



GIVRAPD

Global Islands' Vulnerability
Research Adaptation Policy
and Development



POLICY BRIEF

LESSONS FROM SEYCHELLES: ADDRESSING CLIMATE CHANGE VULNERABILITY THROUGH INTEGRATED COASTAL PLANNING AND MICRO-FINANCE

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POLICY HIGHLIGHTS

- 7 The low-lying and densely populated coastal settlements in Seychelles, especially in Mahé and La Digue, and the surrounding critical habitats are vulnerable to climate change hazards such as sea level rise, flooding, destruction of critical infrastructure, and loss of livelihoods.
- 7 The GIVRAPD project focused on three main areas for adaptation planning and coastal resilience including biophysical and vulnerability assessment, cross-sectoral and multi-stakeholder participatory planning, and the use of micro-insurance as an adaptation strategy.
- 7 Integrated management across coastal and marine sectors and joint planning with stakeholder groups are enabling conditions to build the adaptive capacity at the community level for local action.

COUNTRY PROFILE

Seychelles is a Small Island Developing State (SIDS) in the South West Indian Ocean in Africa. The country comprised of 115 granitic and coralline low-lying islands with a majority of the population concentrated on three islands namely Mahé, La Digue and Praslin (Fig 1). The islands are highly vulnerable to climate change due to their geographical location and high exposure to hazards including storms, flooding, landslides, and destruction of coastal property and livelihoods. Annual sea level rise is expected to increase according to scientific projections, a change that would challenge the recovery of Seychelles' coral reefs. It is also anticipated that the dry season will be drier whilst the wet season will be wetter, causing concerns over water shortage, food production, and loss of fishing and recreational tourism activities.



Figure1: Map of Seychelles showing learning sites on Mahe and La Digue

In recent decades, Seychelles has experienced extreme weather events and an increasing number of coastal hazards resulting in coral bleaching, flooding and damage to critical infrastructure and resource-based livelihoods. Tourism and fisheries are the main economic sectors that provide the majority of export earnings and livelihoods for coastal settlements. One of the world's major tuna fishing grounds is contained within Seychelles' nearly 1.4 million square kilometre exclusive economic zone. Given Seychelles' economic dependence on coastal resources, any future climatic changes that impact the country's biodiversity including coral reefs, fisheries and other coastal tourist attractions may significantly impact its development and the well-being of its citizens.

COASTAL VULNERABILITY ASSESSMENT AND ADAPTATION PLANNING

It has been shown that the adaptive capacity and resilience of coastal communities is highly linked to their availability and access to capital assets (human, financial, social, etc.) as well as physical space and proximity for local adaptation action. The physical space is instrumental for adaptation planning and options including the use of hard or soft measures, re-location and retreat, and coastal zone buffers.

A detailed coastal vulnerability assessment was undertaken in Seychelles by van Prosdij and Baker (2015) through site survey and geomorphic assessments, as well as GIS based flood tools using beach profiles and Emory methods. The learning sites consist of two central locations: La Digue and Anse Royle on Mahe. The research component addresses one of the central themes of the GIVRAPD project, i.e., to assess current and future exposure-sensitivities and adaptive strategies in low-lying coastal settlements. The findings have ramifications for urban clusters especially in regard to sustaining eco-tourism, protecting critical coastal infrastructure and maintaining natural processes such as accretion and beach nourishment. For example, on La Digue, most of the 'foreshore' is classified as beach (predominantly sand). Some aspects of this region are already vulnerable and are showing evidence of erosion whilst the rock revetments or breakwaters are failing to protect critical infrastructure and settlements (Fig 2).



Figure2: Vulnerable coastal infrastructure and rock armouring interventions (Photo credit: van Prosdij and Baker, 2015)

Based on the sea level rise flood model, most of the buildings in La Digue will be permanently inundated along with key transportation and communication infrastructure. The presence of limestone reefs somehow protects the southern tip of La Digue from erosion and wave action. Similarly, on Mahe, most of the shoreline is classified as low gradient sand beach of which the majority is partially stabilized and a small section is actively eroding. The eastern beaches of Petite and Grande Anse will also be significantly impacted as deeper waters will allow high wave action and increase the rates of erosion and flooding. This means the surrounding coral reefs that act as a buffer and protect shoreline through sediment transfer should be protected. In some other regions such as Anse Caiman, hard engineering infrastructure has resulted to backshore erosion. These key findings have implications for conserving critical habitats, developing buffer zones and nature reserves, integrating land use and marine spatial plans, and limiting human activities along these critical coastal regions.

Multiple adaptation interventions are therefore recommended. This includes beach reclamation and the use of soft measures such as wetland restoration and mangrove planting, re-location to accommodate natural processes such as storm water, and community engagement towards mitigative strategies and ecological stewardship.

PARTICIPATORY PLANNING OF ADAPTATION STRATEGIES

Climate change adaptation is a cross cutting issue that requires innovative governance arrangements and partnership models that can address issues of cross-scale linkages as well as sectoral silos. As part of the GIVRAPD focal area, a participatory workshop was organised to assess potential barriers and disconnects between national adaptation policies and local implementation as well as building a common platform for collective action towards national adaptation governance. The workshop included representatives of both local organisations and national organisations, covering the three resource sectors identified as most vulnerable to climate change: agriculture, fisheries, and tourism. The workshop involved various activities with the goal of bringing diverse sectoral participants together. These activities included: i) identifying existing stakeholders involved in adaptation planning and implementation; ii) assessing linkages and relationships between the various stakeholders; iii) discussing and agreeing on critical barriers related to the implementation of adaptation measures; iv) identifying strategies and actions that contribute to 'adaptation good practice action'; and v) mapping relational ties, level of influence, and social networks amongst actors and partners.

These undertakings were geared toward gaining insight into the quality and quantity of information flow, policy advice, funding streams, and lines of command and authority for institutional change.

Workshop participants identified key actors and agencies responsible for national adaptation planning in the various sectors as well as the role of NGOs and international organizations as bridging organizations in providing funding and knowledge mobilization tools (see Brief 4 and GIVRAPD Working Paper on Seychelles). Most of the barriers identified can be easily addressed using existing resources and capabilities. For example, the lack of evidence or data to assess local climate change vulnerabilities could be dealt with by establishing or reinforcing national research units and adaptation taskforces to coordinate scientific monitoring activities as well as citizen science to mobilize knowledge. However, some of the barriers identified were more deeply-rooted into historical practices (e.g. development planning needs, sectoral approaches) and will therefore require more time and institutional changes to address these. Some of the adaptation good practices include face to face engagement, cross-sectoral partnerships, community engagement, and adequate funding.

MICRO-INSURANCE AS ADAPTATION STRATEGIES

Increasing loss and damage from climate change impacts and weather related disasters is having a toll on coastal economic sectors and the livelihoods of resource dependent communities. Seychelles has been experiencing weather related disasters such as drought and flooding that affects agricultural activities, tourism, fishing, and service sectors. The recent Post-Flood Damage, Loss and Needs Assessment highlights the financial cost of addressing climate hazards and points to alternate sources of funding allocation to complement government interventions. The 2004 Indian Ocean tsunami resulted in losses of about USD \$30 million whilst the 2013 January hurricane resulted in USD \$10million in damages. Although insurance is a common approach in Seychelles for individuals to mitigate risk towards health and well-being, accidents, and property damages (homes and automobiles), it has not received a lot of attention as an adaptation strategy towards risks in the coastal resource sectors. How local communities cope will depend on the type of disaster, response options and the institutional context.

It is within this context that GIVRAPD undertook field research through demand surveys to understand stakeholder needs in relation to challenges and opportunities for micro-insurance options for small and medium communities to cope with climate uncertainties.

Micro-finance is important as a risk-sharing scheme whereby community members pay premiums into a common insurance program to address various types of risks and compensate against losses. As part of the research, various community attributes were studied including risk profiles and stressor levels, livelihoods, income and expenditure, savings and assets, kinships and the level of social capital during disasters. Comparative assessments across the two SIDS regions indicate that Seychelles and Mauritius rely on personal savings in banks as well as assets and property to deal with disaster relief. About one third of the sample population were assessed to be at risks, of which natural resource sectors (agriculture, fisheries, and tourism) and retail-related activities are the most vulnerable. Depending on the level of stressor, coping strategies and policy interventions can range from formal bank withdrawal, to borrowing through social networks and kinship ties, to selling assets, and external assistants through remittances (Fig 3).

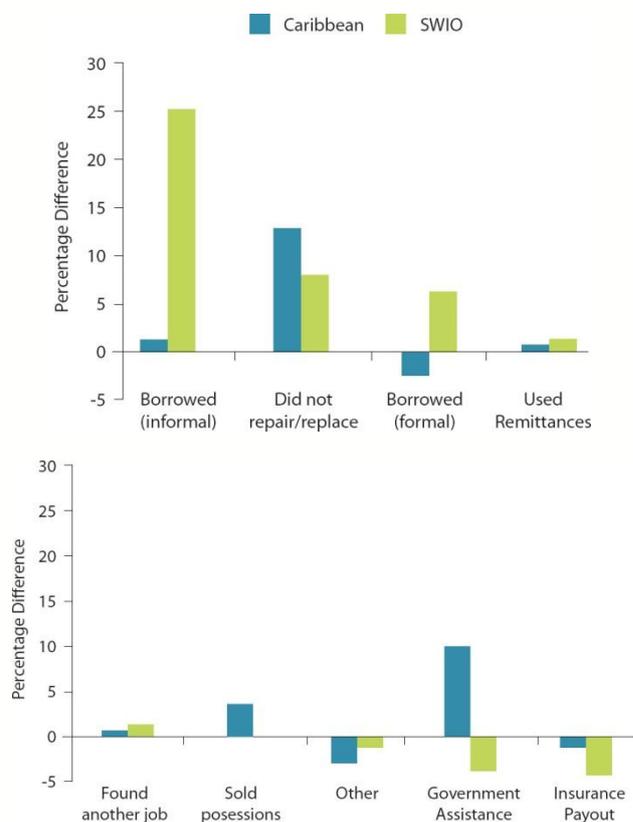


Fig 3: Coping mechanisms and interventions as percentage of respondents

These findings have implications for future adaptation planning as the frequency of extreme events will affect both short and long term coping behaviour. The opportunities for micro-insurance hence present itself to deal with these climate risks through legal and institutional mechanisms that facilitate participation from community members, client education on benefits and repayment conditions, and public private partnerships with financial institutions.

FOR FURTHER READING

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Figure 4: Beach erosion, La Digue, Seychelles

ABOUT THIS BRIEF

This policy brief is a product of research undertaken by the GIVRAPD project, a two year interdisciplinary research project funded by the Climate & Development Knowledge Network (CDKN) in collaboration with government agencies, community stakeholders and universities. The participating universities include University of Cape Town, University of Waterloo, University of Mauritius and University of Oxford. The project was led by INTASAVE/CARIBSAVE in partnership with the African Climate and Development Initiative (ACDI), Global Climate Adaptation Partnerships, in addition to the Governments of Saint Lucia, Jamaica, Mauritius and Seychelles. The project seeks to understand the multi-scale socio-economic, governance and environmental conditions that shape vulnerability and capacity to adapt to climate change in four learning sites. Brief 5 focuses on the rationale, development, and implementation of micro-insurance schemes as climate change adaptation strategies in SIDS.

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