



# Applying Disaster and Climate Risk Information in Decision-Making and Infrastructure Development in Saint Lucia

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Presenter: Farzana Yusuf-Leon  
Water Resource Specialist

Water Resource Management Agency, Ministry of Sustainable Development, Energy, Science and Technology



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# SAINT LUCIA OVERVIEW

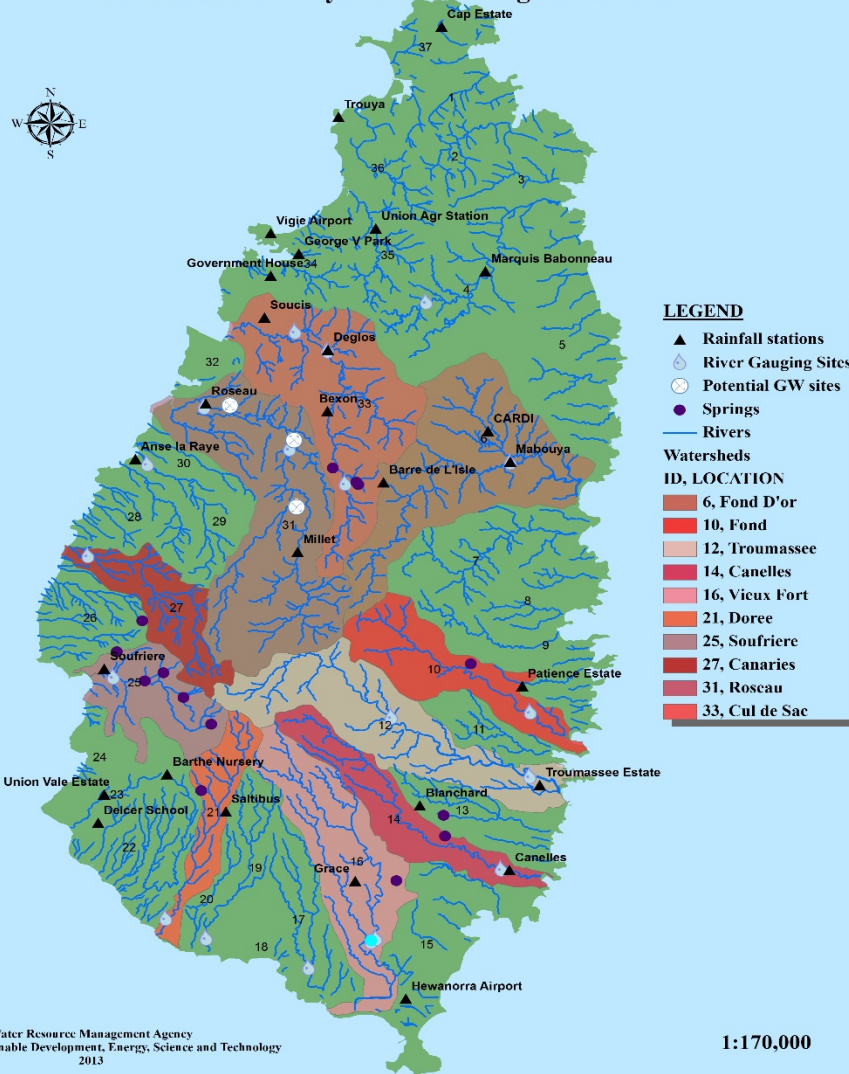
- Area: 616 km<sup>2</sup>
- Population: 166,526 (May 2010)
- Geology/Topography:  
Rugged, primarily volcanic
- Wet season: June to December
- Dry Season: January to May
- Average annual rainfall:  
approximately 1700 mm
- Maximum rainfall occurs  
between September-  
November



- Main economic activities:  
Tourism, Agriculture, Fishing,  
Services, Small Manufacture

# WATER RESOURCES OF SAINT LUCIA

Map of Saint Lucia showing the 10 Major Watersheds, Water Sources and Hydro-Meteorological Network



- 37 watersheds- rugged mountainous upper watershed areas to low lying coastal areas
- 28 water infrastructure intakes
- 1 dam
- Total available supply of surface water: approx. 7 billion gallons per annum / 20 MGD

# IMPACTS DUE TO CLIMATE CHANGE

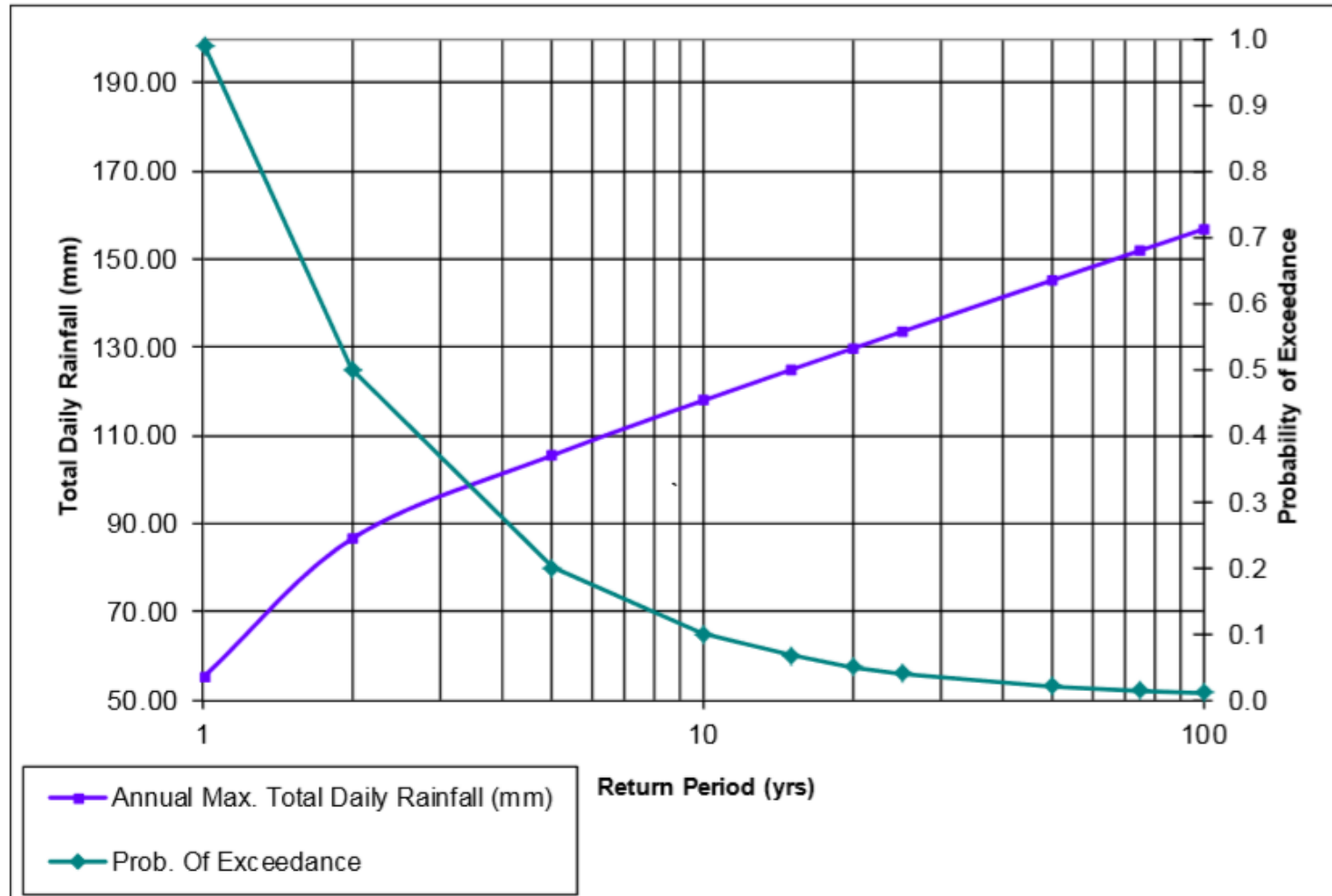
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- Medium to long term reduced quantity of surface water
- Reduced surface and spring water quality
  - Increased incidences of flooding
  - Increased incidences of drought
- Increased erosion of riverbanks and siltation of surface water
- Increased sediment deposition in coastal environment
- Coastal and beach erosion due to storm surges and sea level rise

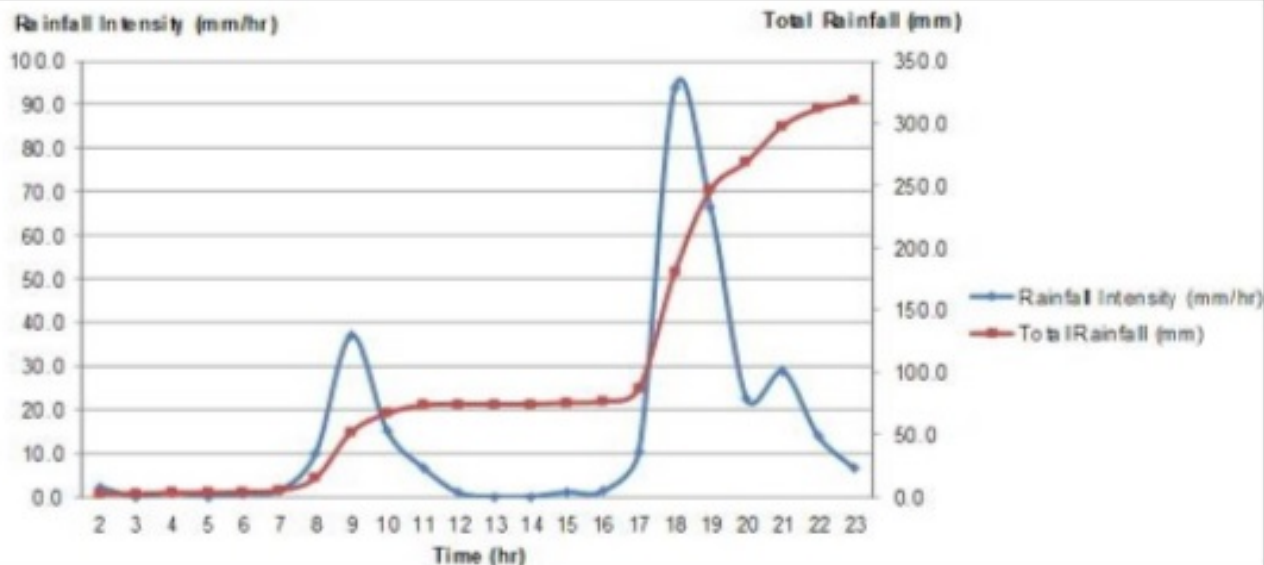
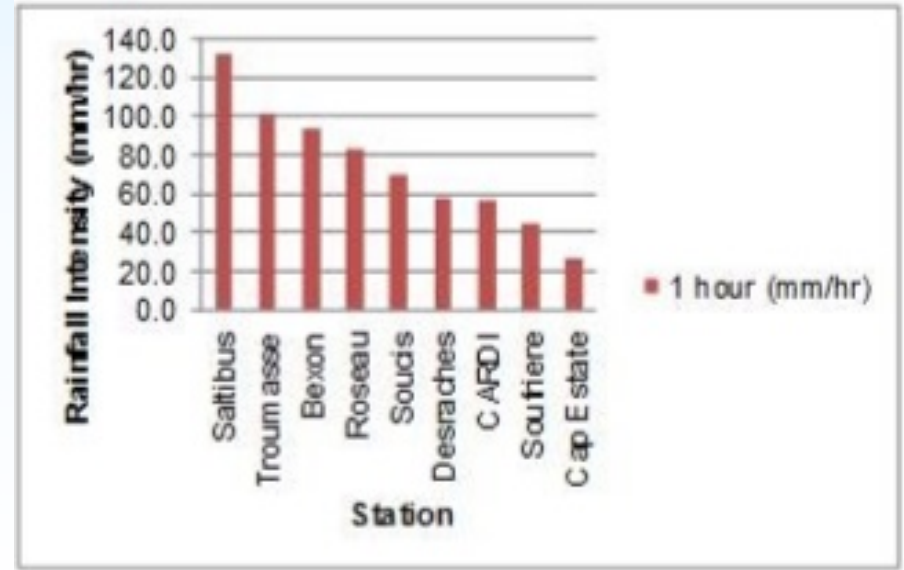
# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

Rainfall occurrences versus return period



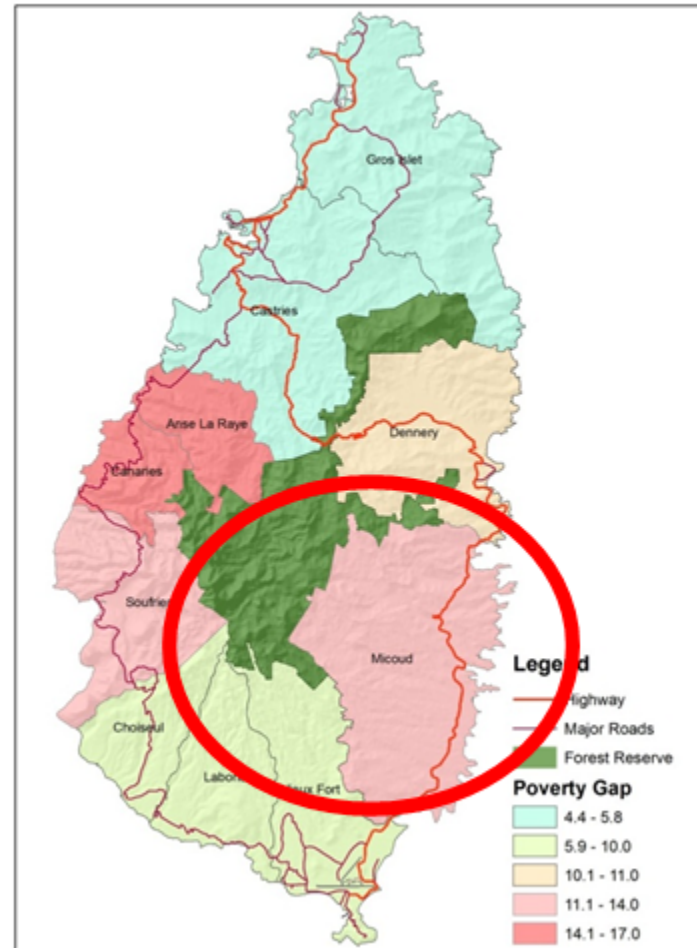
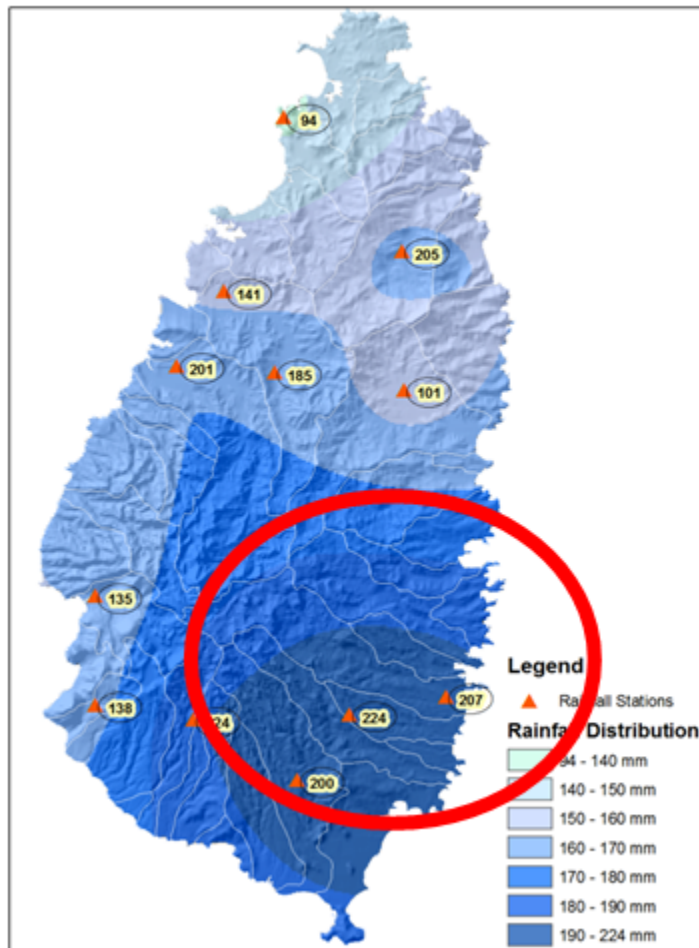
# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

- Rainfall Intensity during Trough of December 24, 2013



# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

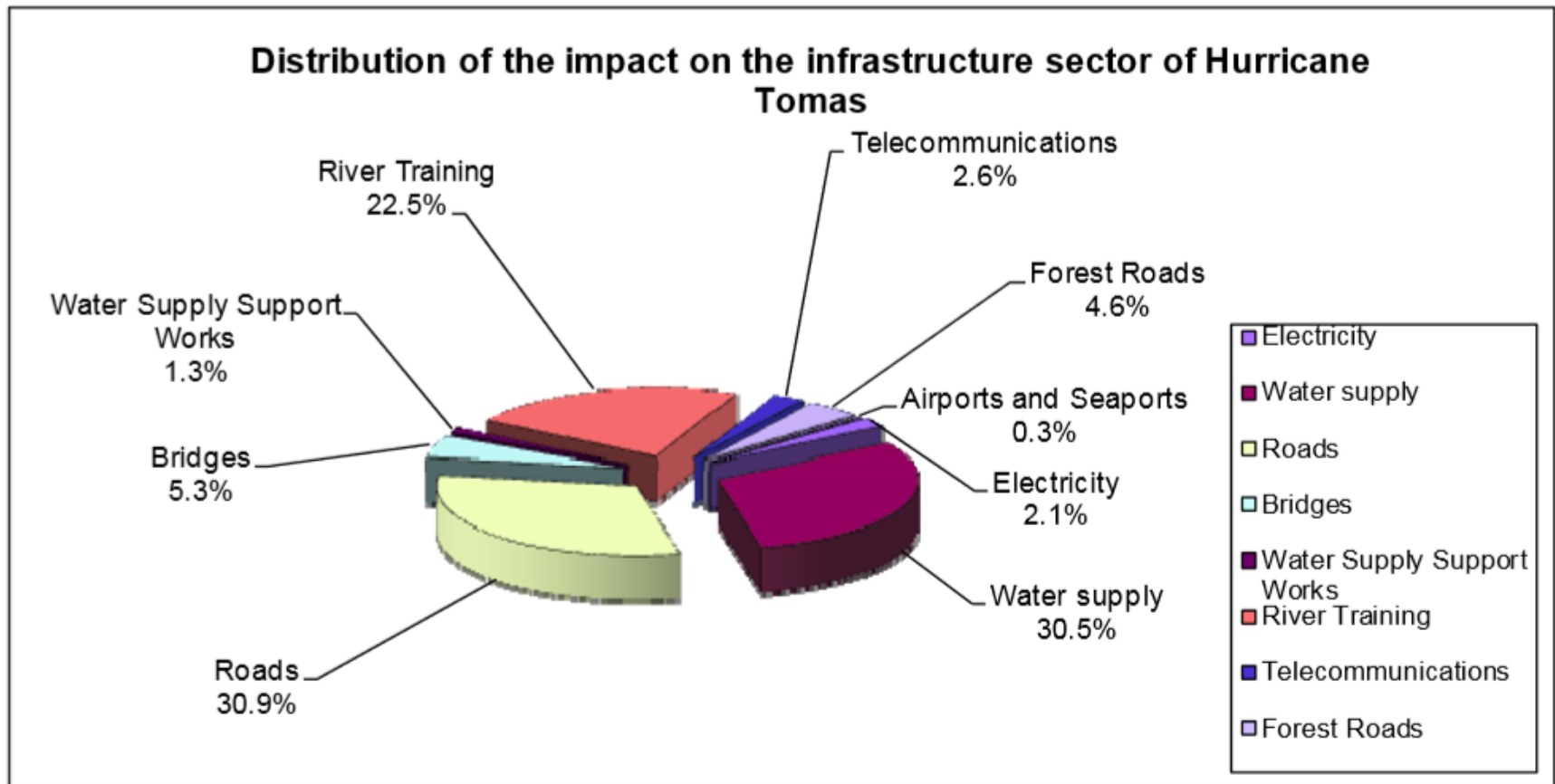
Maximum rainfall intensity in 3 hours, Dec 24 2016 Poverty gap 2005/2006





# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

Impact of Hurricane Tomas, October 30 2010



Source: ECLAC estimates based on official Government of Saint Lucia data

# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

- Compromised water supply infrastructure

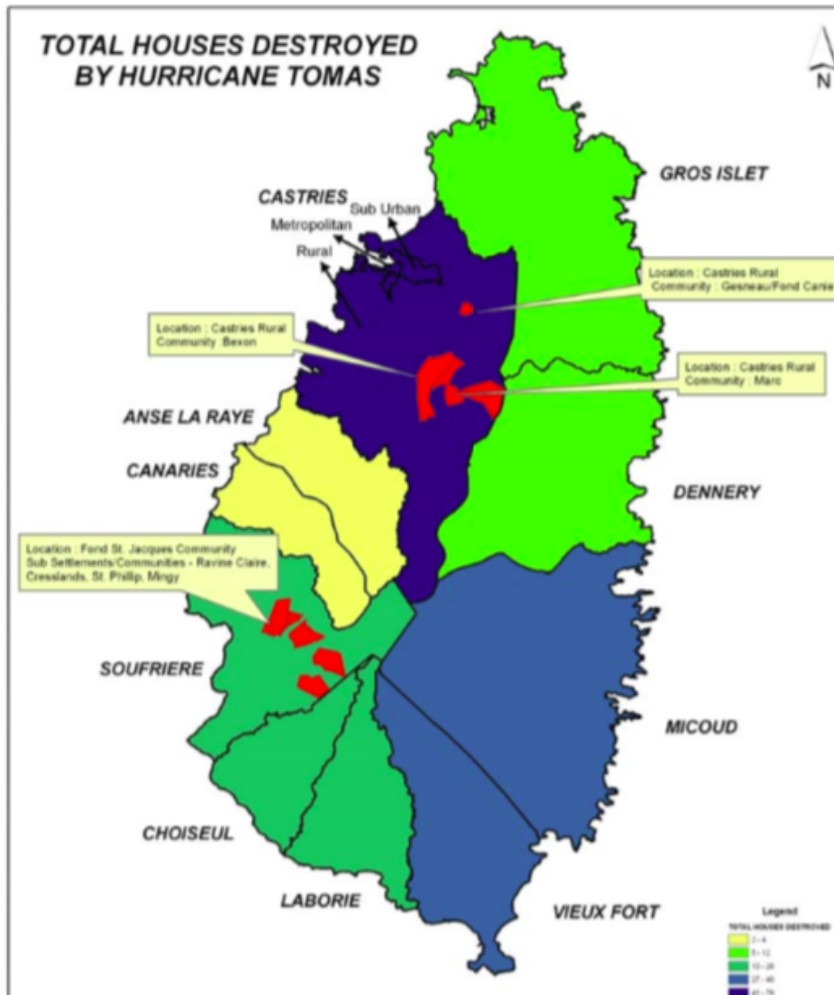


- Increased rate of siltation of John Compton Dam
- Acute shortage of potable water, especially in times of emergency



# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

- Impacts on private and public infrastructure



Map shows total houses destroyed and also highlights the most affected areas of hurricane Tomas.

Data Source : Central Statistical Office - GIS Mapping Unit

0 1 2 Kilometers  
SCALE 1:200,000

Legend  
dashed line: Parish  
Red: AREAS MOST AFFECTED



# DISASTER-RELATED IMPACTS TO WATER AND INFRASTRUCTURE SECTORS

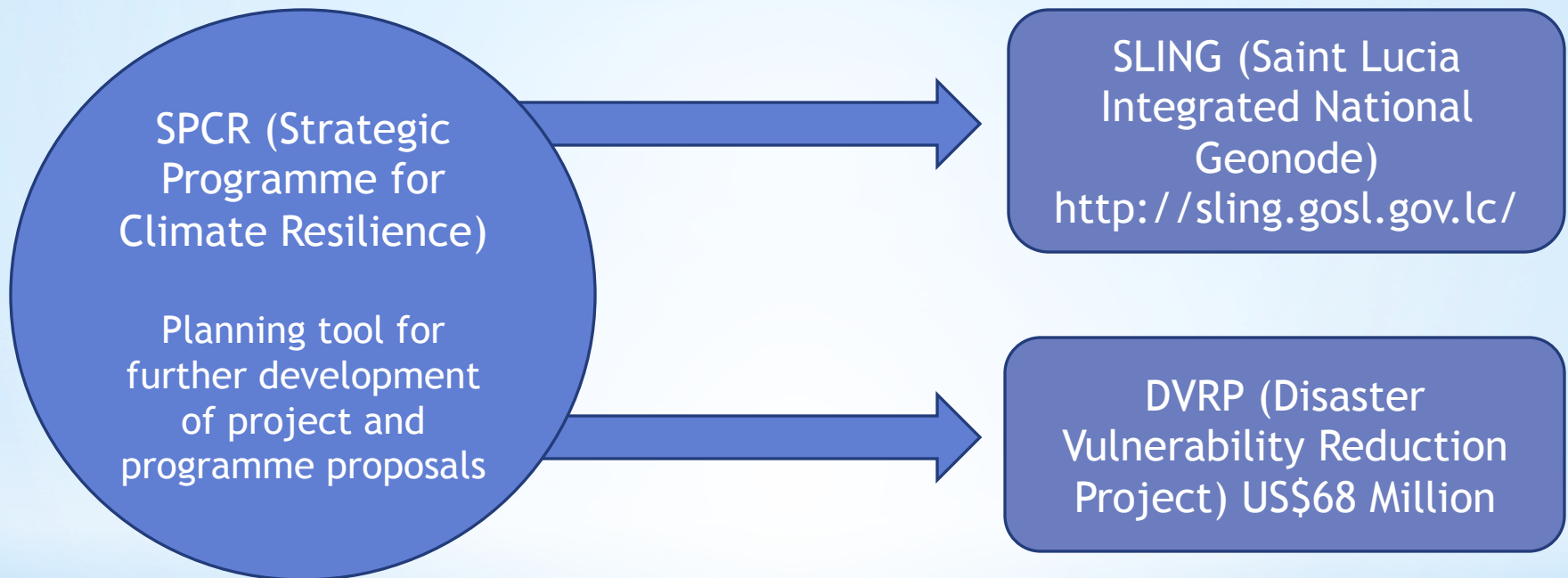
- Damaged bridges, roads and culverts



- Loss of data recording equipment



# STEPS TOWARDS ADOPTING A COORDINATED APPROACH



Cross cutting sectors require an integrated and multi-sectoral approach in addressing disaster risk reduction and climate change vulnerability, therefore projects were processed as a single programme with blended International Development Association, World Bank (IDA) credit and Pilot Programme for Climate Resilience (PPCR) grant and concessional loan funded by the Climate Investment Funds (CIF)

# DISASTER VULNERABILITY REDUCTION PROJECT

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Objective: Reduce vulnerabilities to natural hazards by:

- Developing a more comprehensive way of gathering appropriate data to make informed decisions
- Developing effective disaster risk management policies
- Undertaking specific risk assessments to adopt strategies that will ensure improved construction of physical infrastructure
- Designing for improved resilience of infrastructure to future natural disasters

Implementation:

Component 1- Risk Reduction and Adaptation Measures

**Component 2- Technical Assistance for Improved Assessment and Application of Disaster and Climate Risk Information and Decision Making**

Component 3: Climate Adaptation Financing Facility

Component 4: Contingency Emergency Response

Component 5: Project Management and Implementation Support

# DISASTER VULNERABILITY REDUCTION PROJECT

Project	Expected Outputs/Outcomes
<b>Optimization of the meteorological and hydrological monitoring network</b>	An optimized network of hydro-meteorological equipment from which reliable and accurate data may be received for storage and analysis.
<b>Procurement of software and equipment to support analyses and investigations</b>	The relevant data collecting agencies are well equipped with a platform by which to store, analyse and share data.
<b>Procurement of water quality field testing equipment</b>	To enhance capacity by facilitating physical, chemical and bacteriological testing during field investigations towards decision-making
<b>Increasing public awareness and sensitization through education in watershed management</b>	To have informed and educated members of the public regarding watershed systems and reduced water availability in an effort to incite the adoption of better practices.
<b>Strengthening Sea Level Monitoring Network</b>	High quality data stream available on a continuous basis for monitoring changes along the island's coast as well as computing future tidal fluctuations

# DISASTER VULNERABILITY REDUCTION PROJECT

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<b>Project</b>	<b>Expected Outputs/Outcomes</b>
<b>Development of a national wastewater management strategic plan</b>	To reduce the vulnerability to the effects of climate change through the development of a national wastewater policy and management strategic plan to guide the collection, treatment and disposal of wastewater island-wide
<b>Development of guidelines for watershed management plan preparation and development of one watershed management plan for a critical watershed</b>	Comprehensive guidelines for preparation of watershed management plans in Saint Lucia to protect natural resources and encourage sustainable livelihoods and development



# ADDITIONAL ASSISTANCE TOWARDS IMPROVING CLIMATE SERVICES

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Technical assistance from the World Bank was requested by the Prime Minister and Minister of Finance for a comprehensive review of the hydro-met setup in Saint Lucia. The assessment seeks to undertake the following:

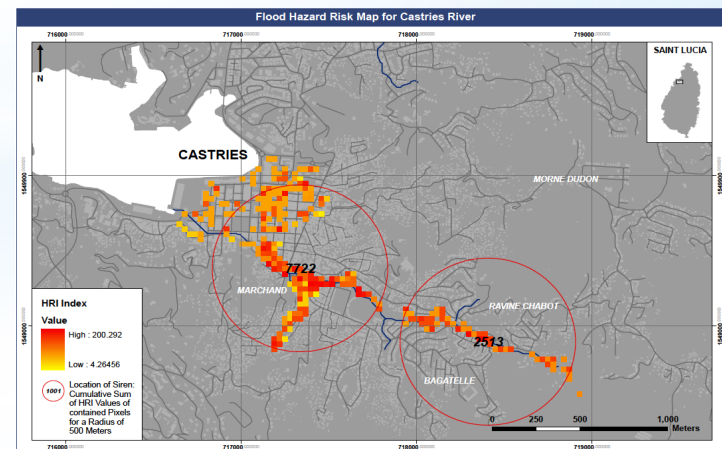
**- Review the needs and capabilities of the Met services and WRMA agencies in terms of the collection of hydro-meteorological data.** This review should not only examine the need to expand data collection but should also the staffing and equipment needs required to ensure that existing and future observation stations can be maintained.

**-Examine the forecasting capabilities of the Met Services,** with particular focus on the role of institutional relationships with CIMH and Meteo-France, to develop plans for forecasting non-hurricane storms in the future.

# SUPPLEMENTARY DRR PROJECTS

## Early Warning System and Hydrological Monitoring for Water Management and Disaster Risk Reduction Project funded by Australian Government

- Investigation of groundwater potential to augment potable water supply- Completed June 2014
- Installation of flood early warning systems to reduce disaster risk (Castries, Anse la Raye, Canaries)- Ongoing
- Development of waste disposal sites inventory for regulation of waste disposal impacting water resources- Ongoing



# SUPPLEMENTARY DRR PROJECTS

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## **USAID- OECS Reduce Risks to Human & Natural Assets Resulting from Climate Change (RRACC) Project**

- Demonstration project in GIS technology towards mapping of the existing water supply infrastructure- Ongoing

## **Japan International Cooperation Agency (JICA)**

- Early Flood Warning Systems (Corinth, Bois d'Orange)- Implemented 2012



## NEXT STEPS

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Foster synergies between existing projects and DVRP  
Encourage sustainability through collaboration and cooperation amongst regional countries

<https://www.youtube.com/watch?v=U07rxTiJzoo>

Continue mapping of resources

Continue assessment of hydro-meteorological services

Proposed South-South Exchange in order to:

- increase sharing of knowledge and best practices;
- learn from experiences;
- enhance data collection, analysis and dissemination;
- and

pursue and/or collaborate on appropriate research

THANK YOU

QUESTIONS?

