations were adopted into law. The purpose of the regulations is to protect a minimum of 30 percent of Seychelles' territorial waters through adherence to the MSP. The regulations establish three zones to regulate different uses to achieve that protection goal. Zone 1 is designated as high biodiversity protection zone and areas in this category collectively provide long-term protection of habitats and species to "ensure ecological resilience and climate change adaptation". Zone 2 is designated as a sustainable use zone with medium biodiversity protection, and Zone 3 is designated as a multiple use zone to support high value economic activities.

The MSP regulations were the culmination of a long, participatory and inclusive process involving input from interest groups across GoS, the private sector and civil society. The regulations were strategically developed to ensure synergy with other key pieces of legislation such as the Maritime Zones Act (1999), the Fisheries Act, the Environment Protection Act (2016) and EIA regulations (currently under review). The MSP regulations include penalties for offences, some of which may already be specified in the

[139] https://www.undp.org/mauritius-seychelles/news/seychelles-launches-new-project-strengthen-disaster-response-systems

parent Nature Reserves and Conservancy Act and would thus be subject to those fines or imprisonment guidelines.

Environmental and Social Impact Assessments

Climate change considerations have not yet been integrated into Seychelles' Environment Protection Act (2016) nor the Environmental Impact Assessment (EIA) Regulations which are currently under review. The EPA makes provision for the prevention and control of pollution and protection of biodiversity. It also outlines requirements for EIAs on certain types of developments. The EPA allows a minister to declare protected coastal zones and make regulations to ensure that activities in coastal areas do not cause damage to the environment. Seychelles is in the process of finalizing updated regulations for EIAs under the Environment Protection Act. EIA regulations could require consideration of climate risks for large high-risk sectors such as large tourism developments, energy infrastructure and aquaculture and demonstrate how such projects will adopt strategies for decarbonization and climate resilience that are aligned with Seychelles' national targets.

Climate Adaptation and Physical Planning

Seychelles is moving towards integration of climate adaptation and mitigation priorities in land use and urban planning. In 2021 the Physical Planning Act (PPA) replaced the Town and Country Planning Act of 1972 as the key legislation guiding development and construction in Seychelles. The new legislation does not mention climate change directly but makes provision for no development zones if needed for public safety or due to natural disaster risk. It also allows the government to refuse permission to develop land at risk of landslides or flooding. While not referring specifically to climate impacts, the PPA Development and Subdivision of Parcels Regulations (2023) prohibit coastal construction within 25 m of the high tide water mark on sandy shores, and protect natural water courses from obstruction, constriction or diversion (which could exacerbate flooding during extreme rainfall events that are becoming more common as a result of climate change).

The Physical Planning (Land Use and Development Plans) Regulations (2023) provide a solid foundation for the integration of climate risks into land use planning. The regulations provide guidance for the Planning Authority to develop land use plans (LUPs), including instructions to consult and consider all available hazard, risk and climate change data and information pertaining to the LUP region and demarcate any hazard risk areas. The regulations require a risk assessment and drainage strategy for proposed developments in a known hazard prone area. The PPA requires LUPs to be updated every five years to take into consideration new occurrences of natural disasters and reclassify lands as needed. There is an underlying assumption that this information is readily available to planners, however, the current GIS system in use does not currently include layers indicating hotspots for landslides, inland flooding, sea level rise or coastal erosion, or climate projections of future trends. The Planning Authority has plans to migrate its system over to the ArcGIS Enterprise model and at the same time incorporate climate risk layers to facilitate climate-informed planning. There is a need for capacity building to support Planning Authority staff as well as other key stakeholders (for example. developers and the Planning Authority Board).

The Physical Planning (Building) Regulations (2024) provide a solid foundation for climate mitigation and adaptation in the construction sector. This new legislation which has not yet come into force[140] constitutes Seychelles updated Code of Practice for building design and construction. The regulations cover materials, resistance to moisture, structural stability and so on, and includes provision for several climate mitigation and adaptation measures, including energy efficiency, passive solar design, solar water heating, rainwater harvesting, flood risk management, coastal and river setbacks, material efficiency, soil conservation and climate-informed building considerations which are well aligned with Seychelles climate commitments. Although some capacity building on climate-proof building design has been undertaken by the Planning Authority for staff and construction partners, ongoing training will be necessary to ensure that stakeholders understand and comply with the new regulations.[141]

[140] https://seylii.org/akn/sc/act/si/2024/43/eng@2024-05-29

[141] Seychelles NDC (2021) and National Climate Change Policy (2021) commit to capacity building to ensure that all stakeholders are able to adequately respond to climate change, including in the construction sector.

Annex 2: Economic Modeling

This CCDR conducted detailed modeling to analyze the potential impacts of climate change on Seychelles' economy, using climate scenarios to account for uncertainties in future climate projections (Box 1). As noted in Chapter 1, while there is consensus that average annual temperatures will rise in the country, projections of future precipitation vary significantly. To support the analysis in this CCDR, climate scenarios were selected to capture the broadest range of climate change effects across General Circulation Models (GCMs) within relevant SSP-RCP projections. As the two most likely global action scenarios, climate projections for SSP2-4.5 and SSP3-7.0 were considered, consistent with World Bank guidance. However, certain climate variables are only available as SSP ensemble-level statistics (for example peak daily precipitation or flood frequency), hence the selected SSPs correspond to the climate scenarios for the impact assessments that rely on such variables (that is., roads, bridges, flooding, and landslides). For other impacts reliant on monthly and daily timeseries, climate vulnerability was assessed by selecting a range of GCMs representing wet versus. dry and hot vs. warm conditions: five dry/hot scenarios, and five wet/warm scenarios were therefore used.

The damage of climate change to the economy is modeled through nine channels that affect output, productivity and physical assets. This exercise helps quantify how climate risks affect four main areas: i) Human health and development; (ii) agriculture, land use, and energy; iii) Infrastructure; and iv) Environment. **Table 8** outlines the nine channels.

Table 8: Summary of modeled climate impact channels.

CHANNEL OF IMPACT	DESCRIPTION
Human Health and Development	
Heat and labor productivity	**Labor productivity shocks**. Labor type-specific curves based on sectoral work intensities from temperature.
Human health and labor supply	**Labor supply shocks**. Damage to total labor productivity based on statistically modeled effects of temperature on the spread of disease, and the resulting losses in labor supply.
Tourism	**Tourism demand.** Temperature and other meteorological effects directly affect tourism demand from abroad. Based on the relationship between temperature and tourist arrivals from prior studies, and on effects of sea level rise and inland flooding.
Agriculture, Land Use, and Energy	
Rainfed Crop production	**Agricultural productivity shocks**. Based on crop yield responses to water availability from monthly temperature and precipitation. A range of adaptation options can be evaluated including irrigation, shifting crop mix, or improved crop varieties.
Erosion and land use impacts	**Agricultural productivity and capital shocks**. Uses the Revised Universal Soil Loss Equation (R-USLE) to evaluate effects of climate change and land use on erosivity. Outputs are translated to crop yield impacts and implications for inland flooding.
Infrastructure	
Inland flooding	**Capital damages**, considering floodplains, design flood events, and spatial distribution of capital. Precipitation events routed through the TR-20 model. Adaptation options considered include improved infrastructure design, or improved land use.
Sea level rise	**Capital damages**. Coastal flooding due to sea level rise. A reduced form approach using temperature and proxies (e.g., road density) to represent coastal capital.
Environment	
Fisheries	**Losses in fish production** from a rising sea level (coastal erosion and salinization, and consequent losses to tourism and food and water security); extreme rainfall and flooding, and rising sea temperature. This channel relies on a World Bank study and datasets of the effects of climate change on maximum catch potential for Seychelles. Only effects on fisheries captured in this analysis are captured in this channel.
Coral	**Coral bleaching from rising sea temperatures**. An increase in global temperatures of 2 degrees Celsius will be catastrophic to the existing corals which provide coastal protection and habitat for some fish stocks. The country's broader vision of sustainable development is heavily focused on environmental management of its ocean and coastal resources. The relationship between climate change, coral degradation, and economic impacts will be developed based on relationships in literature.

Shocks from impact channels are estimated using physical damage functions under different climate scenarios. A mix of global and domestic scenarios is considered in assessing the potential impacts of climate risks, with each scenario representing different climate futures and corresponding policy responses.

Two global scenarios are considered:

- **An optimistic global climate and policy scenario** that assumes high global effort and ambition towards decarbonization resulting in a global temperature increase consistent with the objective of the Paris Agreement that is, limiting global warming to 1.5 or 2°C by 2100. This optimistic scenario

is equivalent to the Network for Greening the Financial System (NGFS) Net Zero by 2050 scenario, in terms of the socioeconomic and technology conditions and the physical element of climate change (that is, SSP1-1.9).

- **A pessimistic global climate and policy scenario** that aligns with the NGFS Current Policies scenario. It assumes that global temperatures increase by more than 4°C by 2100, which is consistent with current policies continuing, technological advancements being slow and physical climate change being reflected with SSP3-7.0. It also assumes that climate change translates into rapid changes in the intensity and frequency of extreme events, such as flooding, heat extremes, and slow onset risk such as drought, affectingthe country's future economic growth path.

Annex 3: Carbon Market

Seychelles does not have any registered carbon offset projects under major international carbon market standards such as the Gold Standard, Verified Carbon Standard (Verra), Clean Development Mechanism (CDM), or REDD+ initiatives. This indicates that while Seychelles has made substantial progress in defining its climate policies, updating its NDCs, and developing sectoral strategies, it has yet to tap the international carbon market to achieve additional emission reductions.

As outlined in Section 5.3, there are three key issues when considering Seychelles' potential opportunity to sell blue carbon credits: (i) volumes (which are likely to be low); (ii) uncertain net benefits (due to volatile prices and high upfront costs); and (iii) the long lead time before revenues are generated (typically 5–7 years).

In terms of volumes, Seychelles has already committed to protect its vast seagrass meadows in Marine Protected Areas (MPAs) under its NDCs, leaving a limited volume of carbon sequestration to sell. Seagrass meadows store 98 percent of Seychelles' Blue Carbon Ecosystem (BCE) with 18.9 million tons of organic carbon stored,[142] and annual sequestration of an additional 510 $ktCO_2e$. As per its NDC, Seychelles has committed to place 50 percent of these areas in MPAs by 2025 and 100 percent by 2030. This leaves limited scope for additional carbon sequestration in these areas. BCEs developed outside of MPAs could generate 'excess' carbon credits for Seychelles to sell, but this would have important consequences on BCE integrity,[143] biodiversity, the blue economy, and tourism, which may exceed the potential revenues from carbon markets.

In terms of net benefits, prices are volatile, while the costs of accessing the market are substantial. Blue carbon markets are nascent, with relatively few examples globally.[144] As a result, their prices are much more volatile than forest conservation projects (REDD+). For example, during 2021-2022, blue carbon prices ranged from US$13–35 per ton, compared to US$8–10 for forest conservation projects (REDD+) (IFC, 2023).[145] These higher prices and volatility reflect the much higher risk profile of blue carbon projects, along with the higher implementation costs (i.e., establishing robust monitoring, reporting, and verification systems), technical and regulatory complexities, and longer lead time to establish the project before it starts to generate revenue. The implementation costs for Seychelles are likely to be especially high, given the complex verification processes, remote project locations, and large area covered by Seychelles' seagrass meadows.

In terms of lead time, international experience has shown that blue carbon projects generally take 5–7 years of investment and preparation before they generate revenue. For example, four mangrove restoration/conservation projects in Pakistan (the Delta Blue Carbon project), Colombia (the Vida Manglar Project and Cispatá Bay Project), and Kenya (the Mikoko Pamoja project) each took 5–7 years to go from project initiation to revenue generation by selling carbon credits. However, several technical, scientific, and regulatory challenges make seagrass projects more difficult to design, measure, and certify for carbon credits than mangroves projects. This suggests that Seychelles may need longer than 5–7 years to generate carbon credit revenues from a seagrass project, so sufficient planning time is needed to integrate carbon markets as a key component of its climate finance strategy.

For illustrative purposes only, this CCDR estimated the potential revenues that Seychelles could generate from selling blue carbon credits for its entire seagrass stock, which would require removing the seagrass meadows from the MPAs and Seychelles' NDCs. However, removing seagrass meadows from the MPAs would conflict with GoS' strong track record of responsible environmental stewardship. Such a move could be perceived as inconsistent with the environmental sustainability objectives of many investors, potentially reducing Seychelles' attractiveness of as an investment destination. Furthermore, excluding seagrass from the MPAs would require its removal from the national GHG

[142] Seagrass is a nationally important blue carbon ecosystem for Seychelles. It covers nearly 160,000 ha in area and stores 18.9 million tonnes organic carbon - equivalent to 69 million tonnes of C02. Managing and accounting for Blue Carbon can go some way to offsetting carbon emissions from other sources in Seychelles, while delivering additional benefits to local economies

[143] A lower integrity would also alter sequestration permanence, reducing the quality of carbon projects and ultimately result in lower credit value and/or demand for these credits and create reputational risks.

[144] As of January 2024, blue carbon projects accounted for only 0.2 percent of the total issuance in global Voluntary Carbon Markets). . Accessed on May 2, 2025. A. (2024). "How the VCM can turn the tide for blue carbon", BeZeroCarbon. Available at https://bezerocarbon.com/insights/how-the-vcm-can-turn-the-tide-for-blue-carbon?utm. Accessed on May 2, 2025.

[145] https://www.ifc.org/content/dam/ifc/doc/2023-delta/deep-blue-opportunities-for-blue-carbon-finance-in-coastal-ecosystems-optimized.pdf

inventory and NDC, thereby eliminating a key natural carbon sink. This would necessitate identifying and investing in alternative GHG mitigation measures to meet the country's NDC targets, which might require significant financial and technical resources.

- Selling on the Voluntary Carbon Markets (VCM). Depending on the project type (public/PPP/private), the GoS could receive up to 30 percent of the sales proceeds (after the 5 – 10 years establishment period which, as described above, would have significant costs). Assuming that received the maximum 30 percent of the carbon credit sale price, the GoS could access an average of US$ 1.5 million revenues per year (based on the average carbon credit price for 2022/2023).[1]

Selling via the Paris Agreement Article 6[1]*:* In effect, this involves one country selling carbon credits to another to meet its NDCs. Transactions related to Article 6.2 eligible projects currently trade at about US$32 per ton of emissions.[1] Therefore, a project covering the entire stock of seagrass could yield about US$17 million/year in gross revenue. Assuming a generous 50 percent profit margin, net revenues to GoS would be about US$8.5 million per year.

Considering the above, the banking sector, PES, the Seychelles Pension Fund, and insurance companies appear to offer more promising short term and stable long-term financing options to help close the immediate funding gap required to meet Seychelles' NDCs and broader climate-related financing needs. The current global blue carbon volatility can create additional risks—particularly regarding market instability and challenges in ensuring that carbon offset projects deliver real, measurable, and long-term benefits. The development of carbon markets must be balanced against several key considerations: (i) alignment with national priorities such as achieving NDC targets; (ii) the substantial investments and institutional capacity needed to establish a robust Measurement, Reporting, and Verification (MRV) system; (iii) uncertainty around the reliability of projected revenues due to market dynamics; and (iv) their potential to contribute to sustainable job creation. Thus, in the short term, the banking sector, PES, the Seychelles Pension Fund, and insurance companies appear more promising sources of financing to close Seychelles' climate funding gap. However, carbon credits in the energy sector could be considered to accelerate VRE uptake in projects where additionality (lack of project viability, for instance) is demonstrated.

Nonetheless, at the project level, mechanisms such as small grants and concessional loans managed by SeyCCAT—financed through Seychelles' innovative blue economy instruments—are key investments to advance 'beyond carbon benefits' via nature-based solutions and support community-level jobs and livelihoods. These initiatives are generating tangible local benefits in areas such as marine conservation, sustainable fisheries, and blue economy entrepreneurship. In the long term, as Seychelles strengthens its technical readiness and demonstrates the feasibility of such efforts, the country could be well-positioned to participate meaningfully in blue carbon markets.

Based on a readiness assessment of Seychelles capacity and readiness for engaging in carbon markets[146], GoS would need to increase its institutional capacity for core processes necessary for full carbon participation and attractiveness for carbon market engagement. These include the development of sectoral strategies for carbon market participation and challenges for the regulation of carbon markets (including safeguards mechanisms), appointment of a dedicated authority to oversee carbon markets engagements, allocation of dedicated financial and human resources, and clarity on interministerial capacity and coordination mechanisms to support cross-sectoral engagement and decision meeting. Continued awareness raising among sector ministries, the private sector, and civil society will also be important for fostering inclusive carbon market engagement.

[146] World Bank. Navigating Decisions on Carbon Markets (English). Washington, D.C.: World Bank Group.