



Saint George's Inner Harbour in Grenada.

Building Climate Resilience in the Eastern Caribbean

Regional Disaster Vulnerability Reduction Program

Vulnerable Islands, Vulnerable Economies

The increasing pace of climate change will continue to have negative impacts on the people, environments, and economies of the Eastern Caribbean islands. Rising sea levels, increasing influx of hurricanes, high winds, drought, torrential rains and landslides coupled with a limited human and technical capacity, a finite natural resource base, and fragile ecosystems will increase the demand for reducing inherent climate vulnerability in the region. Collectively, these hazards reduce the ability of the Eastern Caribbean governments and their people to defend recent progress in economic growth and poverty reduction as well as improve their potential for sustained development.

Due mostly to external factors, Eastern Caribbean countries' national budgets are often over-stretched. This is, in part, because they are burdened by debts resulting from repeatedly having to rebuild after major natural disasters. For example, in 2004, Hurricane

Ivan caused damages estimated upwards of US\$900 million in Grenada—equivalent to 200 percent of the country's GDP (2003). Grenada also lost two-thirds of its housing stock. One estimate predicts that, if current trends continue, disaster events like Hurricane Ivan will become more frequent, and the region will lose an estimated US\$350-870 million annually between 2015 and 2050.¹

To address these challenges and reduce their vulnerability, the Eastern Caribbean countries will need to improve their understanding of the risk of natural hazards, take the appropriate measures, and enhance their monitoring and land-planning practices. To help mitigate the effects of future hazards, they will also need to strengthen key national infrastructure, such as bridges, roads and sea walls. These investments will require large amounts of technical assistance and financing. Therefore, the ability of the governments to access climate funds will be critical.

1 Burke, L. and Maidens, J. 2004. *Reefs at Risk in the Caribbean*. Washington, DC, World Resources Institute.

“There remains an urgent need to improve the information-base with regard to the risks posed by climate change impacts in the Caribbean and the capacity of adaptation options to cope with different levels of climate change, so as to enable greater evidence-based adaptation assistance from the international community.”

—Jim Joseph, National Geodata Coordinator Coordinator, Saint Lucia.

The Eastern Caribbean countries also understand that they must face these challenges together. As former British colonies and members of the Organization of Eastern Caribbean States (OECS),² they share a common language, currency, colonial history and economic union. Their political and institutional arrangements are similar, as are their geographical characteristics. They are also vulnerable to one-another’s external shocks. As demonstrated by Hurricane Ivan, when one country is devastated by an extreme climatic event such as a hurricane or drought, it directly affects neighboring islands’ economies. This relationship provides the basis for a two-tiered approach to disaster vulnerability reduction, supporting measures at both the national and regional levels in parallel.

Supporting Resilient Investments

The World Bank and the Climate Investment Funds (CIF) are committed to supporting the efforts of Eastern Caribbean countries to reduce vulnerability to natural hazards and anticipated impacts of climate variability. On June 23, 2011, the World Bank Board approved the US\$47 million Regional Disaster Vulnerability Reduction Project (RDVRP) for Grenada and Saint Vincent and the Grenadines. The project’s financing is a combination of World Bank International Development Association (IDA) credits and climate financing supported by the CIF through the Pilot Program for Climate Resilience (PPCR).³ This is the largest project ever supported by the

² Formed in 1981, the Organization of Eastern Caribbean States (OECS) is an inter-governmental organization dedicated to economic harmonization and integration, protection of human and legal rights, and the encouragement of good governance between countries and dependencies in the Eastern Caribbean. The seven member states are Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines.

³ The PPCR is a targeted program under the Strategic Climate Fund. The PPCR demonstrates ways in which climate risk and

World Bank for the region. More importantly, the RDVRP signifies a shift from business as usual in the Caribbean as it takes a core development-planning approach that is led by the respective ministries of finance.

Due to their relatively high per capita income and small population size, Eastern Caribbean countries do not have access to significant financing. Therefore, projects in the Caribbean are usually small and targeted sector-specific interventions. The RDVRP is enabling the governments of Grenada and Saint Vincent and the Grenadines to simultaneously address their infrastructure needs and build capacity to identify and analyze climate risks at the country level. For the first time in the Eastern Caribbean, the RDVRP is providing the financing to make a tangible impact—at both at the national and regional levels. An investment of this size and comprehensive nature will yield benefits of regional learning, climate resilience, and disaster risk reduction for years to come.

A Regional Approach

In order to build upon ongoing collaboration and geographical, political, and institutional similarities, the RDVRP is also designed to strengthen the region’s collective resilience to climate change and natural hazards. The participating countries identified territorial planning and infrastructure as the two thematic focus areas most critical to building climate resilience. Through this regional approach, the RDVRP aims to create a platform for knowledge exchange.

Critical to improving territorial (land use and physical) planning processes is improving the way in which hazard, risk and climate data are managed. For this reason, in October 2011, the government of Grenada hosted “an RDVRP-sponsored workshop aimed at finding ways to improve data management and data sharing within governments and throughout the region. During the workshop, participants addressed the technical challenges of national and regional geospatial data management. Facilitated by the Labs team from the Global Facility for Disaster Reduction and Recovery (GFDRR),⁴ participants were introduced to the GeoNode software platform as a data sharing management tool and explored its technical applications as well as the requirements to foster improved national and regional data sharing and collaboration.⁵ The workshop supported the creation of an

resilience can be integrated into core development planning and implementation. The PPCR includes nine country pilots (Bangladesh, Bolivia, Cambodia, Mozambique, Nepal, Niger, Tajikistan, Yemen, Zambia) and two regional pilot programs in the Eastern Caribbean and the South Pacific.

⁴ Founded in July 2010, the mission of the GFDRR Labs is to use science, technology, and innovation to better empower decision-makers in the developing world to increase their resilience to disasters in a changing climate. The Labs strategy is to build partnerships and communities that utilize open data and open source technology to assist decision-making.

⁵ <http://geonode.org/about/>



Road damage in Saint Vincent and the Grenadines after Hurricane Thomas in October 2010.



Community in Georgetown overlooking effects of heavy rains and flooding on Saint Vincent Island in March 2011.

online community of practice of geospatial practitioners, information technology specialists and regional development partners to continue discussions on data-related issues and ways to improve regional collaboration.

Following the workshop on improving data management, the government of Saint Vincent and the Grenadines hosted a workshop on building more climate resilient infrastructure. Participants discussed options for improving building codes, design standards, and construction materials. As an outcome of the workshop, engineers from the respective ministries of works established a regional community of practice. Together, they are working out a way, with support from the World Bank in collaboration with the Caribbean Development Bank (CDB), to create harmonized building codes and design standards. In an effort to improve regional sharing and integration of knowledge and expertise, future collaboration will include all Eastern Caribbean countries.

Strategic Investments for Development Planning

Over the course of the last few decades, Grenada and Saint Vincent and the Grenadines have suffered from an increasing number of disasters resulting from climate-related events, such as hurricanes, landslides, rainfall and drought. These disasters have caused significant and recurrent damage to these countries' housing and infrastructure, with significant impacts on human welfare and the economy.

In response, the RDVRP is enabling the governments of Grenada and Saint Vincent and the Grenadines to embark on a proactive approach to reducing climate risks and strengthening the capacity of their national infrastructure, institutions and people to cope with the negative impacts of climate variability. The RDVRP's approach includes (i) prevention and adaptation investments in public buildings

and infrastructure, (ii) hazard and risk evaluations and applications to improve decision making and building practices, and (iii) an emergency recovery and rehabilitation mechanism to re-categorize financing or provide additional financing in the case of a national emergency.

In parallel, the World Bank is collaborating with the Inter-American Development Bank (IDB) at a regional level, through the CIF-supported PPCR, to strengthen the capacity of Caribbean countries to integrate climate resilience into development planning. This regional program will be implemented by regional agencies in the Caribbean, and aims to scale up and leverage climate resilient investments by building on other ongoing initiatives. With support from the regional agencies, the program will provide a strategic framework to channel donor funding and foster regional partnerships—which Dominica and Saint Lucia are also directly participating and plan to join the RDVRP in the coming months.

“The establishment of a Sub-Regional Engineering Association would help us (Eastern Caribbean) get to the level where we can use the same codes and standards throughout the region. This will facilitate a more competitive private sector while simultaneously ensuring more climate resilient infrastructure.”

—Cecil Harris, Chief Technical Officer, Ministry of Works, Grenada.



Vulnerable housing resettlement at La Sagesse and Bausejour, Grenada after Hurricane Ivan in 2004.

The RDVRP will improve the governments’ understanding of where, and how to build in a changing climate. A variety of approaches will be tested and will provide best practices for watershed management, flood mitigation, legislation, advocacy, coastal zone management, slope stabilization and climate resilience. This approach will benefit the Eastern Caribbean community, first, by strengthening institutions and human capacity, and, second by better integrating natural hazard and climate risk considerations into planning processes. Although the project will produce many tangible products, such as detailed hazard maps, its main achievement will be a greater knowledge and awareness among government policy makers, technical specialists, and practitioners of climate and disaster risk management, of how to plan for an uncertain future.

A Safer Environment for the Future

The Eastern Caribbean governments and the World Bank recognize that the RDVRP is an important step in providing a safe environment for the people of the region. Under the project, government agencies will strengthen their hazard monitoring and risk identification systems, which will facilitate improved policies and planning to confront future hazards. Policy makers, government specialists, and communities will be better informed and able to use the information for better decision making. Governments will incur fewer economic losses and communities will be better prepared and resilient to impacts. Collectively, these investments will provide the enabling environment for broader economic development and improved livelihoods for populations in Grenada and Saint Vincent and the Grenadines, as well as the Eastern Caribbean region as a whole.

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