

DISASTER RISK FINANCE IN BELIZE

Progress and Perspectives



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Progress and Perspectives

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CONTENTS

	Acknowledgments	v
	Abbreviations and Acronyms	vi
	Glossary	vii
	EXECUTIVE SUMMARY	viii
CHAPTER 1	Introduction	1
	Collaborative Framework	1
	Theoretical Framework of DRF	2
	The Case for a DRF Strategy in Belize	4
CHAPTER 2	Disaster Risk Assessment	7
	Probabilistic Disaster Losses	7
	Fiscal Contingent Liabilities Linked to Disasters	8
CHAPTER 3	Financial Management of Disaster Risk	11
	Legal and Policy Framework	11
	Budgetary Response Framework	12
CHAPTER 4	Review of the Catastrophe Risk Insurance Market in Belize	15
	Market Overview	15
	Legislation: New Insurance Act	17
	Natural Catastrophe Insurance	18
CHAPTER 5	Financing Gap and Value-for-Money Analysis	21
	Contingent Liabilities Due to Natural Disasters	21
	Belize's DRF Instruments	22
	Financing Gap Analysis	25
	Cost-Effectiveness of Alternative Risk Layering Options	26
	Key Messages	27
CHAPTER 6	Recommendations	29
	Discussion	29

ANNEXES

Annex 1. AIR Worldwide Results	34
Annex 2. Risk Layering of DRF Strategies	36
Annex 3. VfM Economic Assumptions	38

FIGURES

Figure 1. Risk Layering Approach for DRF	3
Figure 2. Temporal Dimension of Post-Disaster Financing Needs	3
Figure 3. Range of Estimates of Government Contingent Liabilities from Tropical Cyclones (USD millions)	10
Figure 4. Yearly NEMO Expenditures by Category	12
Figure 5. DRM Expenditures since 2009	14
Figure 6. GPI Growth, GDP Growth, and Inflation	16
Figure 7. Non-Life Insurance Penetration	16
Figure 8. Market Share of GPI by Class of Insurance Business (entire industry, 2023)	17
Figure 9. Total Damages from Hurricane Lisa (2022) by Insurance Status	18
Figure 10. World Bank Crisis and DRF VfM Process	22
Figure 11. Tropical Storm Risk Profile	23
Figure 12. Diagram of the Current DRF Strategy for Tropical Storm Risk	26
Figure 13. VfM Analysis of Alternative DRF Strategies	27
Figure A1. Tropical Storm Risk Profile Based on AIR Worldwide Model	34
Figure A2. Tropical Storm Risk Profile: Comparison of CCRIF SPC and AIR Worldwide Models	35

TABLES

Table 1. Natural Disasters Affecting Belize 2016–2022	4
Table 2. National Modeled Loss from Natural Disasters	8
Table 3. Government Contingent Liabilities from Natural Disasters	9
Table 4. Hurricane Lisa Rehabilitation Expenditures by Ministry and Program	13
Table 5. Premiums Ceded against Gross Written Premiums, by Major Class 2016–2020	20
Table 6. GoB Contingent Liabilities Due to Tropical Cyclone	22
Table 7. CCRIF SPC Claims 2016–2023	25
Table 8. Proposed Recommendations for DRF in Belize	30
Table A1. GoB Contingent Liabilities Due to Tropical Cyclone	35

ACKNOWLEDGMENTS

This document was produced under the Inter-American Development Bank (IDB) and World Bank Memorandum of Understanding by a team led by Jared Phillip Mercadante (Senior Disaster Risk Management Specialist, World Bank) and Hongrui Zhang (Senior Financial Sector Specialist, IDB). The team includes Stefan Leeffers (Disaster Risk Finance Consultant, World Bank), Raquel Letelier (Senior Financial Sector Specialist, World Bank), John Plevin (Senior Financial Sector Specialist, World Bank), Dario Bacchini (Actuarial Consultant, World Bank), Juan José Durante (Principal Financial Markets Specialist, IDB), Celeste Izquierdo (Senior Disaster Risk Finance Consultant, IDB), Andrea Terán Barrientos (Senior Disaster Risk Finance Consultant, IDB), Annabella Gaggero (Senior Operations Associate, IDB), and José Ángel Villalobos (Senior Disaster Risk Finance Consultant, IDB).

The team is grateful for the guidance and support of Karla González (current Country Representative, IDB), Rocío Bolívar (former Country Representative, IDB), and Federico E. Baechli (Senior Country Officer, World Bank) at various stages of the IDB–World Bank Memorandum of Understanding implementation as well as the generous support of the staff of the IDB Country Office in Belize. The team also benefited from the support of Marcela Silva (Regional Director of Infrastructure, World Bank), Federica Ranghieri (Practice Manager, Urban Development, Resilience and Land, Latin America and the Caribbean, World Bank), Anderson Caputo Silva (Division Chief, Connectivity, Markets, and Finance Division, IDB), and Laura Rojas (Unit Chief, Disaster Risk Management Unit, IDB). The strategic orientation was guided by Ana María Ibáñez (Vice President for Sectors and Knowledge, IDB), Susana Cordeiro Guerra (current Vice President for Latin America and the Caribbean, World Bank), Carlos Felipe Jaramillo (former Vice President for Latin America and the Caribbean, World Bank), Ayat Soliman (Director for Strategy and Operations, Latin America and the Caribbean, World Bank), and Emilio Pineda Ayerbe (Manager, Institutions for Development Sector, IDB).

The report greatly benefited from data and information provided by the Ministry of Finance (MoF); Ministry of Economic Development; Office of the Budget; National Emergency Management Organization (NEMO); Central Bank; Office of the Supervisor of Insurance and Pensions (OSIPP); Ministry of Agriculture, Food Security, and Enterprise; and Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC).

ABBREVIATIONS AND ACRONYMS

AAL	average annual loss
Cat DDO	Catastrophe Deferred Drawdown Option
CCF	Contingent Credit Facility for Natural Disaster and Public Health Emergencies
CCRIF SPC	Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company
CDRP	country disaster risk profile
CoA	chart of accounts
CRDC	climate-resilient debt clause
DRF	disaster risk finance
DRM	disaster risk management
GDP	gross domestic product
GoB	Government of Belize
GPI	gross premium income
IDA	International Development Association
IDB	Inter-American Development Bank
IMF	International Monetary Fund
IPCC	Intergovernmental Panel on Climate Change
MDB	multilateral development bank
MoF	Ministry of Finance
NEMO	National Emergency Management Organization
OSIPP	Office of the Supervisor of Insurance and Private Pensions
VfM	value-for-money

GLOSSARY

Average annual loss The expected annual loss, averaged over a long period, due to natural disasters.

Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company A regional mutual insurance facility that provides member countries with parametric insurance against natural disasters.

Contingent Emergency Response Component A component of a loan or credit that allows for rapid reallocation of project funds in the event of an emergency.

Contingent liabilities Obligations that may or may not come due, depending on the realization of events.

Explicit contingent liabilities Specific obligations, created by law or contract, that governments must settle.

Implicit contingent liabilities Moral obligations or burdens that, although not legally binding, are likely to be borne by governments because of public expectations or political pressures.

Chart of accounts A structured list of accounts used to define each class of items for which money is spent or received.

Direct damage Total or partial destruction of physical assets existing in the affected area. Note: Damage occurs during and immediately after the disaster and is usually measured in the replacement value of assets.

Disaster risk finance Financial strategies to ensure that adequate funds are available for disaster response and recovery.

Disaster risk management The application of strategies to prevent new disaster risks, reduce existing disaster risks, and manage residual risks, contributing to the reduction of disaster losses and the strengthening of resilience.

Fiscal risk The volatility in fiscal variables from what was expected at the time of a budget or other forecast. Fiscal risks include macroeconomic shocks and contingent liabilities.

Gross premium income The total premium income received by an insurance company before deductions for reinsurance, commissions, or other expenses.

Parametric insurance Payout is made based on the occurrence of an event, not the magnitude of the resulting loss. Trigger mechanisms must be devised to determine whether such an event has occurred and if payment under a parametric insurance contract is required. Triggers may be based on weather recordings or a formula, index, or model as a proxy for the actual event.

Probable maximum loss The maximum expected loss that could result from a disaster event, given a certain annual probability of exceedance.

Public-private partnership A cooperative arrangement between public and private sectors for the provision of public assets or services.

EXECUTIVE SUMMARY

This work is part of a joint effort between the Inter-American Development Bank (IDB) and the World Bank to strengthen the Caribbean's resilience to disasters.

Launched in August 2023, the first flagship activity under this collaborative framework focuses on disaster risk finance (DRF) strategies that help reduce financial vulnerability to climate-related shocks. While this effort concentrates exclusively on the financial protection pillar of disaster risk management (DRM), underscoring its importance, both institutions recognize and promote the need for integrated risk management approaches.

This report provides a clear road map for Belize to further improve the country's financial and fiscal management of climate and disaster risks, thereby increasing the resilience of its population, economy, and public finances to natural disasters and climate extremes. To achieve this, the report evaluates Belize's systematic efforts in advancing DRF, reflecting on the progress made since the last assessment.¹ It also discusses the key issues hindering further advancements and outlines recommendations for a comprehensive DRF strategy while suggesting potential prioritized activities for implementation in the short to medium term.

As a starting point, the report acknowledges the significant progress made by the Government of Belize (GoB) in strengthening the country's financial resilience to natural disasters and climate shocks. Key achievements include the adoption of DRF instruments, the development of a public asset inventory, and the introduction of the New Insurance Act of 2023. However, challenges remain in reinforcing budgetary planning for disaster-related expenditures, enhancing the tracking and reporting of disaster response expenditures, and establishing more contingent financing arrangements. Therefore, this report outlines updated recommendations for

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a comprehensive DRF strategy with new insights and data.

Belize's vulnerability to natural disasters (such as hurricanes, tropical storms, droughts, and floods) and public health crises (epidemics and pandemics) necessitates a robust DRF strategy and implementation plan. Updated estimates of potential national losses from tropical cyclones and earthquakes indicate increased financial vulnerability for Belize. The average annual loss (AAL) from tropical cyclones, based on the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC) model, is estimated at USD 27.2 million, with a 1 percent chance (1-in-100) that those losses could exceed USD 672 million (22 percent of 2023 nominal gross domestic product [GDP]).

Government contingent liabilities from tropical cyclones, Belize's primary hazard, are substantial, posing a significant threat to fiscal sustainability and resilient economic growth. Based on the CCRIF SPC model, the average annual contingent liabilities for the government are estimated at USD 6.8 million. For a 1 percent chance (1-in-100) event, government contingent liabilities could exceed USD 168 million.

¹ World Bank Group. 2018. Advancing Disaster Risk Finance in Belize. <http://hdl.handle.net/10986/33088>.

Belize has enhanced its legal and policy frameworks for disaster preparedness and response. The Disaster Preparedness and Response Act and the Finance and Audit (Reform) Act have been key legislative pillars, with recent amendments strengthening their effectiveness. Despite these improvements, there remains a need to clarify financial responsibilities within the Ministry of Finance (MoF) regarding disaster response funding.

The budgetary response framework includes pre-disaster planning and allocation, emergency financial procedures, expenditure tracking and reporting, and post-disaster financial management. Establishing a contingency fund, pre-allocating budgetary provisions, and employing a risk-layered approach to DRF are fundamental steps. However, the tracking and reporting of disaster-related expenditures need further refinement to ensure transparency and accountability.

Belize's insurance market, though small, has seen significant growth. The non-life insurance market recorded a gross premium income (GPI) of USD 83.66 million in 2023. However, compared to other Small Island Developing States in Latin America and the Caribbean, the market continues to face underinsurance issues regarding insurance penetration, particularly in non-life insurance products related to catastrophe risk.

Belize has shown progress in implementing disaster risk retention and transfer

instruments. The country has ex ante financial coverage through the IDB's Contingent Credit Facility (CCF) for Natural Disasters and Public Health Emergencies, approved in 2019 to make USD 10 million available for emergencies caused by floods and hurricanes.² Belize's participation in the CCRIF SPC provides crucial financial protection, with annual premium payments ensuring quick access to funds during disasters.

This report includes a financing gap and value-for-money (VfM) analysis that identifies different cost-effective combinations of DRF instruments and areas for improvement. First, contingent credit provides a substantial potential value for Belize's money and is most effective for moderate-severity events. Second, the GoB relies heavily on budget reallocation, which could lead to high opportunity costs and may not always be available depending on the timing of a disaster. Third, the financing gap and VfM analysis is not a one-off exercise, so the GoB should continue this endeavor, supported by development partners.

Finally, this report underscores the need for continued efforts to strengthen Belize's DRF strategy and implementation. Enhancing financial resilience and ensuring effective disaster response and recovery are crucial for the country's long-term sustainability and economic stability.

² In August 2025, the IDB approved an expansion of the CCF contingent loan to USD 25 million and broadened its coverage to include earthquakes, wildfires, epidemics, and pandemics.



CHAPTER 1

INTRODUCTION

Collaborative Framework

The Caribbean region, including Belize, is disproportionately vulnerable to the devastating impacts of climate change and natural disasters. Rising global temperatures are expected to intensify the frequency, severity, and duration of extreme weather events like hurricanes, posing a significant threat to the region's stability. Hurricane Earl's devastating landfall in Belize in 2016, resulting in USD 184 million in losses (approximately 8 percent of the country's gross domestic product [GDP]), was a stark and costly reminder of the nation's vulnerability to natural disasters. Effective financial management of these risks is a key public policy challenge for any government,

particularly for those with limited fiscal space to manage the economic and financial impacts of disasters.

In light of this, the Inter-American Development Bank (IDB) and the World Bank signed a memorandum of understanding in August 2023 to collaborate on strengthening the Caribbean's resilience to disasters. Both the IDB and the World Bank provide crucial support to vulnerable countries in building resilience to natural disasters and climate-related shocks, ensuring that hard-won social progress is protected and long-term development programs remain on track despite the challenges posed by climate change. Driven by this shared commitment, on August 31, 2023,

the IDB Group and the World Bank embarked on a historic collaborative effort by signing a memorandum of understanding to strengthen the Caribbean's resilience to disasters, leveraging each party's expertise to develop robust risk financing strategies. By working together and leveraging their comparative advantages, the IDB and the World Bank seek to promote disaster risk finance (DRF) strategies for the public sector at the national level, advance the implementation of innovative risk financing instruments, and encourage private sector participation.

This report, conducted under this IDB-World Bank collaborative framework, is part of the first flagship activity proposed, which focuses on DRF strategies. To promote better financial risk management of contingent liabilities and long-term fiscal planning in the face of natural disasters and climate change in the Caribbean, the World Bank and IDB aim to carry out a joint comprehensive analysis of risk financing needs for each Caribbean country. Based on the joint analyses, the two institutions support developing national DRF strategies to manage the impacts of natural hazards. These strategies determine the coverage needs through different risk retention and transfer instruments, such as contingent loans, catastrophe bonds, and insurance.

The second flagship activity supports countries' implementation programs on disaster risk finance and insurance and will be based on the conclusions and recommendations of the first flagship activity. The World Bank and IDB will support the implementation of these comprehensive DRF strategies by providing coordinated technical assistance and the optimal cost-efficient combination of financial instruments. Both institutions have been working together to strengthen the offering of contingent financing instruments such as the IDB Contingent Credit Facility (CCF) for Natural Disaster Emergencies and the World Bank Catastrophe Deferred Drawdown Option (Cat DDO). Additionally, they will support

countries to transfer disaster risks to the markets via insurance products and instruments like catastrophe bonds.

Theoretical Framework of DRF

DRF is a crucial component of a broader comprehensive disaster risk management (DRM) framework. To address the potential impacts of disasters on public and private infrastructure, economic activity, livelihoods, and public finances, countries must develop comprehensive strategies encompassing all stages of disaster management: preparedness, response, and recovery. While this report and the collaborative IDB-World Bank effort focus on DRF, these institutions actively promote improvements in other areas of DRM, which are essential to reducing vulnerability and mitigating the potential impact of disasters. To this end, they are also supporting several initiatives under the following DRM strategic pillars: (i) DRM governance, (ii) risk identification, (iii) risk reduction, (iv) emergency preparedness and response, and (v) financial protection and risk transfer.

The primary objective of a DRF strategy is to reduce the economic and fiscal impact caused by disasters, based on the concept of cost-effectiveness, which involves developing instruments differentiated according to the different types of risks identified (Figure 1). A DRF strategy combines instruments for the retention and transfer of risk and administrative and legal mechanisms to increase the capacity to respond effectively, reduce the associated financial burden, and, ultimately, ensure the sustainability of public finances. Such a broader program to finance and transfer disaster risks assumes the existence of budgetary and financial constraints, meaning that no single instrument can effectively cover all levels of risk by itself. Various instruments must be used that can be adapted to cover specific layers of risk, depending on the probability of

occurrence and the magnitude of the expected impact.³ From a macroeconomic point of view, the various instruments forming the strategy play the role of automatic stabilizers and help manage budgetary volatility caused by disasters. These tools include the ex ante instruments established by the Government of Belize (GoB) before a disaster and the ex post measures implemented after a disaster.

The temporal dimension is another key factor in developing a cost-effective DRF strategy. When a country estimates its disaster

response financing needs, it does not necessarily mean that all recovery funds will be used immediately after an event (Figure 2). Immediate resources are necessary to carry out emergency operations. Ensuring that these resources are available and that operations can be carried out quickly is crucial to stabilizing the human, social, or economic impact of a disaster. However, it is only after a few months, and sometimes even a few years, that financial needs will peak to address reconstruction efforts.

Figure 1.
Risk Layering Approach for DRF

Source: IDB/World Bank.

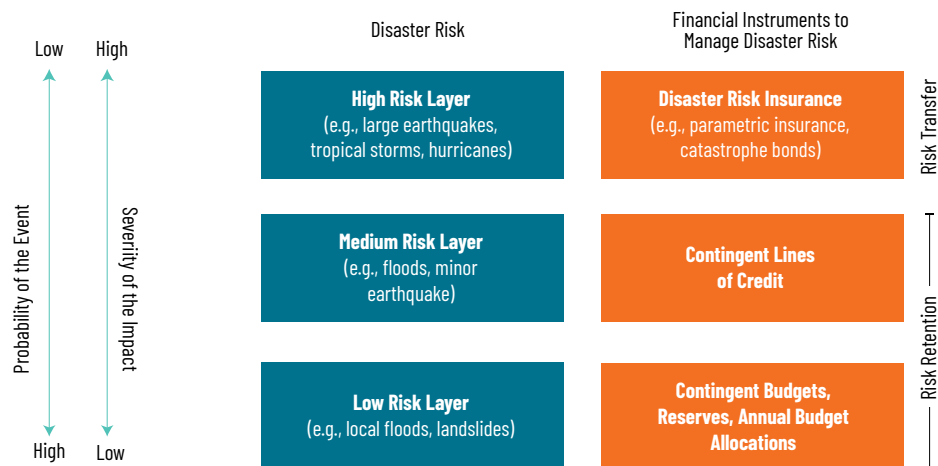
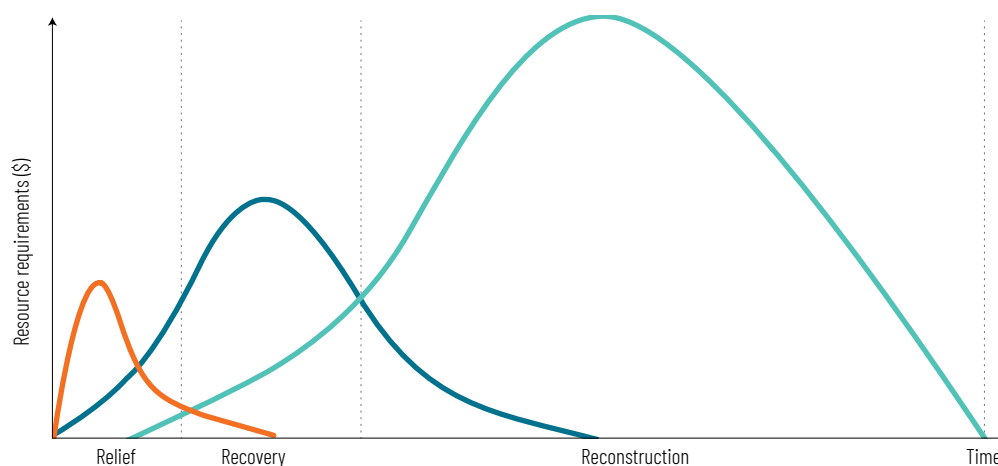


Figure 2.
Temporal Dimension of Post-Disaster Financing Needs

Source: IDB/World Bank.



³ IDB. 2010. Natural Disasters Financial Risk Management: Technical and Policy Underpinnings for the Use of Disaster-Linked Financial Instruments in Latin America and the Caribbean. Technical Note. IDB-TN-175.

To effectively develop a DRF strategy, key factors such as the definition and quantification of explicit and implicit contingent liabilities, along with institutional, legal, and administrative aspects, must be considered.⁴ As explained above, the DRF strategy should deploy appropriate financial instruments tailored to varying risk levels, and timing is crucial to ensure that immediate and long-term needs are met. However, clear legal frameworks and efficient administrative processes are essential for timely fund allocation and utilization. Funds and financing mechanisms must be implemented, and payments must be made at the required times. In many cases, efforts to secure funds quickly after a disaster are hampered by the multiple administrative steps needed for the responsible institution to appropriate resources and execute operations. Although often overlooked, this legal and administrative dimension needs to be addressed with particular attention to ensure the risk financing strategy is effective.

The Case for a DRF Strategy in Belize

Belize has faced various disasters over the past 15 years, significantly affecting its economy and underscoring the need for a robust DRF strategy. Disasters such as hurricanes, tropical storms, earthquakes, droughts, floods, landslides, and public health emergencies (for example, epidemics and pandemics) frequently affect the country. According to the Climate Risk Index for 1997–2016, Belize ranks within the top 5 percent globally for economic losses and within the top 12 percent for fatalities due to climate-related disasters.⁵ Since 2016, Belize has encountered a prolonged drought in 2019, the COVID-19 pandemic, which contracted GDP by 13.4 percent in 2020, Hurricane Nana in 2020, and Hurricane Lisa in 2022. These events caused extensive damage to agriculture, infrastructure, and livelihoods (Table 1).

Table 1.
Natural Disasters Affecting Belize
2016–2022

Notes:

a. Total economic impact across the social, productive, infrastructure, environmental, fisheries, and forest sectors, calculated as total estimated damages.

b. Estimated crop losses.

c. Estimated damage for all hurricanes and tropical storms in 2020 (GoB, Economic Update, March 2021).

d. Besides the combined physical damage of USD 66 million, the economic losses were estimated at USD 31 million. The total damage estimated by the National Meteorological Service of Belize is USD 100 million.¹²

Event	Year	Description	Direct Damage (USD millions)
Hurricane Earl ⁶	2016	A Category 2 hurricane that caused significant damage, particularly to infrastructure and housing in Belize City and surrounding areas	94 ^a
Prolonged Drought ⁷	2019	A prolonged drought that affected agriculture, livestock, and water resources, leading to economic losses in the agricultural sector	25 ^b
COVID-19 Pandemic	2020	The pandemic led to severe economic contraction, particularly in the tourism sector, along with health system strains and widespread social disruptions	—
Tropical Storm Amanda/Cristobal ⁸	2020	Tropical storms that affected Belize with heavy rains and flooding	50 ^c
Hurricane Nana ⁹	2020	A Category 1 hurricane that caused flooding and agricultural damage in southern Belize	
Hurricane Lisa ¹⁰	2022	A Category 1 hurricane that caused significant damage, especially in Belize City and the northern districts, affecting infrastructure and housing	66 ^d
Tropical Storm Julia ¹¹	2022	A tropical storm that affected Belize with heavy rains and flooding, particularly in 30 communities in southern and central Belize	—

⁴ Ghesquiere, Francis, and Olivier Mahul. 2010. Financial Protection of the State against Natural Disasters: A Primer (English). Policy Research Working Paper No. WPS 5429. <http://documents.worldbank.org/curated/en/227011468175734792/Financial-protection-of-the-state-against-natural-disasters-a-primer>.

⁵ IMF. 2018. IMF Country Report No. 18/329, Belize Climate Change Policy Assessment. November.

⁶ NEMO. 2016. Damage Assessment and Needs Analysis, Hurricane Earl.

⁷ GoB. 2021. Economic Update. March.

⁸ National Hurricane Center Tropical Cyclone Reports for Tropical Storm [Amanda](#) and [Cristobal](#).

⁹ GoB. 2021. Economic Update. March.

¹⁰ GoB. 2023. Post Disaster Needs Assessment: Floods Due to Hurricane Lisa in Belize.

¹¹ IFRC. 2022. DREF Application. Belize Tropical Storm Lisa 2022.

¹² National Hurricane Center. 2023. National Hurricane Center Tropical Cyclone Report: Hurricane Lisa.

The financial toll of natural disasters in Belize from 2016 to 2022 has been substantial, averaging USD 34 million annually (Table 1), particularly in the agricultural sector. The direct losses from these events totaled USD 235 million, with category 1 hurricanes, tropical storms, and droughts contributing significantly to these damages. Natural disasters have considerably affected agriculture, housing, and tourism, which are key contributors to the country's GDP.

The Belizean economy is heavily reliant on tourism and agriculture. Agriculture and fisheries account for approximately 9 percent of GDP (2024)¹³ and represent over 80 percent of merchandise exports, concentrated in sugar, bananas, citrus, and marine products. The sector employs approximately 11 percent of the labor force (2025).¹⁴ Tourism is the other major economic driver, contributing approximately 40 percent of GDP when direct, indirect, and induced effects are included, and employing about one in four Belizeans (2024).¹⁵ The cays and coastal regions, major tourism hubs, are particularly susceptible to damage from tropical storms and hurricanes.

The Intergovernmental Panel on Climate Change (IPCC) is highly confident that climate change will exacerbate environmental challenges, including rising sea levels and more frequent, intense tropical storms.¹⁶ Small Island Developing States like Belize are especially vulnerable to rising sea levels, extreme weather events, and resource scarcity. Climate change is also expected to worsen environmental challenges such as soil erosion

and land degradation due to heavy rains, particularly in agriculturally marginal lands with steep slopes. Projections indicate a temperature rise of 1.3°C by the 2030s, 1.8°C by 2050, and 2.1°C by 2070, alongside a decrease in rainfall ranging from 7 percent in the Northern zone to 10 percent in the Southern zone, where many of the poorest farmers reside.¹⁷ These climatic shifts will likely prolong drought periods and increase the number of hot days, exacerbating the vulnerability of Belize's agricultural landscape.

While fiscal space has improved significantly since the COVID-19 pandemic, it remains limited. Recent fiscal efforts, combined with pioneering the Blue Bond, a debt-for-nature swap based on Belize's exceptional natural endowments, including the world's second-largest barrier reef, have enabled fiscal consolidation and debt reduction, bringing the debt-to-GDP ratio from 103 percent in 2020 to 63 percent in 2025.¹⁸ This consolidation was underpinned by strong post-pandemic growth: between 2021 and 2024, GDP grew at an average annual rate of 8.1 percent. Nevertheless, fiscal pressures persist and this outlook remains vulnerable to shocks, as the economy is projected to return to its pre-pandemic average growth rate of approximately 2 percent, with 1.5 percent expected in 2025.¹⁹

This report contains the main findings and recommendations of the technical work carried out under the IDB-World Bank collaborative effort. The work is presented in five chapters, starting with this introductory section as Chapter 1. Chapter 2 provides a preliminary

¹³ Statistical Institute of Belize (SIB). 2024. Preliminary GDP, Fourth Quarter 2024.

¹⁴ Statistical Institute of Belize (SIB). 2024. Merchandise Trade Statistics 2024.

¹⁵ Ministry of Tourism and Diaspora Relations (MTDR). 2024. Annual Technical Report, Fiscal Year 2023–2024.

¹⁶ Pörtner, H.-O., D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, and B. Rama, eds. 2022. *Climate Change 2022: Impacts, Adaptation and Vulnerability: Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. IPCC. Cambridge University Press. <https://doi.org/10.1017/9781009325844>.

¹⁷ CIAT (International Center for Tropical Agriculture) and World Bank. 2018. *Climate-Smart Agriculture in Belize. CSA Country Profiles for Latin America and the Caribbean Series*.

¹⁸ IDB and IDB Invest. 2026. Belize and IDB Group Strategic Agreement: Country Strategy 2026–2030. February.

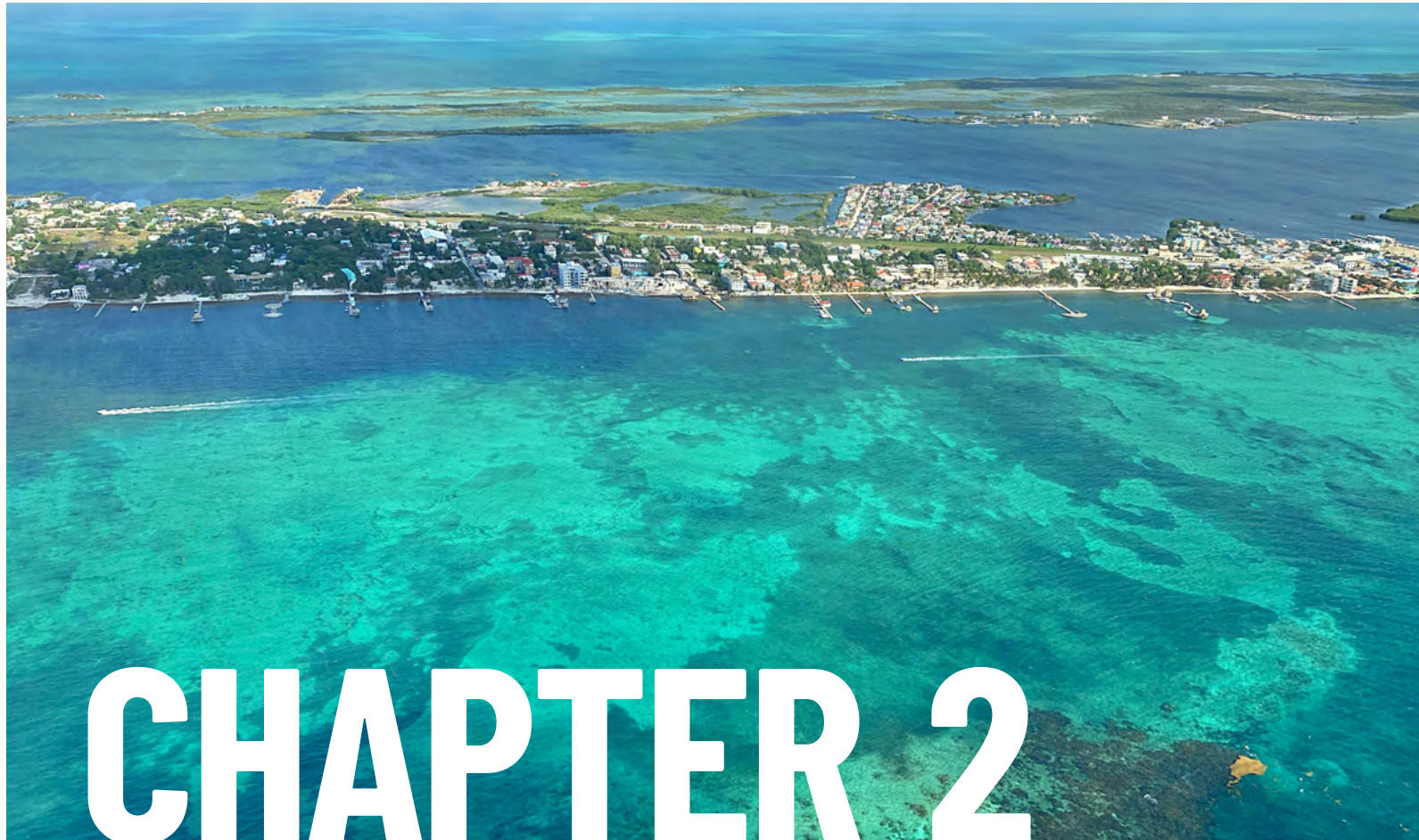
¹⁹ IMF. 2025. IMF Outlook.



financial disaster risk assessment for Belize, focusing mainly on the fiscal impact of natural disasters. Chapter 3 describes the public financial management of disasters, including Belize's legislation, policies, and budgetary framework for disaster response. Chapter 4 presents an overview of the private catastrophe insurance market. Chapter 5 comprises a protection gap analysis aimed at identifying

the strengths and weaknesses in Belize's DRF policy and highlighting opportunities for enhancing fiscal efficiency and financial readiness through optimal instrument use and strategic layering.²⁰ Finally, Chapter 6 reviews the recommendations for future financing of natural disaster recovery and reconstruction expenditures.

²⁰ Conducted by the Finance, Competitiveness, and Innovation Global Practice of the World Bank, the gap analysis focused on evaluating the cost-effectiveness of Belize's current DRF mechanisms and how well various financial instruments are utilized to minimize costs while ensuring funds are readily available when disasters occur.



CHAPTER 2

DISASTER RISK ASSESSMENT

Understanding and quantifying a country's disaster risks, including fiscal contingent liabilities, is a critical first step in designing cost-effective DRF strategies. The last DRF assessment used a Probabilistic Country Disaster Risk Profile (CDRP) for Belize, developed by the World Bank in 2015, to provide risk assessments and estimates of potential damages to public and private buildings from hurricanes and earthquakes.²¹

Probabilistic Disaster Losses

This report provides updated estimates of potential losses and fiscal contingent liabilities from natural disasters to reflect the

increased exposure of buildings due to Belize's growing real estate market and economy. This report not only updates the CDRP estimates but also provides two alternative sets of estimates for hurricane risk, which is the primary source of government contingent liabilities, based on the Caribbean Catastrophe Risk Insurance Facility Segregated Portfolio Company (CCRIF SPC) model and AIR Worldwide model. This approach acknowledges the inherent complexity and uncertainty in disaster risk modeling; thus, by providing a range of estimates of disaster risks, the government can be aware of the assumptions underpinning the different strategic combinations of DRF instruments analyzed in Chapter 5 of the financing gap and value-for-money

²¹ For the methodology and key assumptions, see Annex 2 of World Bank Group. 2018. Advancing Disaster Risk Finance in Belize.

(VfM) analysis. See Chapter 5 and Annex 1 for a more detailed discussion of the results from CCRIF SPC and AIR Worldwide models.

The updated estimates of potential national losses from tropical cyclones and earthquakes indicate increased financial vulnerability for Belize, reflecting higher exposure to private and public assets. The residential and commercial real estate market in Belize is experiencing a surge in demand due to the growing tourism industry. It is expected to have reached USD 10.3 billion in 2024, from USD 7.4 billion in 2017.²² Given this significant increase in real estate value, the updated CDRP estimates show that national modeled losses from earthquakes and tropical cyclones have more than doubled compared to the last assessment, assuming that the percentage of total building exposure value remained constant (Table 2). The average annual loss (AAL) is estimated at USD 41.9 million for tropical cyclones and USD 3.2 million for earthquakes, which are between 128 percent and 134 percent higher than reported in 2018. Additionally, with a return period of 100 years, the estimated national losses

could reach USD 1,143 million and USD 68.3 million for tropical cyclones and earthquakes, respectively.

Since the key assumption behind the updated CDRP values could introduce bias into the estimates, this report provides alternative calculations for the main hazard facing Belize—tropical cyclones—based on CCRIF SPC and AIR Worldwide models. Consistent with previous findings, the potential national losses have increased significantly across key return periods. For example, the AAL from the CCRIF SPC model is estimated at USD 27.2 million, while once every 100 years, those losses could exceed USD 672 million (22 percent of 2023 nominal GDP) (Table 2).

Fiscal Contingent Liabilities Linked to Disasters

Fiscal contingent liabilities are key metrics for more effective public financial management of disaster risks. Disaster loss estimates inform policy makers about the magnitude of the country's problem but are less

Table 2.
National Modeled Loss from Natural Disasters (USD millions)

Return Period (years)	CDRP 2015		CDRP 2024		CCRIF SPC	AIR Worldwide
	EQ	TC	EQ	TC	TC	TC
AAL	1.4	17.9	3.2	41.9	27.2	40.4
PML						
10	1.3	12.9	3	30	30	87.8
50	15.4	280.8	34.1	657.8	418	482.6
100	30.7	487.8	68.3	1,142.7	672	793.9
200	—	—	—	—	929.6	1,111.7
250	63.3	791.2	140.7	1,853.3	—	—

Sources: World Bank CDRP, CCRIF SPC, AIR Worldwide.

Notes: EQ = Earthquakes; TC = Tropical cyclone; AAL = average annual loss; PML = probable maximum loss.

²² Statista Market Insights, July 2024.

useful for devising cost-effective strategies for the government since not all potential losses translate into public financing needs. Therefore, reliable quantification of fiscal contingent liabilities linked to potential disasters is critical for decision-making. However, limited information on disaster-related public expenditures often necessitates assuming a certain percentage of total disaster losses as government contingent liabilities, which can reduce the accuracy of the estimates. Improving the tracking and reporting of public expenditures for disaster needs is essential to

improve the quantification of fiscal contingent liabilities.

Belize faces substantial government contingent liabilities from tropical cyclones, which significantly threaten fiscal sustainability and resilient economic growth. The average annual contingent liabilities for the government range from USD 6.8 million, based on the CCRIF SPC model, to USD 10.5 million, according to the CDRP model. For a 100-year return period, government contingent liabilities based on CDRP could exceed USD 285.7

Table 3.
Government Contingent Liabilities from Natural Disasters (USD millions)

Return Period (years)	CDRP 2015		CDRP 2024		CCRIF SPC	AIR Worldwide
	EQ	TC	EQ	TC	TC	TC
AAL	0.4	4.5	0.8	10.5	6.8	9.3
PML						
10	0.3	3.2	0.7	7.5	7.5	20.2
50	3.9	70.2	8.5	164.5	104.5	111
100	7.7	122.0	17.1	285.7	168	182.6
200	—	—	—	—	232.4	255.7
250	15.8	197.8	35.2	463.3	—	—

Sources: World Bank CDRP, CCRIF SPC, AIR Worldwide.

Notes: CDRP and CCRIF SPC assume that government contingent liabilities account for 25 percent of national losses, while AIR Worldwide accounts for 23 percent. EQ = Earthquakes; TC = Tropical cyclone; AAL = average annual loss; PML = probable maximum loss.

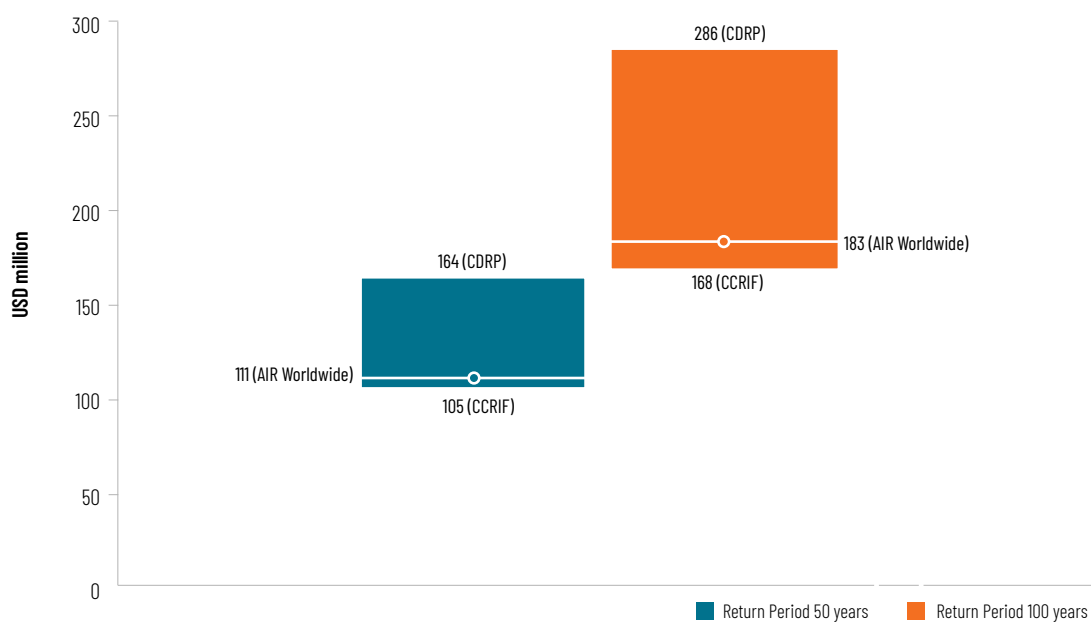
million. This amount far exceeds the estimates based on the CCRIF SPC and AIR Worldwide models, which are USD 168 million and USD 182.6 million, respectively (Table 3).

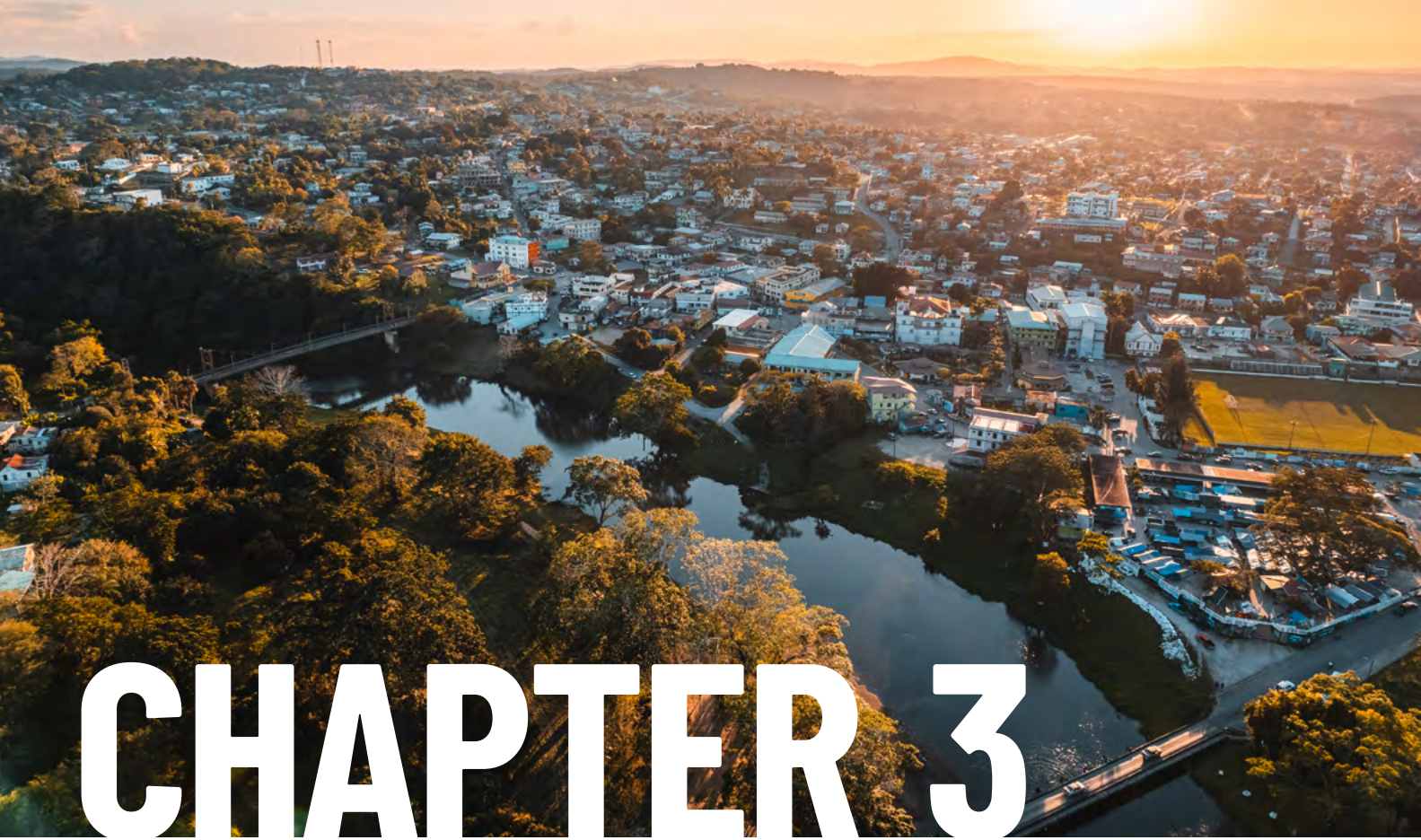
Estimates of fiscal contingent liabilities are subject to uncertainties. Estimating government contingent liabilities due to natural disasters in Belize is challenging. The availability and quality of historical disaster damages and expenditures are limited, and catastrophe

risks often require catastrophe risk modeling to understand the potential for infrequent and severe events. Risk modeling provides valuable information on Belize's risk profile, but no model is perfect, and different views of risk can differ substantially. The estimates, therefore, are subject to uncertainty—given natural limitations to risk modeling—and could underestimate the level of risk, especially for smaller and more frequent events.

Figure 3.
Range of Estimates of Government
Contingent Liabilities from
Tropical Cyclones (USD millions)

Sources: World Bank CDRP, CCRIF SPC,
AIR Worldwide.





CHAPTER 3

FINANCIAL MANAGEMENT OF DISASTER RISK

Legal and Policy Framework

Belize has enacted key legislation to enhance disaster preparedness and risk mitigation, focusing on efficient emergency declaration and resource mobilization. The Disaster Preparedness and Response Act 2000 outlines the legal framework for swiftly declaring emergencies and mobilizing necessary resources. Meanwhile, the Finance and Audit (Reform) Act 2021 supports these efforts by detailing the financial allocations required during emergencies and incorporating provisions for urgent and unforeseen expenditures.

The Disaster Preparedness and Response Act provides a structured approach to managing disasters in Belize, detailing the responsibilities of government agencies and the procedures for emergency response and recovery. Recent amendments have enhanced several aspects, including coordination and mobilization procedures, shelter regulations, and the roles of the National Disaster Preparedness and Response Advisory Committee.²³ However, despite these amendments, the act could be improved in addressing the financial management aspects of disaster response more concretely. There is a continued need to revisit the legislation to clarify the

The twin towns of Santa Elena and San Ignacio, joined by the Hawkesworth Bridge, Belize's longest suspension bridge.
© JC Cuellar

²³ Disaster Preparedness and Response Act, as amended in 2020.

Ministry of Finance (MoF)’s financial responsibilities in funding disaster responses.²⁴

The Finance and Audit (Reform) Act 2021 established a Contingencies Fund essential for managing immediate and unexpected expenses during disasters.²⁵ It provides the framework for regulating revenue, expenditures, and contracts, including provisions for emergency expenditures and the use of special warrants for disaster-related financial needs. This proactive measure enhances Belize’s ability to manage financial resources effectively in times of crisis.

Budgetary Response Framework

A Budgetary Response Framework refers to the government’s processes, guidelines, and mechanisms for allocating, managing, and tracking financial resources in response to emergencies and disasters. This framework ensures that funds are readily available and efficiently utilized during crises to support relief, recovery, and reconstruction efforts. A well-designed Budgetary Response Framework helps governments respond more effectively to disasters, ensuring that financial resources are available and managed

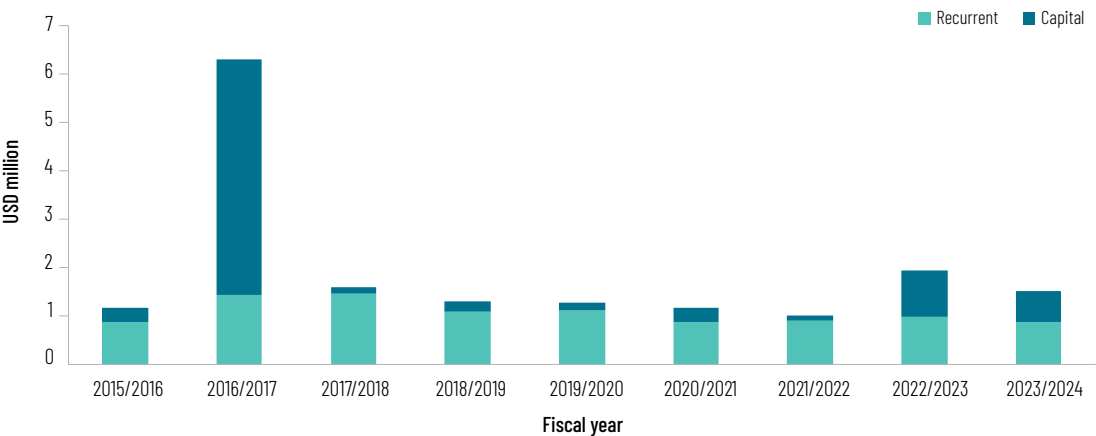
efficiently to address immediate needs and support long-term recovery efforts.

Expenditures of the National Emergency Management Organization (NEMO) form a significant part of Belize’s disaster management budget, but other departments also contribute. Figure 4 shows NEMO’s yearly recurrent and capital expenditures, averaging USD 1.1 million since 2015. However, this does not include disaster-related spending by other departments. For instance, in 2019/2020, USD 474,520 was allocated for Support to Farmers (Disaster Risk Recovery) under the Ministry of Agriculture. NEMO’s major capital expenditures are often linked to hurricanes, such as USD 2.8 million in assistance and USD 1.7 million in emergency management for Hurricane Earl in 2016, USD 211,420 for Hurricane Eta in 2020, and USD 748,889 for rehabilitation after Hurricane Lisa in 2022.

Belize employs systematic methods to track disaster-related expenditures associated with specific events. For example, tracking Hurricane Lisa’s rehabilitation efforts in 2022 was facilitated using the Act Code 2094 ‘Hurricane Rehabilitation 2022 – Lisa’ across all ministries. These expenditures, detailed in Table 4, accounted for 2.9 percent of total

Figure 4. Yearly NEMO Expenditures by Category

Source: NEMO.
Note: Recurrent expenditures are the ongoing costs necessary for NEMO’s day-to-day functioning, including salaries, utilities, supplies, maintenance, and other operational costs. Capital expenditures are funds for significant investments intended to improve assets, such as large-scale projects to reduce disaster risks.



²⁴ World Bank Group. 2018. Advancing Disaster Risk Finance in Belize. <https://hdl.handle.net/10986/33088>. License: CC BY 3.0 IGO.
²⁵ Act No. 24 of 2021 – Finance and Audit (Reform) Amendment Act, 2021.

Table 4.
Hurricane Lisa Rehabilitation Expenditures by Ministry and Program

Ministry and Program	Expenditures (USD)
Ministry of Finance	
Strategic Management and Administration	362,193
Ministry of Agriculture, Food Security, and Enterprise	
Agricultural Research and Development	369,469 ^a
Ministry of Sustainable Development, Climate Change, and Disaster Risk Management	
Office of Emergency Management	748,889
Ministry of Human Development, Families, and Indigenous Peoples' Affairs	
Strategic Management and Administration	390,763
Ministry of Infrastructure Development and Housing	
Strategic Management and Administration	1,689,286
Ministry of Youth, Sports, and Transport	
Youth Support Services	50,000
Sports Development	75,000
Transport Administration and Enforcement	24,722
Ministry of Rural Transformation, Community Development, Labour, and Local Government	
Local Government	317,000
Ministry of National Defence and Border Security	
Strategic Management and Administration	248,977 ^a
Total	4,276,299

Source: Approved Estimates of Revenue and Expenditure for FY2024/2025.

Note: a. Estimated values of expenditures in FY2023/24.

capital expenditures and 0.6 percent of the total budget ceiling (recurrent and capital) for 2022/2023. This approach ensures that disaster-related spending is accurately documented and can be reviewed for accountability and planning.

Tracking disaster-related expenditures and assessing the fiscal impact of disasters present ongoing challenges. Unfortunately, expenditures are not always explicitly recorded as disaster related; they are included within the existing expenditure distributions of the line ministries to which the resources are

allocated.²⁶ This practice complicates specific allocation tracking and subsequent audits, as noted in previous assessments. The general practice involves coding these expenditures under various budget lines, which obscures the total impact of disaster-related spending on national finances. Separating expenditures related to preparedness, response, and recovery is particularly important but currently difficult due to these limitations. Nonetheless, a careful review of individual items in past financial statements gives a good impression of the government-wide expenditures for disaster preparedness, response, and recovery (Figure 5).

²⁶ World Bank Group. 2018. Advancing Disaster Risk Finance in Belize. <https://hdl.handle.net/10986/33088>. License: CC BY 3.0 IGO.

Figure 5.
DRM Expenditures since 2009

Source: NEMO.

Notes: a. Capital expenditures include emergency management and immediate response, fire services and infrastructure, preparedness and risk management, flood mitigation and relief, and support and rehabilitation programs.

b. Recurrent expenditures include the Office of Emergency Management, Meteorology/Hydrology Services, Central Administration, and the National Fire Service.



DRM expenditures in Belize show significant fluctuations in capital expenditures and a steady increase in recurrent spending, reflecting the country's adaptive financial response to disasters. Capital expenditures on DRM have varied dramatically since FY2009/10, with notable peaks in 2010/11, 2016/17, 2020/21, and 2022/23, reaching up to USD 8 million, coinciding with major disaster events. The share of DRM capital expenditures as a percentage of total capital expenditures also peaks around these years, indicating substantial investments in disaster-related infrastructure and response. In contrast, recurrent expenditures on DRM have steadily increased from USD 2.7 million in 2009/10 to about USD 7 million by 2023/24, with the share of total recurrent expenditures rising to approximately 1.2 percent. This trend highlights Belize's growing commitment to continuous disaster management activities, such as preparedness, response, and recovery operations.

Work is under way to revamp the chart of accounts (CoA) to improve the tracking and reporting of disaster-related expenditures.

A team in the Budget Unit is developing a revised CoA that will provide a detailed review of post-disaster spending. Best practices suggest classifying programs to distinguish between relief, recovery, and reconstruction expenditures and categorizing them by affected sectors such as housing, agriculture, and tourism. The new CoA will also reflect the spending location and identify the program under which it is classified. Additionally, Belize plans to transition to accrual accounting over the medium term, a complex and resource-intensive reform considered an advanced practice in public financial management. This transition, attempted by a few regional comparators, requires meeting various preconditions and is expected to enhance the accuracy and comprehensiveness of financial reporting.²⁷

²⁷ IMF. 2023. Fiscal Affairs Dept. Belize: Technical Assistance Report-Transition to Accrual Accounting.



CHAPTER 4

REVIEW OF THE CATASTROPHE RISK INSURANCE MARKET IN BELIZE

Market Overview

Belize's insurance market has seen notable growth in recent years. The non-life insurance market in Belize is relatively small, with a gross premium income (GPI) of USD 83.66 million (BZD 167.33 million) at the end of 2023. Figure 6 illustrates the growth of non-life

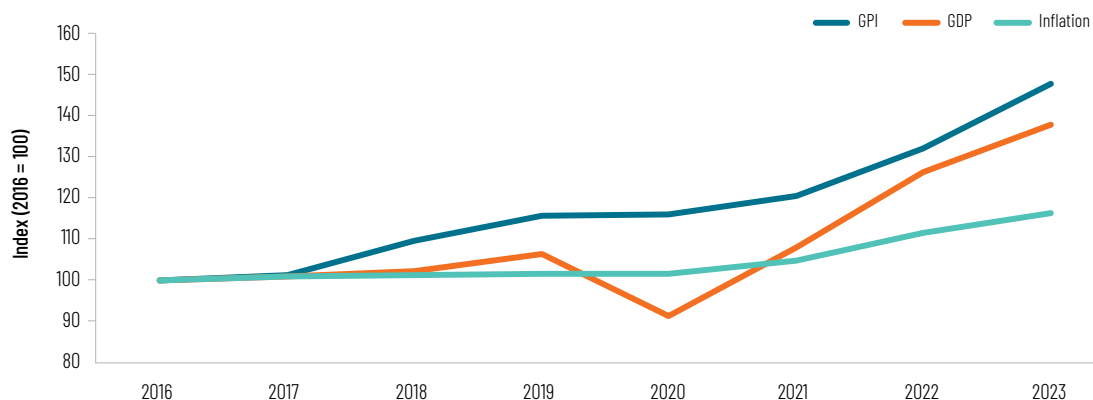
insurance premium income compared to nominal GDP growth and inflation rates from 2016 to 2023. Since 2016, the average GPI growth rate has been 5.81 percent, outpacing inflation and nominal GDP growth. In the five years prior, the actual value of the non-life insurance industry's premium had stagnated.²⁸

²⁸ World Bank Group. 2018. Advancing Disaster Risk Finance in Belize. <https://hdl.handle.net/10986/33088>. License: CC BY 3.0 IGO.

Figure 6.
GPI Growth, GDP Growth, and
Inflation

Sources: Office of the Supervisor of Insurance and Private Pensions (OSIPP) for GPI, World Bank World Development Indicators for GDP, Statistics Institute of Belize for Inflation.

Note: 2016 is set as the index year at 100.

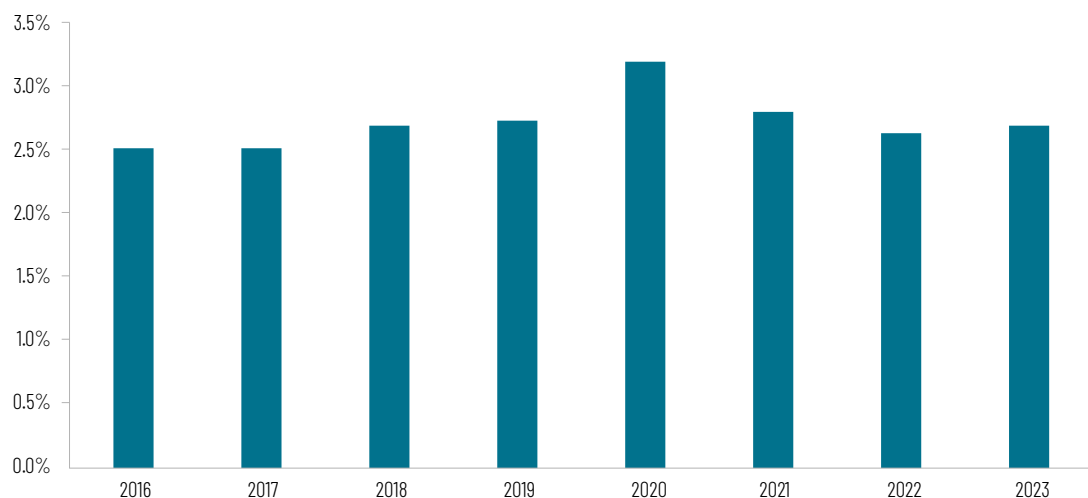


The insurance market in Belize continues to experience underinsurance. In 2016, the penetration level for non-life insurance was below that of many Small Island Developing States in Latin America and the Caribbean. The situation improved slightly but remains relatively

low, at 2.7 percent in 2023 compared to 2.5 percent in 2016. Low insurance penetration, combined with a growing Belizean economy, indicates significant potential for market expansion (Figure 7).

Figure 7.
Non-Life Insurance Penetration

Sources: OSIPP for GPI and World Bank World Development Indicators for GDP.



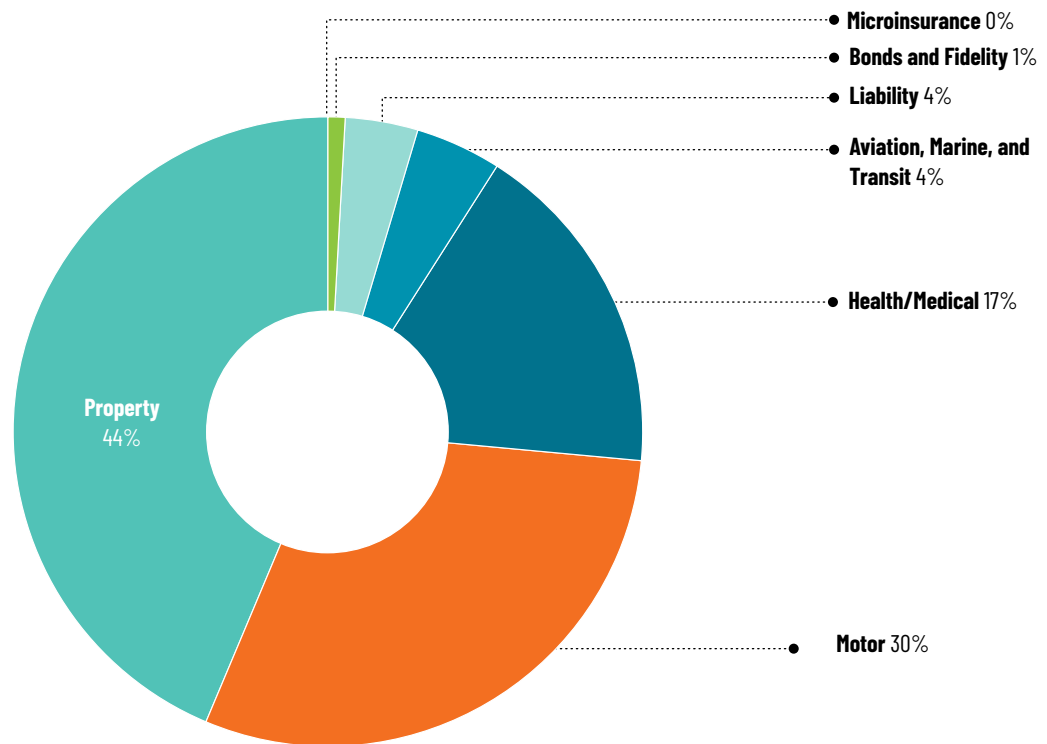
In 2023, property remained a key business area for insurers in terms of GPI, representing 44 percent of the non-life insurance market (see Figure 8). Belize's property insurance market is seeing increased demand driven by post-pandemic tourism and real estate development growth. Personal property insurance is typically purchased only when required by mortgage lenders.

The insurance market's structure reflects a high concentration among a few key players. In 2022, 10 insurance companies operated in Belize (five non-life companies), with the market dominated by RF&G Insurance, which holds a significant share of the non-life insurance market, including approximately 60 percent of the property sector.²⁹ Other notable participants include Lloyd's, the

²⁹ AXCO. 2024. Non-life Insurance Market Report Belize.

Figure 8.
Market Share of GPI by
Class of Insurance Business
(entire industry, 2023)

Source: OSIPP.



Insurance Corporation of Belize, Massy United Insurance Ltd, and Guardian General Insurance Ltd. The New Insurance Act of 2023 is anticipated to reshape the market, potentially leading to mergers, closures, or new incorporations among existing insurance entities.

Legislation: New Insurance Act

Recent legislative changes have enhanced the regulatory framework of Belize's insurance market, aiming for greater stability and inclusivity. The New Insurance Act of 2023 consolidates the Insurance Act of 2004 and the International Insurance Act of 1999 into a comprehensive framework. This new law aims to strengthen industry stability, improve consumer protection, and enhance the sector's international capabilities by attracting more international businesses and insurers.³⁰

The New Insurance Act of 2023 introduces a risk-based supervisory framework and aligns Belize with international standards.

This significant shift from a rules-based to a risk-based approach allows financial institutions to consider overall risks more comprehensively, enhancing flexibility and regulatory responsiveness. Additionally, the act's alignment with the Insurance Core Principles of the International Association of Insurance Supervisors and the Financial Action Task Force recommendations strengthens Belize's compliance with global standards, bolstering its position in the international insurance landscape.³¹

The OSIPP is the regulatory authority under the New Insurance Act of 2023.

Appointed by the Minister through a transparent public process, OSIPP oversees the implementation and enforcement of the Act. OSIPP operates with significant autonomy but is accountable to the Minister of Finance. OSIPP's operations

³⁰ New Insurance Act 2023.

³¹ Ibid.

are funded through fees levied on insurance entities, ensuring the necessary resources for adequate industry supervision.³²

Natural Catastrophe Insurance

Catastrophe risk insurance remains underrepresented in Belize's insurance market. Most residential properties in Belize are uninsured against natural disasters. Underinsurance to natural disasters can represent a contingent liability for the government. Property insurance claims from recent catastrophic events suggest Belize is significantly underinsured relative to its risk exposure. As a result of Hurricane Lisa in 2022, around 5,000 homes were damaged in Belize, with an additional 500 destroyed. Total damages from the storm in Belize were estimated at USD 100 million. However, only USD 19 million in property insurance claims were reported to OSIPP (Figure 9).

Underinsurance in Belize is primarily driven by valuation practices. Cyclone coverage is embedded within property insurance policies and does not require separate purchases, but properties are often insured for their purchase value rather than their replacement value. This undervaluation creates substantial gaps

in post-disaster recovery, particularly in the high-value real estate sector.³³

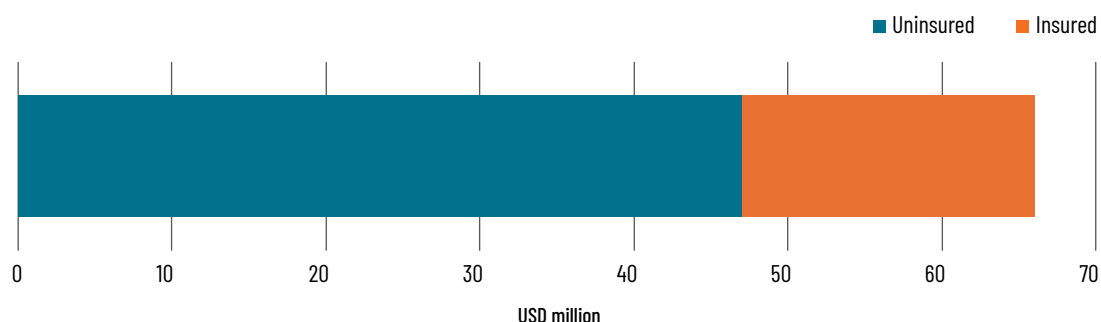
Belize's major infrastructures, such as public buildings and health, commercial, and transportation facilities, are located on or near the coast, making them highly susceptible to rising sea levels. Sea flooding and other natural disasters pose significant risks, including the destruction of property, loss of life, and disruptions to critical linkages. Despite these vulnerabilities, there is a lack of dedicated insurance schemes for public infrastructure. The country is already undertaking a significant program of resilience-building investments. According to the GoB, resilience-related spending is about one-third of the capital budget, with allocations of around 1.7 percent of FY2018/19 GDP (BZD 66 million, or USD 25 million).³⁴ Resilience building so far has been concentrated on physical infrastructure and relies heavily on international support.

Agricultural Insurance

Belize does not have specific agricultural insurance products.³⁵ According to the National Agriculture and Food Policy of Belize, the agricultural sector faces significant risks from natural disasters, yet there are no dedicated insurance schemes to mitigate these risks.³⁶ The absence of relief funds or insurance schemes to assist small farmers in managing

Figure 9.
Total Damages from Hurricane Lisa (2022) by Insurance Status

Source: OSIPP.



³² New Insurance Act 2023.

³³ Stakeholder Consultations, November 21, 2024.

³⁴ IMF. 2020. Belize Technical Assistance Report - Public Investment Management Assessment.

³⁵ World Bank. 2010. Agricultural Insurance in Latin America: Developing the Market.

³⁶ Ministry of Agriculture. 2015. National Agriculture and Food Policy in Belize.

production risks leaves them particularly vulnerable, affecting overall economic stability given the sector's contribution (9 percent of GDP). In addition, the increasing frequency and intensity of natural disasters linked to climate variability and climate change, such as drought and floods, are affecting production levels, productivity, and the quality of primary agricultural and food products. Exploring options for insurance schemes, such as parametric insurance, could be beneficial in supporting farmers and enhancing the agricultural sector's resilience.

Microinsurance

Microinsurance is gaining attention in Belize's evolving insurance market, influenced by legislative changes and growing market interest. Since the introduction of the Micro-Insurance Exemption Order in 2016, which allowed parametric covers to be classified as insurance despite lacking traditional insurable interest, there has been a notable but fluctuating interest in microinsurance. Initially, the GPI from microinsurance surged, reaching approximately USD 25,000 (BZD 50,000) in 2016. However, this momentum has waned, with premium income declining to USD 1,405 (BZD 2,811) in 2023, making up a tiny portion of the overall GPI in Belize's insurance sector.³⁷

The New Insurance Act significantly enhances the regulatory landscape for microinsurance in Belize. A pivotal aspect of this legislation is the formal inclusion of microinsurance, aimed at bridging the protection gap for low-income individuals and small businesses. By offering more accessible and affordable insurance options, the act facilitates greater financial inclusion and resilience against disasters. It also expands the scope for international insurers, captives, and reinsurers to operate in Belize, supporting the development of a robust and inclusive insurance

market with a focus on microinsurance and parametric products.³⁸

Reinsurance

The Belizean insurance market heavily relies on reinsurance to manage catastrophe risk, using a blend of proportional and non-proportional reinsurance techniques. There are no local reinsurance companies in Belize; instead, the market depends on leading international reinsurers such as Everest Re, Munich Re, Swiss Re, QBE Re, SCOR, and Lloyd's syndicates to provide reinsurance capacity. This arrangement ensures that the substantial risk from natural perils, particularly windstorms, is effectively transferred to global reinsurers, safeguarding the local insurance market against severe financial losses.

The dependency on reinsurance is significant, especially for non-life insurance products covering natural perils. Windstorm remains the principal threat, and the Belizean market's reliance on reinsurance is evident in the high reinsurance ratios. For instance, in 2020, 91 percent of the property market insurance premiums were ceded to reinsurers (Table 5). This heavy reliance is critical for mitigating the financial impact of catastrophic events, with reinsurers providing the necessary capacity and stability to support the local market.

Reinsurance pricing has fluctuated in recent years due to global catastrophic events. Following the devastating impacts of Hurricanes Irma and Maria in 2017, reinsurance prices surged. Although there was a slight softening in 2019, prices increased again after Hurricane Dorian in late 2019. Due to ongoing global economic pressures and frequent natural disasters, they continued to rise through 2021 and 2022. Despite these fluctuations, Belizean insurers have not significantly changed their purchasing behavior.

³⁷ OSIPP.

³⁸ New Insurance Act 2023.

Table 5.
Premiums Ceded against Gross
Written Premiums, by Major
Class 2016–2020 (%)

Source: AXCO. 2024. Non-life Insurance
Market Report Belize.

Line of Business	2016	2017	2018	2019	2020
Property	86.70	88.42	88.02	85.27	90.82
Motor	5.78	5.16	6.04	5.65	5.30
Liability	62.86	68.95	68.04	67.36	55.35
Surety, bonds, and credit	25.82	28.00	32.28	33.35	38.43
Marine, aviation, and transit	67.46	71.97	68.04	69.09	77.67
Personal accident and healthcare	28.22	28.99	46.96	44.83	46.09
Total non-life market	56.13	56.87	56.69	55.71	60.53



CHAPTER 5

FINANCING GAP AND VALUE-FOR-MONEY ANALYSIS

In the evolving climate and disaster risk finance landscape, a key challenge for governments is to define their DRF strategy with the right mix of instruments to minimize overall costs and ensure funds are available when most needed. The World Bank's Climate and Disaster Risk Finance VfM process provides a sound and transparent methodology and analytical tools to help governments develop their DRF strategy. The VfM process supports governments in making effective decisions on the selection and mix of risk financing instruments to finance their strategy.

The VfM process, outlined in Figure 10, is ongoing and iterative, integrated into government

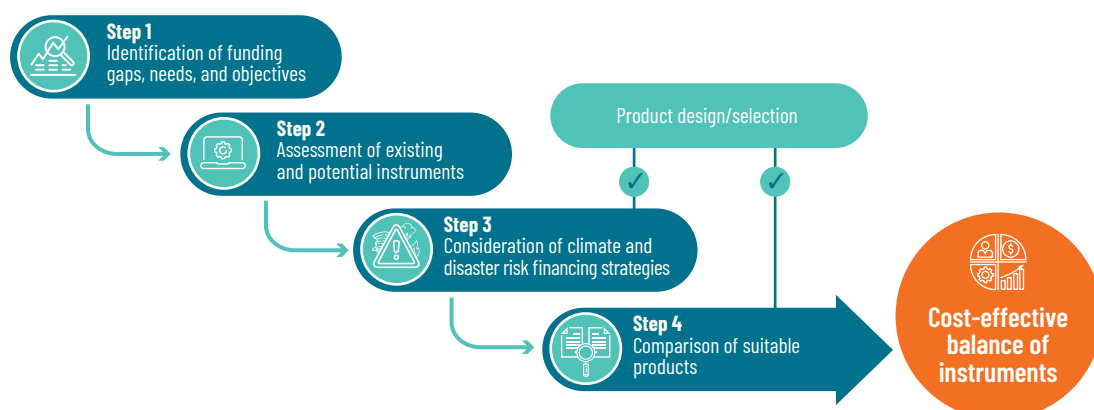
risk understanding and decision-making. The GoB is currently engaged in this process, a snapshot of which is provided in the section below to illustrate the process, the funding gap in Belize, and the trade-offs between different mixes of DRF instruments.

Contingent Liabilities Due to Natural Disasters

DRF is most valuable because it can provide timely liquidity aftershocks when other sources of finance, such as tax increases, sovereign borrowing, and donor aid, are not yet available. Therefore, the financing gap

Figure 10.
World Bank Crisis and DRF VfM
Process

Source: World Bank.



and VfM analysis focus on Belize's contingent liability as the emergency response costs to disasters.

For this analysis, estimates of government contingent liabilities are based on the Tropical Cyclone CCRIF SPC model. As discussed in Chapter 2, these estimates are subject to uncertainty due to natural limitations in risk modeling and tend to underestimate the level of risk, especially for smaller and more frequent events. As the VfM process evolves in Belize, additional or improved risk information will improve the accuracy of the analysis and, hence, its ability to inform refinements and fine-tune the DRF strategy.

The Tropical Cyclone CCRIF SPC model assumes that the government's short-term liquidity needs following an event are 25 percent of national losses, measured as damages to public and private physical assets.

Based on this, the average contingent liability for the GoB is USD 6.8 million, with a 1 percent chance (1-in-100) that government contingent liabilities exceed USD 168 million (see Figure 11 and Table 6). These estimations rely heavily on the assumptions outlined above, which are based on regional and global estimates. The results could vary significantly under a different model or scaling factor. Therefore, future analysis to better understand Belize's disaster risk and contingent liability could lead to different results and conclusions. Annex 1 presents the results based on an alternative risk model (AIR Worldwide) to illustrate the uncertainty in the modeling.

Belize's DRF Instruments

Belize has several DRF instruments crucial for its post-disaster recovery efforts. The mix of financial instruments tailored to the

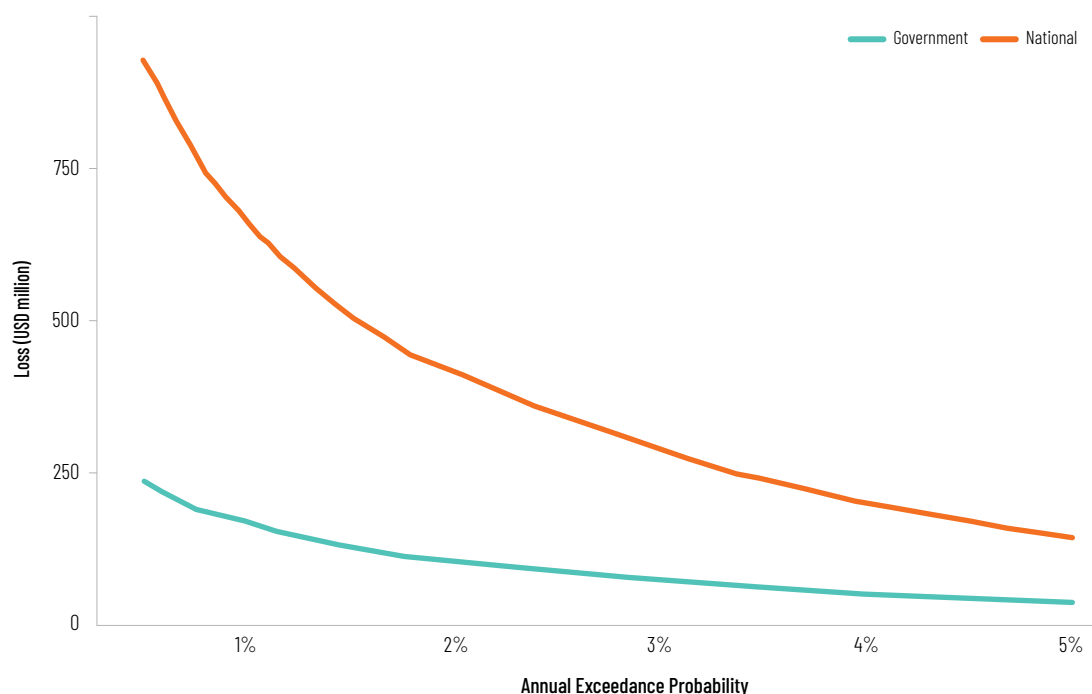
Table 6.
GoB Contingent Liabilities Due to
Tropical Cyclone

Source: CCRIF SPC.

Metrics	USD millions (25% of CCRIF SPC National Losses)
Average	6.8
20% (1 in 5)	0.3
10%	7.5
2%	104.5
1%	168.0
0.5%	232.4

Figure 11.
Tropical Storm Risk Profile

Source: Based on CCRIF SPC model.



country's risk profile and financial needs, including budgetary resources, reserve funds, contingent lines, and risk transfer instruments, is described below.

National Disaster Risk Fund

USD 2.5 million (approximately 0.1 percent of GDP) has been budgeted for the contingency fund every year since FY2022/23. However, it is unclear whether any contributions have been made. Establishing contingency or reserve funds ensures rapid financial mobilization during emergencies. Establishing a National Disaster Risk Fund provides a mechanism for self-insurance against the impacts of natural disasters. The contingencies fund established by the amended Finance and Audit (Reform) Act could be effectively utilized as this type of fund. A fund of approximately 1 percent of GDP, replenished annually, would facilitate swift financing for immediate recovery and response expenses, addressing the anticipated annual average losses from

government contingent liabilities arising from flood and hurricane shocks.³⁹

Pre-allocating budgetary provisions for potential disaster-related expenditures is another critical aspect of pre-disaster planning. Since FY2023/24, NEMO has pre-allocated USD 1 million for Disaster and Emergency Supplies and Inventory. This proactive measure ensures that essential supplies and resources are available during disasters, reducing response time and mitigating the impact on affected communities. During FY2023/24, USD 638,512 was utilized from this allocation, demonstrating the practical application and necessity of pre-allocated budgetary provisions in disaster management.⁴⁰

IDB Contingent Loan for Natural Disaster Emergencies

Belize has secured a USD 10 million Contingent Loan for Natural Disaster Emergencies from the IDB CCF. Approved in

³⁹ World Bank. 2024. Belize Public Expenditure Review (English). <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099031924101527106>.

⁴⁰ Approved Estimates of Revenue and Expenditures for Fiscal Year 2023/2024.

2019, this loan features an innovative parametric design that facilitates rapid access to funds for post-disaster response.⁴¹ The primary objective of the loan is to mitigate the financial impact of severe or catastrophic natural disasters by enhancing the availability, stability, and efficiency of contingent financing. It covers hurricanes and floods, addressing crucial risks to the country's public finances.⁴²

Additionally, the project aims to enhance the comprehensive DRM of the country through the Comprehensive Natural Disaster Risk Management Plan by fostering improvements in five main areas: (i) DRM governance, (ii) risk identification, (iii) risk reduction, (iv) disaster preparedness and response, and (v) financial protection.

Climate Resilient Debt Clause

In January 2024, the GoB requested the activation of the IDB climate-resilient debt clause (CRDC) in a portfolio of 10 IDB loans. The CRDC enables the GoB to have a one-time option to defer principal repayments for two years following the occurrence of an eligible natural disaster and repay those amounts in future amortization installments. The IDB CRDC is designed to be an efficient way to finance unexpected expenditures: a mechanism to free up fiscal space by temporarily reallocating cash that would otherwise be used for repaying debt without the burden of budget reallocations or the need to issue new debt.

Caribbean Catastrophic Risk Insurance Facility

The GoB purchases catastrophe insurance from the CCRIF SPC. This multi-country catastrophe insurance pool operates on a parametric basis, meaning payouts are determined by the intensity of an event, such as

wind speed or ground acceleration, and the estimated impact on the country's budget rather than assessed individual losses. CCRIF SPC provides immediate liquidity to participating governments when they are affected by significant natural disasters.

Since 2020, Belize has actively purchased both hurricane and excess rainfall policies from CCRIF SPC, with specific premium payments made annually. In 2023, Belize's premium payments totaled just over USD 1 million, with USD 585,326 allocated for hurricane cover and USD 469,952 for excess rainfall cover. This participation ensures that Belize can quickly access funds proportional to the estimated impact of such events on the national budget, as calculated by CCRIF SPC's probabilistic catastrophe risk model.⁴³

International support has played a crucial role in funding Belize's premiums to CCRIF SPC, enhancing the country's disaster resilience. Various agencies have contributed, including the Canada-CARICOM Adaptation Fund, which provided USD 740,000 across 2021 and 2022; the European Union, which offered USD 71,618 annually in 2020 and 2021; and the World Food Programme, which supported with USD 100,000 per year in 2022 and 2023.⁴⁴ The World Food Programme's arrangement includes a clause that ensures any valid claims result in cash assistance distributed through Belize's national social protection system, targeting vulnerable populations affected by storms, hurricanes, or intense rainfall events.⁴⁵ Table 7 shows that, since 2016, Belize has claimed a total of USD 552,779, with an additional ex gratia payment of USD 455,000 by CCRIF SPC in 2023 following Hurricane Lisa.⁴⁶

⁴¹ The parametric triggers are predefined parameters of event intensity and affected population that determine the eligibility of an event and the maximum amount that can be disbursed.

⁴² In August 2025, the IDB approved an expansion of the CCF contingent loan to USD 25 million and broadened its coverage to include earthquakes, wildfires, epidemics, and pandemics.

⁴³ OSIPP: CCRIF SPC Premiums and Claims.

⁴⁴ Ibid.

⁴⁵ AXCO. 2024. Non-life Insurance Market Report Belize.

⁴⁶ OSIPP: CCRIF SPC Premiums and Claims.

Table 7.
CCRIF SPC Claims 2016–2023

Source: OSIPP: CCRIF SPC Premiums and Claims.

Event	Year	Policy	Payout (USD)
Hurricane Earl	2016	Excess Rainfall	261,073
Tropical Storm Amanda/Cristobal	2020	Excess Rainfall	203,136
Hurricane Nana	2020	Hurricane (Deductible Cover)	35,000
Hurricane Lisa	2022	Hurricane (Deductible Cover)	53,570
Hurricane Lisa	2023	Ex Gratia Payment	455,000
Total			1,007,779

World Bank Cat DDO

The World Bank has been working on a Cat DDO for Belize to further strengthen the country's DRF.⁴⁷ This instrument provides quick access to funds following a natural disaster, contingent on the country maintaining a sound DRM program.

population affected by hurricanes and excess rainfall events,⁴⁹ and CCRIF SPC parametric insurance policies for tropical cyclone and excess rainfall. When this analysis was conducted (late 2024), the information available did not include the recent expansion of the IDB's contingent credit or the approval of the World Bank's Cat DDO.

Financing Gap Analysis

The GoB uses a range of risk financing instruments to address post-disaster emergency needs. These include the USD 2.5 million contingency fund, an estimated maximum of USD 117 million in potential budget reallocations,⁴⁸ and USD 5.4 million in potential rapid liquidity from the World Bank's Crisis Preparedness and Response Toolkit (USD 2.8 million from the CRDC and USD 2.6 million from the Rapid Response Option). All these instruments are multi-hazard in that they can be used to address post-disaster needs in case of any natural hazard affecting Belize. In addition, the GoB has implemented other hazard-specific risk financing instruments: a USD 10 million Contingent Loan for Natural Disaster Emergencies with the IDB contingent credit, whose withdrawals are linked to the

Despite the progress made by the GoB in its DRF strategy, the financing gap to address emergency losses resulting from low-frequency events remains substantial.

The GoB's current risk layering strategy for tropical cyclones is presented in Figure 3, which considers the currently available instruments, including the structure of the current CCRIF SPC tropical cyclone insurance policy.⁵⁰ A financing gap arises with an annual probability of 1.26 percent (1-in-79) when government losses exceed USD 144.2 million. This funding gap could be larger and more frequent when accounting for additional unmodeled perils or if the government contingent liability as a proportion of total losses is higher than the 25 percent global estimate. It could also be larger if substantial levels of budget reallocation are not possible in the aftermath of a disaster.

⁴⁷ The World Bank approved a USD 20 million Development Policy Credit with a Cat DDO for Belize in July 2025.

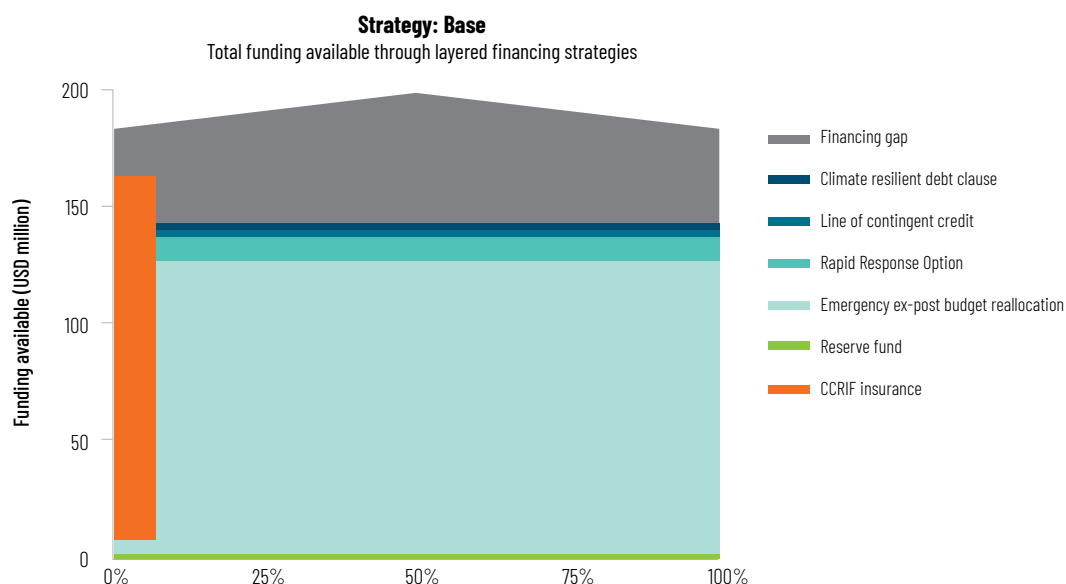
⁴⁸ For FY2024/25, the approved funds for Capital 2 and 3 expenditures are BZD 421 million. Of this, the MoF informed that BZD 234 million can be reallocated, which is 85 percent of the total approved Capital 2 budget.

⁴⁹ This is a parametric product that calculates the maximum amount allowed to be withdrawn by the GoB, according to specific hard rules calculated using the characteristics of the event.

⁵⁰ The Tropical Cyclone CCRIF SPC insurance policy has an Attachment Point of USD 8.09 million, an Exhaustion Point of USD 164.2 million, and a ceding percentage of 6.84 percent. Hence, the coverage amounts to USD 10.67 million. The premium paid is USD 555,953.

Figure 12.
Diagram of the Current DRF
Strategy for Tropical Storm Risk

Source: World Bank, based on data from the GoB.



Cost-Effectiveness of Alternative Risk Layering Options

With support from the World Bank's Finance, Competitiveness, and Innovation Global Practice, the GoB is building its capacity to use VfM analysis to inform decision-making related to its DRF risk layering strategy, which aims to improve the cost-effectiveness of the mix of risk financing instruments (see Figure 12).

The GoB identified five alternative DRF risk layering strategies (see Annex 2 for details). These were analyzed to assess their effectiveness in reducing the financing gap and improving the cost-effectiveness of the risk financing instruments available to the GoB. These strategies are not exhaustive and are intended to indicate the high-level trade-offs between different balances of instruments. The GoB may consider alternative strategies in the future as its objectives evolve and as improved risk information becomes available.

1. Strategies 1.a and 1.b explore the impact of prioritizing contingent credit over budget reallocation.⁵¹ Strategy 1.a uses contingent credit before any budget reallocation, whereas 1.b assumes more considerable losses would be needed before contingent credit is used. The trade-off between contingent credit and budget reallocation is determined by budget reallocations lead to socioeconomic costs resulting from postponing planned projects; the cost of contingent credit, which depends on the financial terms of the loan; and the extent to which the contingent credit crowds out other concessional multilateral development bank (MDB) financing.⁵² There may be additional political or debt-management constraints that affect the attractiveness of contingent credit, which are not quantified in this cost-effectiveness analysis.
2. Strategy 2 builds on Strategy 1.a and explores the value of additional contingent credit through a USD 20 million World Bank Cat DDO. The costs and trade-offs here are similar to those above.

⁵¹ Note that IDB contingent credit is based on parametric triggers for severe events, which may limit its use for smaller disasters.

⁵² This is the case with the World Bank International Development Association (IDA) Cat-DDO, which allocates a proportion of the country's IDA allocation towards the contingent loan.

3. Strategy 3 considers an increase of the contingency fund up to USD 10 million, in addition to Strategy 2. The cost-effectiveness of this strategy depends on the frequency of use of the contingency fund. When used, it can be a cost-effective instrument, but when not used, it carries an opportunity cost of holding funds unused. It is typically useful for smaller and more frequent shocks.
4. Strategy 4 considers the impact of adjusting the CCRIF SPC insurance policy while keeping the premium the same, building on Strategy 2. The revised policy would have a higher attachment point and lower exhaustion point, with a higher ceding percentage. This would lead to larger payouts from the insurance policy but less frequent payouts. As the premium's value is leveraged, this can be more cost-effective after more significant events. Nevertheless, there can be political costs associated with less frequent insurance payouts.

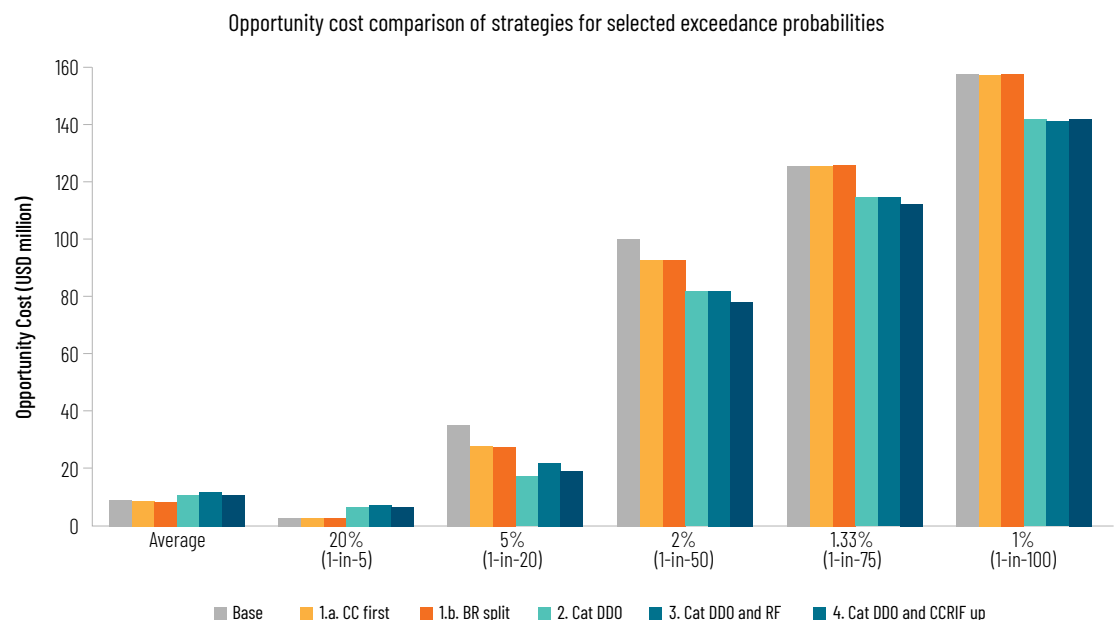
The analysis indicates that alternative strategies for responding to significant and infrequent losses offer advantages without materially increasing the average opportunity cost to the GoB. Using contingent credit before budget reallocation, a strategy that

involves no change in current instruments but rather a decision about the order of use of existing instruments, reduces the opportunity cost for the GoB (see Figure 13). While the addition of a Cat DDO substantially reduces the opportunity cost for low-frequency events, it increases both the average cost and the cost in case of recurrent events due to fixed costs (that is, commitment fee, reduction of the country envelope for other development projects) incurred when the instrument is not used. Increasing the contingency fund implies higher opportunity costs in case of recurrent events (when the fund is not entirely exhausted) due to the cost of immobilizing resources that could be used for other development purposes. Finally, the proposed modification of CCRIF's coverage would reduce opportunity costs under mid-to-severe scenarios when the policy provides a larger payout. Figure 13 compares the opportunity costs of these alternative strategies (Annex 2 presents the diagram of the alternative strategies, and Annex 3 presents the economic assumptions used in the VfM analysis).

The analysis likely underestimates the value of instruments used for multiple hazards and more frequent events, including the

Figure 13.
VfM Analysis of Alternative DRF Strategies

Source: World Bank.
Notes: CC = contingent credit; BR = budget reallocation; Cat DDO = catastrophe deferred drawdown option; RF = reserve fund; CCRIF = Caribbean Catastrophe Risk Insurance Facility.



contingency fund and contingent credit, due to the modeling limitations outlined above.

The GoB relies heavily on budget reallocation, which may not always be available depending on the timing of a disaster.

Additionally, the opportunity cost of large volumes of budget reallocation may need further analysis in the future; it is likely that the cost per dollar of reallocating a small amount of budget is lower than the cost per dollar of larger sums, as easily reallocated budgets are used up, and more impactful projects need to be canceled and postponed.

The analysis does not account for basis risk, the potential mismatch between available finance/payouts from risk financing instruments and the needs they are designed to address. All parametric financial instruments have some level of basis risk, which reduces the average value of the instrument. This basis risk can be reduced and managed by (i) using parametric insurance for infrequent events, for which it performs best; (ii) using a combination of risk financing instruments, including those with flexible triggers such as contingency funds and some contingent credit; and (iii) investing in data to inform decision-making and the design of risk financing products.

Key Messages

1. **Contingent credit provides a substantial potential value for Belize's money and is most effective for moderate-severity events.**
2. **The government relies heavily on budget reallocation, which can be an important tool, but caution is required:**
 - a. It is likely more expensive the more it is used.
 - b. It may not be available when needed, depending on the timing of the event and budgetary conditions.
3. **A higher attachment point for insurance would improve VfM, lead to bigger payouts after the most severe events, and reduce basis risk.** While supporting such a strategy may be politically challenging, it can be beneficial.
4. **Risk data and modeling, and hence the VfM analysis, are subject to substantial uncertainty in Belize. Data collection and analytics could substantially improve decision-making and the design of risk financing products.**
5. **The VfM analysis is not a one-off exercise, so the GoB should continue this endeavor and be supported by development partners.** This includes building technical capacity, refining assumptions, and testing different strategy options as objectives and available financing evolve with the disaster context.
6. **The GoB should enhance its understanding of risk, going beyond modeling driven by the insurance sector.** This would allow for better understanding and management of contingent liabilities and the design of a highly effective risk layering strategy tailored to Belize's reality. Contingent liabilities have been calculated as a fixed percentage of estimated damages to physical assets through probabilistic catastrophe models. A model designed and calibrated to understand government contingent liabilities is needed. Building on risk modeling available in the region, such analytics should be developed in partnership between the GoB, regional stakeholders, and global development partners. This approach would make greater use of historical and more granular expenditure data (for which additional efforts on data collection are needed) and consider the impacts of disasters beyond damages to physical assets.



CHAPTER 6

RECOMMENDATIONS

Belize should develop and adopt a formal, comprehensive national DRF strategy to enhance the government's ability to access financial resources and respond quickly to disasters. This strategy must be flexible, allowing for a proportional response based on the magnitude of the loss while minimizing re-allocations from existing programs and maintaining fiscal balance.

This report aims to provide a road map for further improving the country's financial and fiscal management of climate and disaster risks. Building on the progress made by the GoB, it outlines recommendations for a comprehensive DRF strategy and identifies potential prioritized activities for implementation in the short to medium term. Table 8 lists all the recommendations, and the following

section discusses Belize's progress on each recommendation, highlighting achievements and identifying areas requiring further action.

Discussion

Sovereign Protection

1. **Streamline and institutionalize damage and loss data collection and reporting systems across ministries and all levels of government for all events.** In response to Hurricane Lisa (2022), the GoB collaborated with various international organizations to collect and assess damage and loss data using the internationally recognized Post Disaster Needs Assessment methodology. To fully institutionalize these practices, continued engagement

Table 8.
Proposed Recommendations for
DRF in Belize

Time Frame	Instrument and Strategy Recommendations for DRF
Sovereign Protection	
Short term	1. Streamline and institutionalize damage and loss data collection and reporting systems across ministries and all levels of government for all events. 2. Reinforce the role of budgetary planning for disaster-related contingent liabilities across ministries and all levels of government. 3. Streamline reporting of disaster response expenditures by including explicit programs within the CoA to distinguish disaster response expenditures on relief, recovery, and reconstruction and further categorize them into affected sectors, for example, housing, agriculture, and tourism. Expenditures should also be classified by event, for example, Hurricane Lenny or the December 2015 flood. 4. Establish or re-establish the enforcement of laws allowing for a fast disbursement mechanism to finance post-disaster expenses. 5. Formalize and implement a DRF strategy with a budgetary process for disaster response financing. 6. Engage external development partners in establishing contingent financing arrangements to finance public contingent liabilities. 7. Develop a national financial strategy for climate adaptation and disaster risk resilience. 8. Conduct a comprehensive analysis to inform the country's risk layering strategy and enhance the VfM of sovereign risk financing.
Medium term	9. Institutionalize capacity for continuous DRF analysis and integration into decision-making. 10. Establish a robust catastrophe risk insurance program for public assets and parastatals. 11. Enhance management of contingent liability related to social protection, for example, establish a policy for post-disaster cash transfers.
Private Insurance Market	
Medium term	12. Enhance availability, penetration, and affordability of private and residential catastrophe insurance. Evaluate the potential for public-private partnerships for housing subsidies and explore potential microinsurance mechanisms. 13. Enhance data sharing on agricultural insurance and develop more robust and affordable products for smallholder farmers. 14. Develop a comprehensive public awareness and education program on DRF. Implement campaigns to emphasize the importance of natural disaster insurance for residential properties and evaluate introducing incentives to increase coverage and address underinsurance.

with stakeholders across all levels of government is essential. Further attention is needed to manage and store these data for future use.

2. **Reinforce the role of budgetary planning for disaster-related contingent liabilities across ministries and all levels of government.** The MoF and NEMO have made strides in pre-allocating funds for disaster response, such as the USD 1 million allocation for disaster and emergency supplies. However, integrating these practices across all ministries and subnational entities remains an ongoing challenge. Further efforts are needed to reinforce the importance of budgetary planning for

disaster-related expenditures across ministries and subnational entities.

3. **Streamline reporting of disaster response expenditures by including explicit programs within the CoA to distinguish disaster response expenditures and further categorize them into affected sectors, for example, housing, agriculture, and tourism. Expenditures should also be classified by event, for example, Hurricane Lenny or the December 2015 flood.** A Budget Unit team is revising the CoA to better track disaster-related expenditures. This update will help distinguish between relief, recovery, and reconstruction expenditures and categorize

them by sector and event. The transition to this new system is ongoing, and full implementation will enhance financial tracking and reporting.

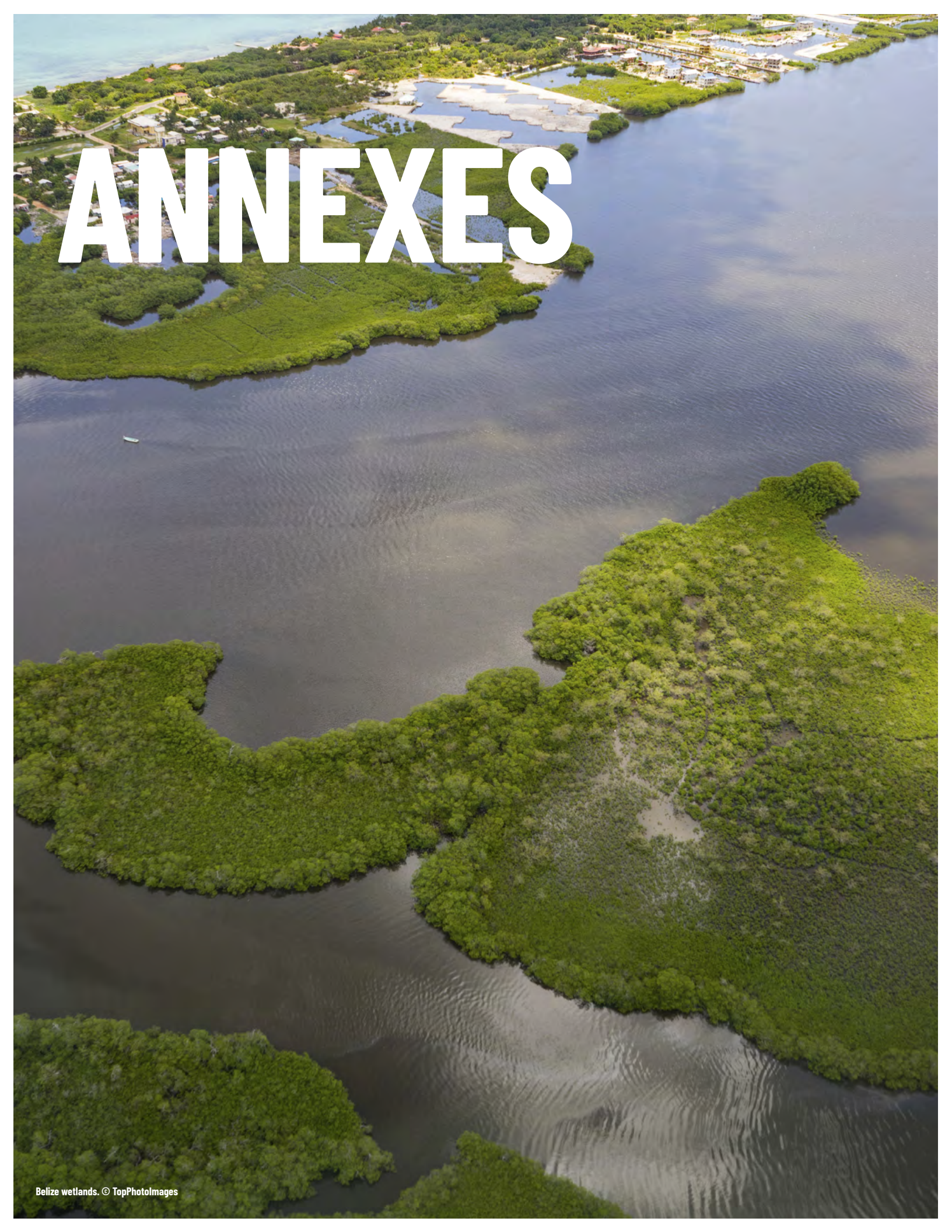
4. **Establish or re-establish the enforcement of laws allowing for a fast disbursement mechanism to finance post-disaster expenses.** Under the Finance and Audit (Reform) Act, the MoF can issue special warrants for disaster-related expenditures, expediting the release of necessary funds. This mechanism has been utilized effectively in recent disaster responses. However, continuous monitoring and evaluation are required to ensure the system operates efficiently and meets the needs of affected communities.
5. **Formalize and implement a DRF strategy with a budgetary process for disaster response financing.** While a formalized DRF strategy has yet to be fully implemented, various legislative updates and pre-disaster planning measures have laid the foundation. Continued efforts to formalize and integrate this strategy into the national budgetary process are essential for improving financial resilience at the level of risk to be informed by the analysis in Recommendation 10.
6. **Engage external development partners in establishing contingent financing arrangements to finance public contingent liabilities.** Belize has engaged with several international partners, including the World Bank, the IDB, and the Caribbean Development Bank, to secure loans and grants for disaster response and recovery. However, more structured and formalized contingent financing arrangements are needed to ensure consistent support at the level of risk to be informed by the analysis in Recommendation 10.
7. **Establish a robust catastrophe risk insurance program for public assets and parastatals.** Belize's participation in the CCRIF SPC is a significant achievement. The GoB has purchased hurricane and excess rainfall policies to cover public assets. Continued efforts are necessary to enhance this program and ensure adequate coverage for all public assets. Indemnity insurance should be considered to cover reconstruction costs.
8. **Enhance management of contingent liability related to social protection, for example establish a policy for post-disaster cash transfers.** Progress has been made with support from international partners like the World Food Programme, which provided direct cash assistance to households affected by Hurricane Lisa. The next step to enhance social protection mechanisms is to develop a formal policy for post-disaster cash transfers, including defining and registering vulnerable populations.
9. **Develop a national financial strategy for climate adaptation and disaster risk resilience.** While strengthening DRF is critical, it must be accompanied by sustained efforts to integrate climate change adaptation measures into national development plans. This includes focusing on disaster risk reduction, infrastructure resilience, sustainable agriculture, and water resource management to mitigate the impacts of climate-related disasters. This strategy should include objectives, timelines, and responsibilities for various stakeholders. It is crucial to estimate the financial requirements for implementing these adaptation measures and to develop a comprehensive financial plan. This plan should outline funding sources, including national budgets, international grants, loans, and private sector investments, ensuring adequate resources are allocated for immediate and long-term disaster risk reduction and climate resilience projects.

While Belize has individual projects addressing disaster risk reduction and climate resilience, a comprehensive national strategy is needed to guide long-term adaptation efforts. Estimating the financial requirements and developing a detailed financial plan will ensure that Belize can effectively implement these adaptation measures and improve overall resilience to climate-related disasters.

10. **Conduct a comprehensive analysis to inform the country's risk layering strategy and enhance the VfM of sovereign risk financing.** To optimize Belize's DRF efforts, this report conducted a financing gap and VfM analysis to help the GoB make effective decisions on the selection and mix of DRF instruments. The analysis highlights that additional contingent credit can provide substantial potential VfM for Belize while cautioning against excessive reliance on budget reallocation to cover post-disaster financing needs. This comprehensive analysis must not be a one-off exercise. The GoB should develop its capabilities to better understand disaster risks and design more effective DRF strategies.
11. **Institutionalize capacity for continuous DRF analysis and integration into decision-making.** To ensure Belize's DRF strategies reflect evolving risks, establish a dedicated unit within the MoF to update disaster risk finance analyses regularly. This unit should develop local expertise, use standardized tools like financing gap and VfM frameworks, and embed findings into fiscal planning and DRF strategies. Regular updates will improve cost-effectiveness, guide risk layering, and ensure the DRF strategy remains relevant and adaptive.

Private Insurance Market

12. **Enhance the availability, penetration, and affordability of private and residential catastrophe insurance. Evaluate the potential for public-private partnerships for housing subsidies and explore potential microinsurance mechanisms.** The introduction of the New Insurance Act of 2023, which includes provisions for microinsurance, is a positive development. However, more efforts are needed to enhance insurance penetration and affordability, especially for residential properties. Evaluating public-private partnership opportunities and developing microinsurance products will further support this goal.
13. **Enhance data sharing on agricultural insurance and develop more robust and affordable products for smallholder farmers.** Limited progress has been made in this area. Enhancing data sharing and developing targeted insurance products for smallholder farmers remain critical for improving financial resilience in the agricultural sector. Further engagement with insurance providers and stakeholders is necessary to drive progress.
14. **Develop a comprehensive public awareness and education program on DRF.** Educate the public and relevant stakeholders about DRF, including insurance benefits and other risk transfer mechanisms. This can help increase insurance penetration and ensure broader financial resilience. Currently, there is limited public awareness about DRF. A structured education program could be implemented in collaboration with insurance companies and educational institutions.

An aerial photograph of a coastal wetland area. The image shows a large body of water, likely a lagoon or bay, with several patches of dense, green mangrove forest. The mangroves are situated along the shoreline and in some areas, they form small islands or peninsulas. In the upper left corner, there is a small cluster of buildings and a road, suggesting a nearby settlement. The water is a dark, deep blue color, and the mangroves are a vibrant green. The overall scene is a mix of natural and developed land.

ANNEXES

ANNEX 1

AIR WORLDWIDE RESULTS

The contingent liabilities in this report were estimated using the Tropical Cyclone CCRIF SPC model, which assumes that contingent liabilities represent 25 percent of national losses. Other available catastrophe models apply their own global assumptions; for example, AIR Worldwide estimates emergency losses (government short-term liquidity needs) as 23 percent of national damaged assets. Using the AIR model (see Figure A1 and Table A1), the average contingent liabilities for the GoB are USD 9.27 million (versus USD 6.83 million under CCRIF), with a 1 percent probability

(1-in-100) that they exceed USD 182 million (versus USD 168 million under CCRIF).

Risk models can differ for various reasons, and there is no perfect view of risk. Accessing different views of risk can help understand uncertainty and inform risk decision-making. Nevertheless, each model can be improved, particularly by using up-to-date, relevant, and accurate exposure data, the latest scientific methodologies and assumptions for the frequency and severity of events, and careful calibration to the geography and intended use of

Figure A1.
Tropical Storm Risk Profile Based
on AIR Worldwide Model

Source: AIR Worldwide.

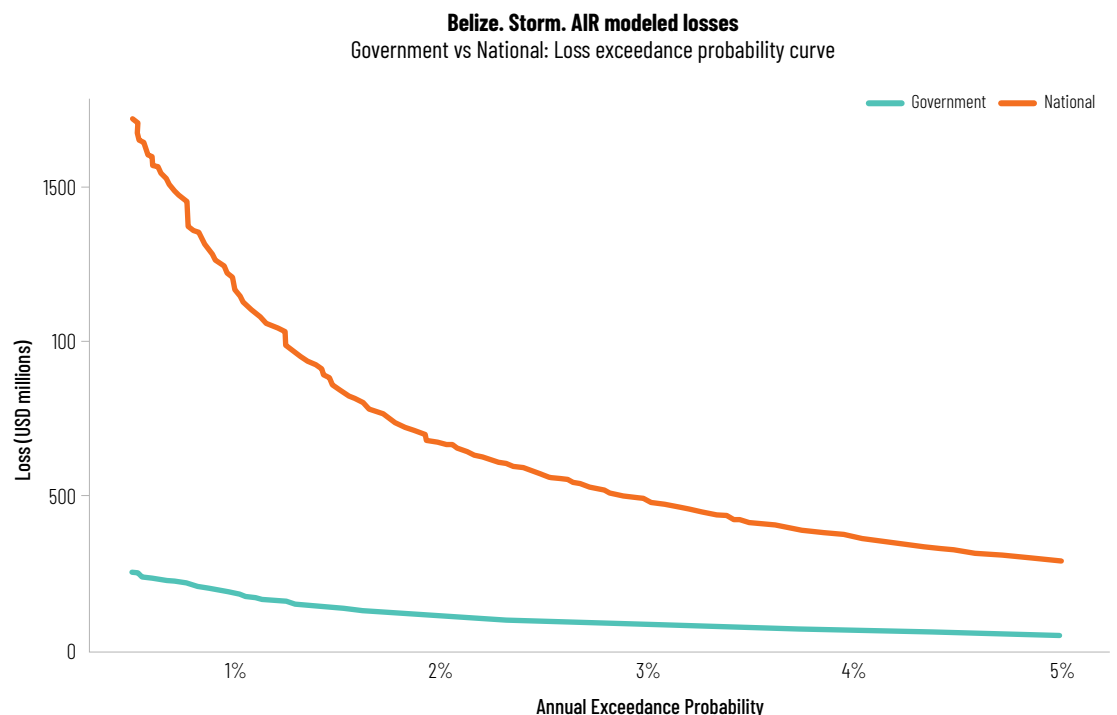


Table A1.
GoB Contingent Liabilities Due to
Tropical Cyclone

Source: AIR Worldwide and CCRIF SPC.

Metrics	USD millions (25% of CCRIF SPC Modeled National Losses)	USD millions (23% of AIR Worldwide Modeled National Losses)
Average	6.8	9.3
20% (1 in 5)	0.3	4.3
10%	7.5	20.2
2%	104.5	111.0
1%	168.0	182.6
0.5%	232.4	255.7

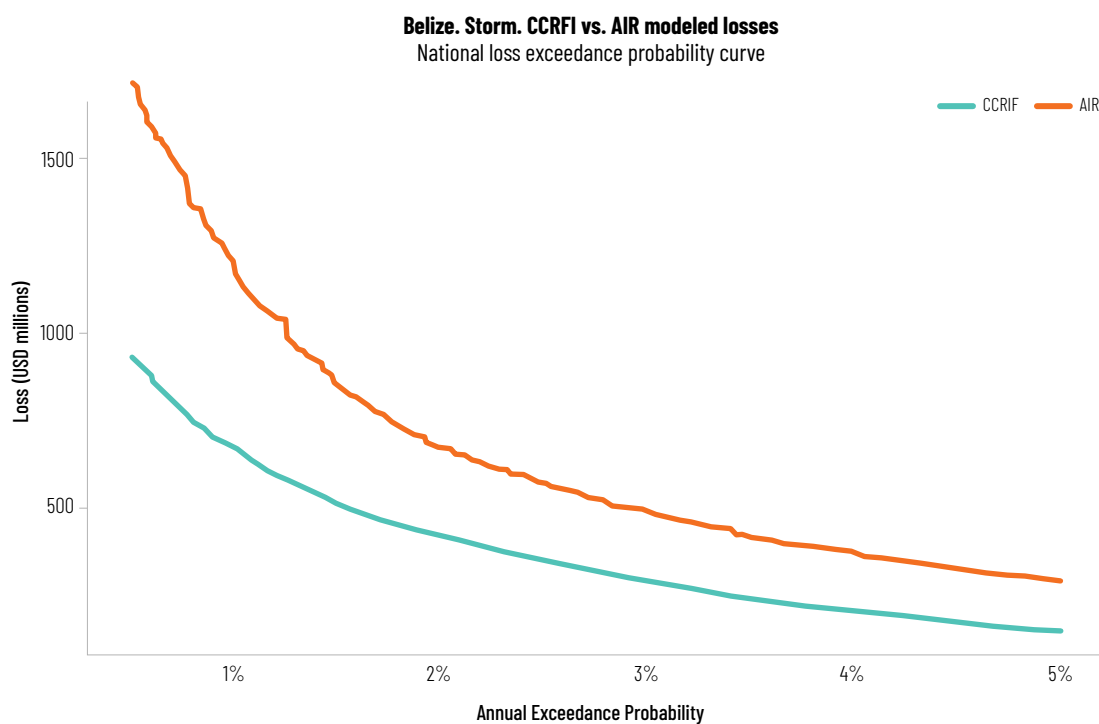
the model. Future work is needed to ensure that risk data and analytics are refined to the needs of Belize.

Figure A2 below compares the National Loss Exceedance Probability Curve based on the CCRIF SPC and AIR Worldwide models before

applying the government scaling factors of 25 percent and 23 percent, respectively. While the models agree on the extent to which losses increase for very severe events (most relevant for insurance applications), they differ on the overall size of the loss.

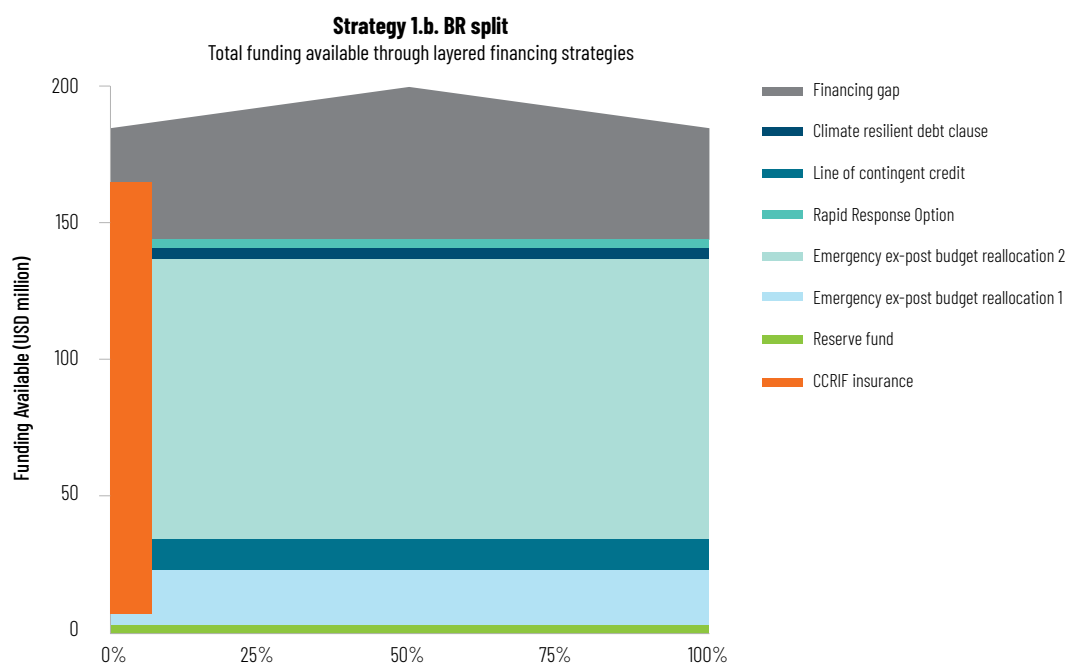
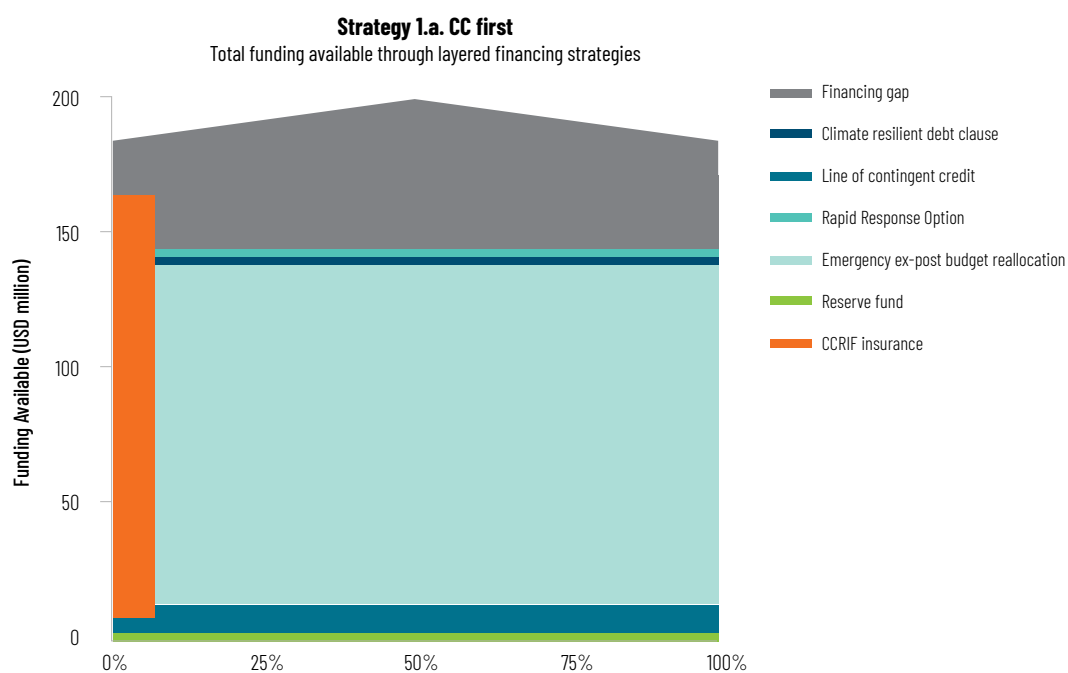
Figure A2.
Tropical Storm Risk Profile:
Comparison of CCRIF SPC and
AIR Worldwide Models

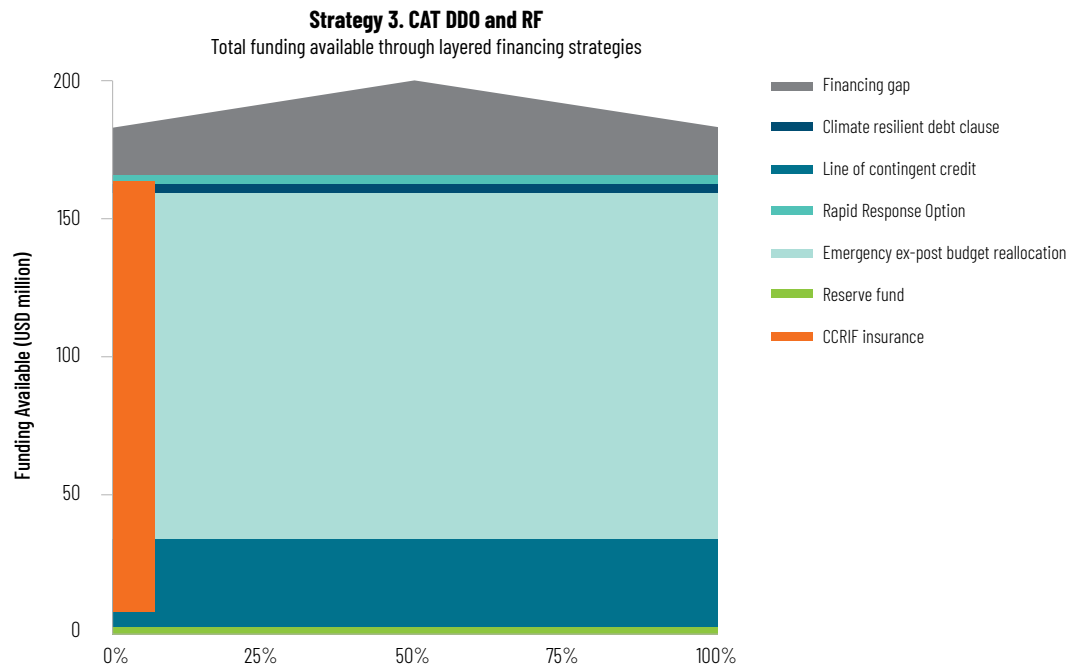
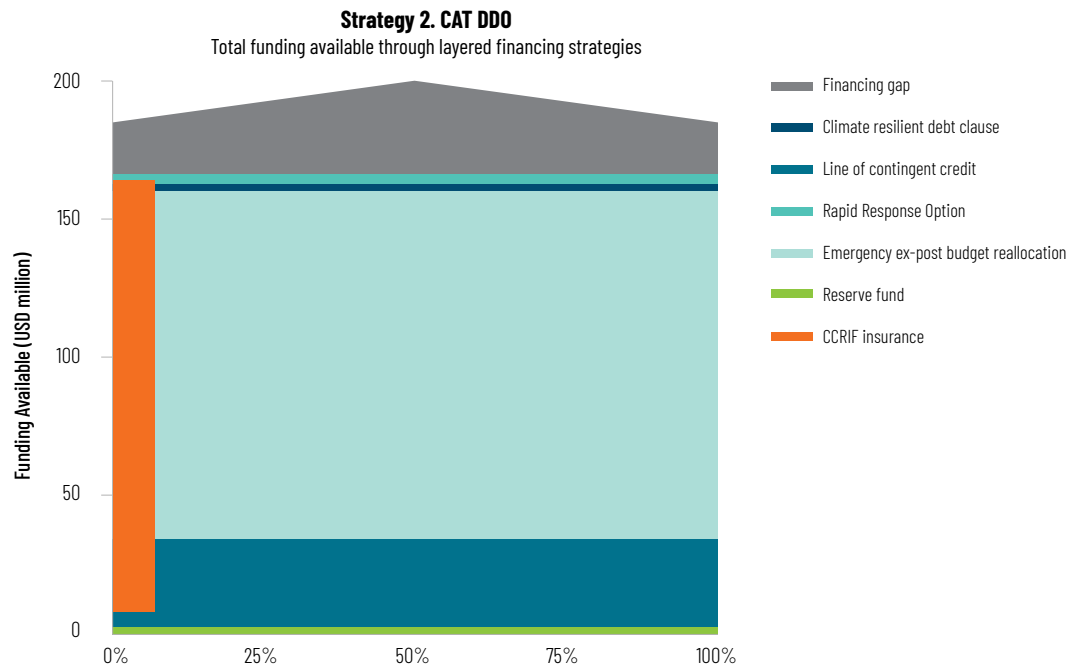
Source: AIR Worldwide.



ANNEX 2

RISK LAYERING OF DRF STRATEGIES





ANNEX 3

VFM ECONOMIC ASSUMPTIONS

Assumption	Value
Marginal interest rate on sovereign debt, assumed to be average borrowing rate on government debt portfolio	8%
Annual discount rate	8%
Investment return on unspent reserves	0%
Arrangement fee for contingent credit (simplified to assume IDA terms for all contingent credit)	0%
Standby fee for contingent grant or credit (simplified to assume IDA terms for all contingent credit)	0%
Proportion of the contingent credit amount agreed which is taken from existing borrowing facilities (for example IDA envelope) (simplified to assume IDA terms for all contingent credit)	0.25
Repayment term of contingent credit and term of borrowing given up in exchange for contingent credit (simplified to assume IDA terms for all contingent credit)	40
Grace period (simplified to assume IDA terms for all contingent credit)	10
Interest rate on contingent credit and interest rate on borrowing given up in exchange for contingent credit (simplified to assume IDA terms for all contingent credit)	1.34%
Social rate of return on projects that budget is reallocated away from	12%
Social rate of return on projects that budget is reallocated away from, used for Rapid Response Option reallocations	12%
Marginal interest rate on ex post borrowing	9.5%
Repayment term of ex post borrowing	2
Annual effective increase in cost of planned expenditures if financed through ex post borrowing	40%
Delay in financing planned expenditures if financed through ex post borrowing	0.75 years
Insurance pricing multiple	1.64
Number of years over which deferred payments are spread for the CRDC repayments	4
Number of years of deferred principle and income payments for the CRDC	2
Interest rate under the existing loan with deferred payments for the CRDC	5.4%



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