Regional Forum on Building a Caribbean Pathway for Disaster Resilience in the Caribbean Disaster Emergency Management Agency (CDEMA) Participating States

Setting the Context Resilience in a hazardous region and expectations for the next three Decades.

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The Caribbean Region is…

Characterized as a highly vulnerable region with a long history of devastating hazard impacts that repeatedly derail socio-economic development and growth

Frequently impacted by hydro-meteorological hazards - hurricanes, tropical storms, floods and droughts

Affected by earthquakes and volcanic eruptions though not as frequently or as equally devastating

Emerging trans-boundary threats- epidemics/pandemics terrorism, climate change

Disasters and Development

Disasters have repeatedly set back development

With climate change

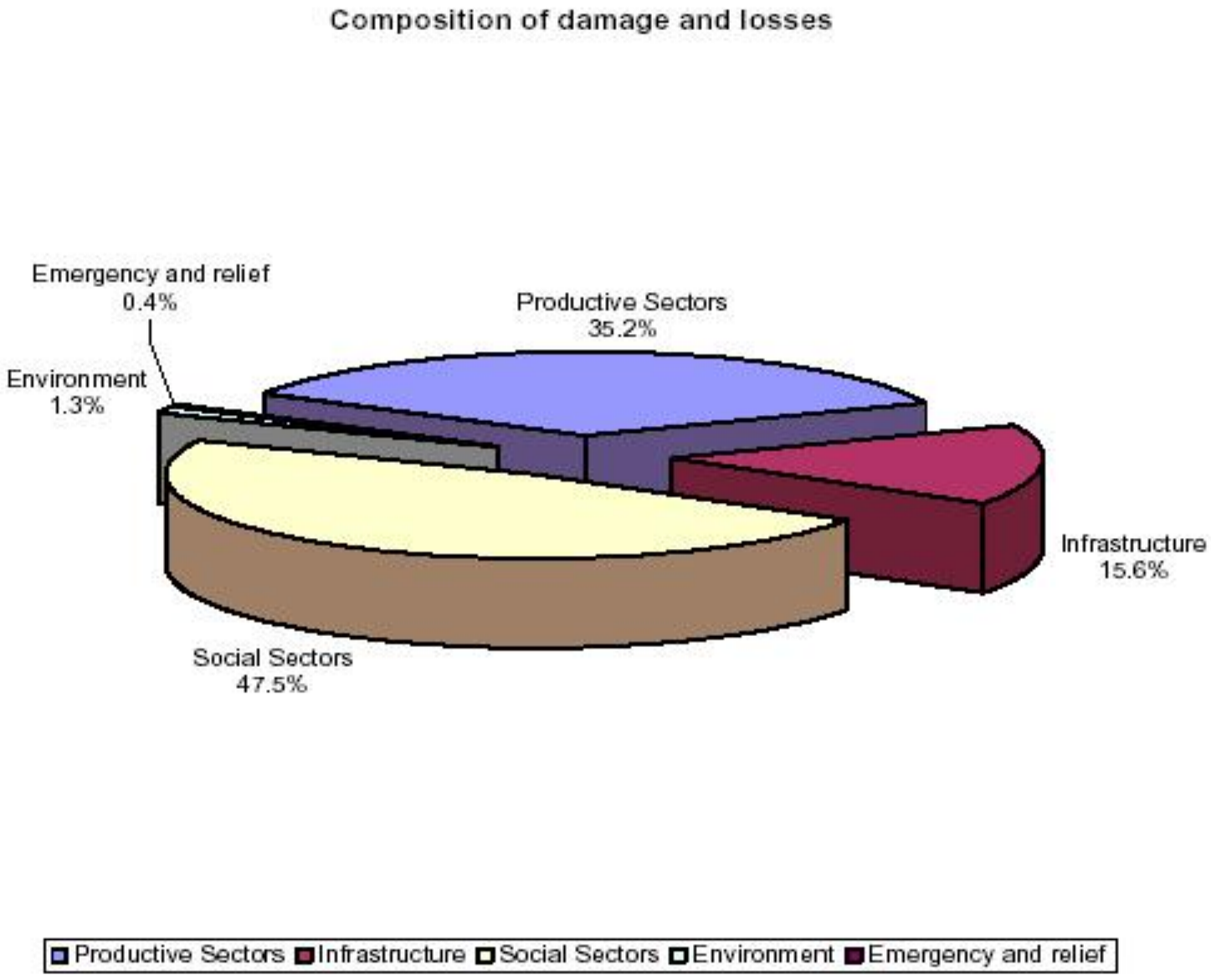
- The occurrence of hazards is likely to increase
- Impacts on ecosystems, reductions in water and food availability and changes to livelihoods will increase vulnerability

The poor, and poorer countries, are hit hardest

Profile of Recent Events (St Vincent and Grenadines)

Event	Impact	Losses in EC$	Affected sectors	% of GDP
Drought first half of 2010	Several months without rainfall, water rationing and numerous bush fires	$100 million	Agriculture	9.1
Hurricane Tomas October 2010	28% of the population was affected, including 5% severely, over 1200 in shelters. **The economic losses were primarily to the agriculture sector**	$150 million	98% of agriculture sector (banana and plantain), forestry, housing stock (6,100 affected, 1200 destroyed), water, telecomms and electricity.	16.8% 119.8% of agricultural GDP 300% of tourism GDP
Excessive rainfall (6-10" in 4 hrs) April 2011	Torrential rainfall affected the NE of the country resulting in severe flooding, landslides, displaced 56 families	$100 million	Roads and bridges, water supply • Infrastructure - $40.2M • Forestry - $38M	
Excessive rainfall (10" in less than 5 hrs) December 2013	500 persons displaced	$330 million	Physical infrastructure (roads, bridges, electricity and water)	15-17%

Source: Disaster Risk Reduction Country Document: Saint Vincent and the Grenadines, 2014



Losses Across all elements of Society and Economy

IVAN IMPACT ON SOCIAL SECTOR

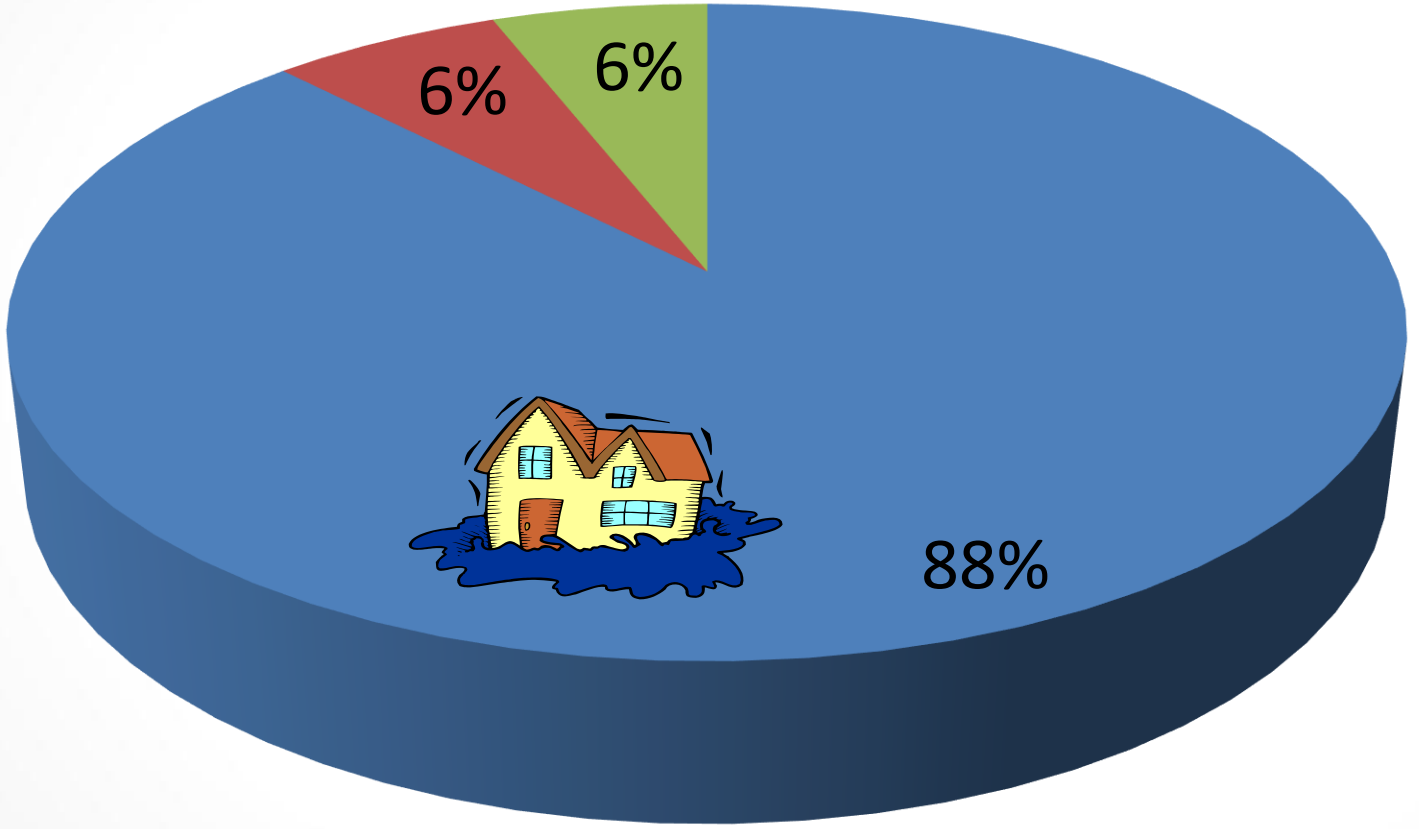
EDUCATION

- 77 schools
- 2 special education schools
- 14 day care centers
- 14 sporting facilities
- 18 communities centers
- Libraries, archives and historical sites

HEALTH

- 11 public health institutions

Social Sector Damage – Jamaica Ivan



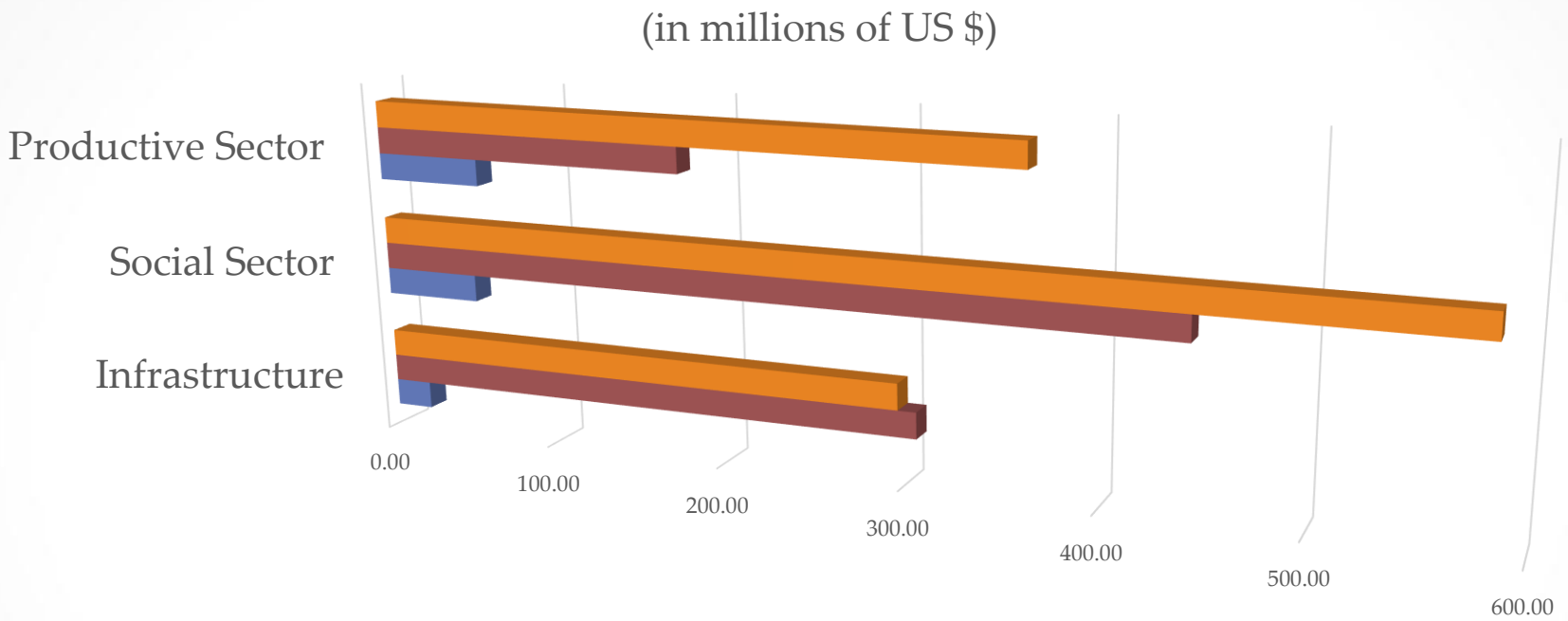
Cost of Disasters in Jamaica 2001-2011

Accumulated cost of natural hazards to Jamaica since 2001 is between 1.3 and 1.7 billion US dollars (**JMD 118 billion**).

- **This is an average of US$171 million** ***per annum***
- Exceeds all items in the estimates of expenditure for the 2010/2011 capital budget for the Government of Jamaica except for debt servicing and civil aviation
- Exceeds the cost of Environmental protection, Physical Planning, Energy, Education, Housing, Social Security & Welfare and Health *combined*
- 9% of the capital budget for 2010/2011

(Source : David Smith)

IRMA and MARIA: SUMMARY IMPACT BY SECTOR GROUPINGS AND COUNTRY



	Infrastructure	Social Sector	Productive Sector
British Virgin Islands	296,000,000.00	583,020,000.00	363,390,000.00
Dominica	306,000,000.00	443,910,000.00	177,950,000.00
Antigua and Barbuda	20,465,000.00	54,216,196.00	59,488,700.00

Effects of disasters stronger on developing countries

- Severe disasters never have positive benefits

Impact on growth varies by hazard

- SIDS face higher relative costs than DC for value of damage and # persons affected

Median Reduction of 2.2 % real GDP in same year

- Median increase in current account deficit in same year
- Public debt increase 6.5% over 3 yrs

IRMA AND MARIA: HAZARDS IN PARADISE

The Events

- 2 Cat 5 events in two weeks
- 2nd time 2 land falling Cat 5 in a season
- 2nd highest wind speed
- Rapid Onset from TS to Major in 48 hours

The Impacts

- 12 Caribbean Islands; 7 CDEMA Participating States
- Full diversity of language and jurisdictional arrangements
- >US $100 billion in damage
- More than 100 deaths

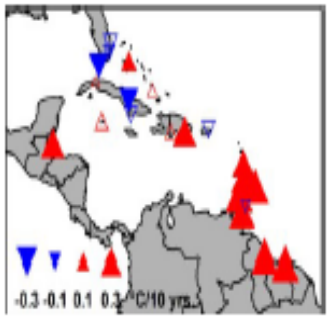
Evidence of the emergence of an Era marked by Unfamiliarity

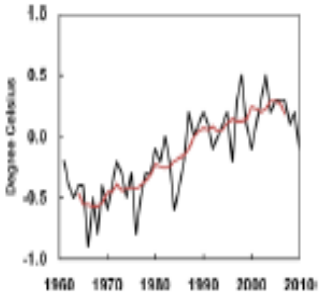
It's hotter

1 ~ 1 degree rise since pre-industrialized times.

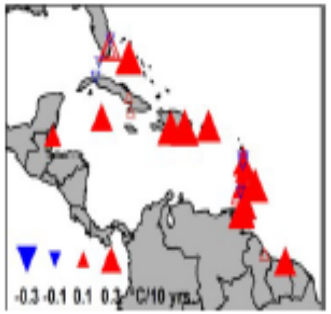
Earlier and longer summers

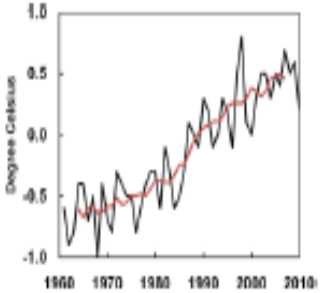
Hot days





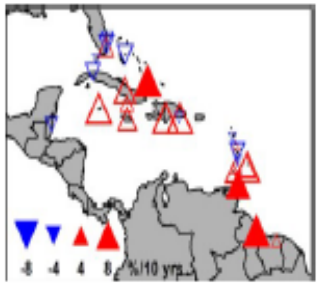
Hot nights

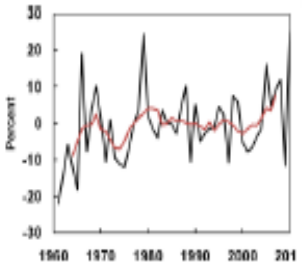




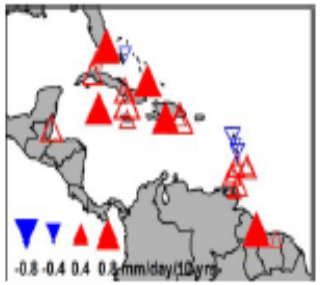
Rain is more variable

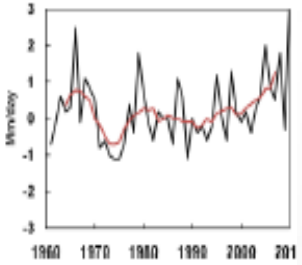
Total Rainfall





Intense Rainfall





(1) Very variable rainfall pattern + some places getting wetter, some getting drier + (3) 'nature' of rain is changing

Stephenson et al (2014)

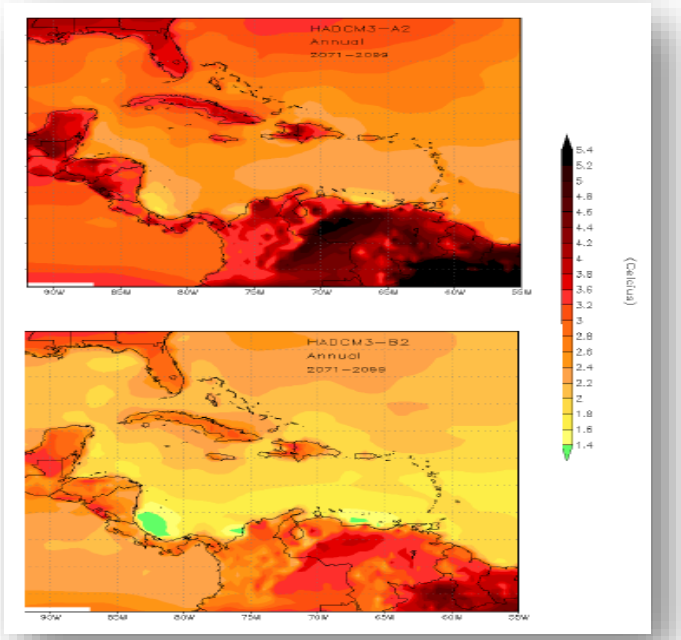
Foretelling of a future marked by the Unprecedented

(Taylor 2017)

1

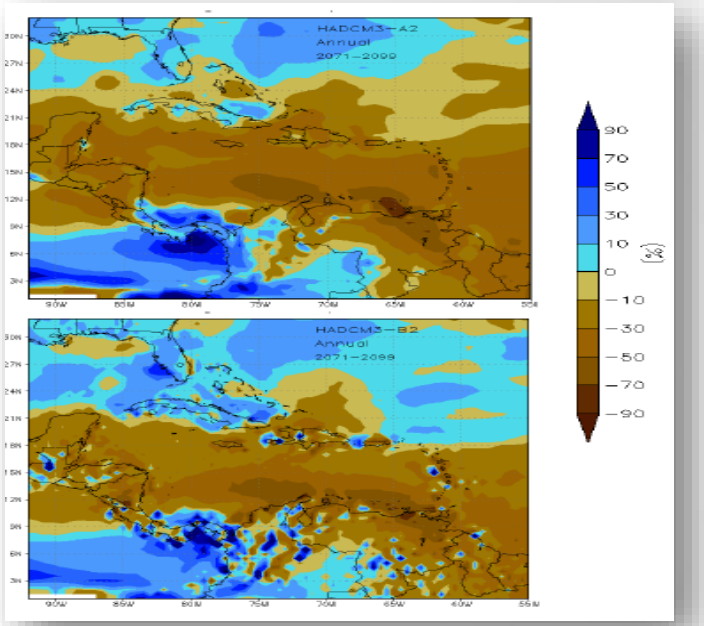
2

…even hotter times



- 1-4 degrees by century's end
- 30-98% of days annually will be 'hot' by the 2090s
- Only 2% 'cool' by the 2080s

…even drier conditions



- Still variable but less
- ~40% drier.
- Shorter rainy season
- Longer, more severe droughts

Taylor et al (2013)

Foretelling of a future marked by the Unprecedented

(Taylor 2017)

The future Caribbean climate will look a lot different!

1

2

Already	1 degrees hotter	Variable	More extremes	3.5 mm per year
				
To Come	Up to 4 degrees hotter	Variable + up to 30% drier	More intense extremes	1-2 m sea level rise

Our future will see '**unprecedented**' climate change

Notification of need for Urgent action that 'ups the ante'

Irma and Maria indicate we need to do even more now!

(Taylor 2017)

1

Mitigation +

'…changing so we reduce the amount of greenhouse gases we put in the atmosphere'

Adaptation +

'…changing in order that we and others can live with the changed climate'

Research

'…action informed by contextual research'

2

Irma & Maria:

"We have to push for greater mitigation regionally and globally (1.5 to stay alive) to offset the worst future possible."

Irma & Maria:

"We have to think again about "the standards, norms and bases" we are using when factoring in climate change in adaptation planning."

Irma & Maria:

"Substantially increase climate impacts research and figure out quickly science-policy interface"

3

= **Resilience**

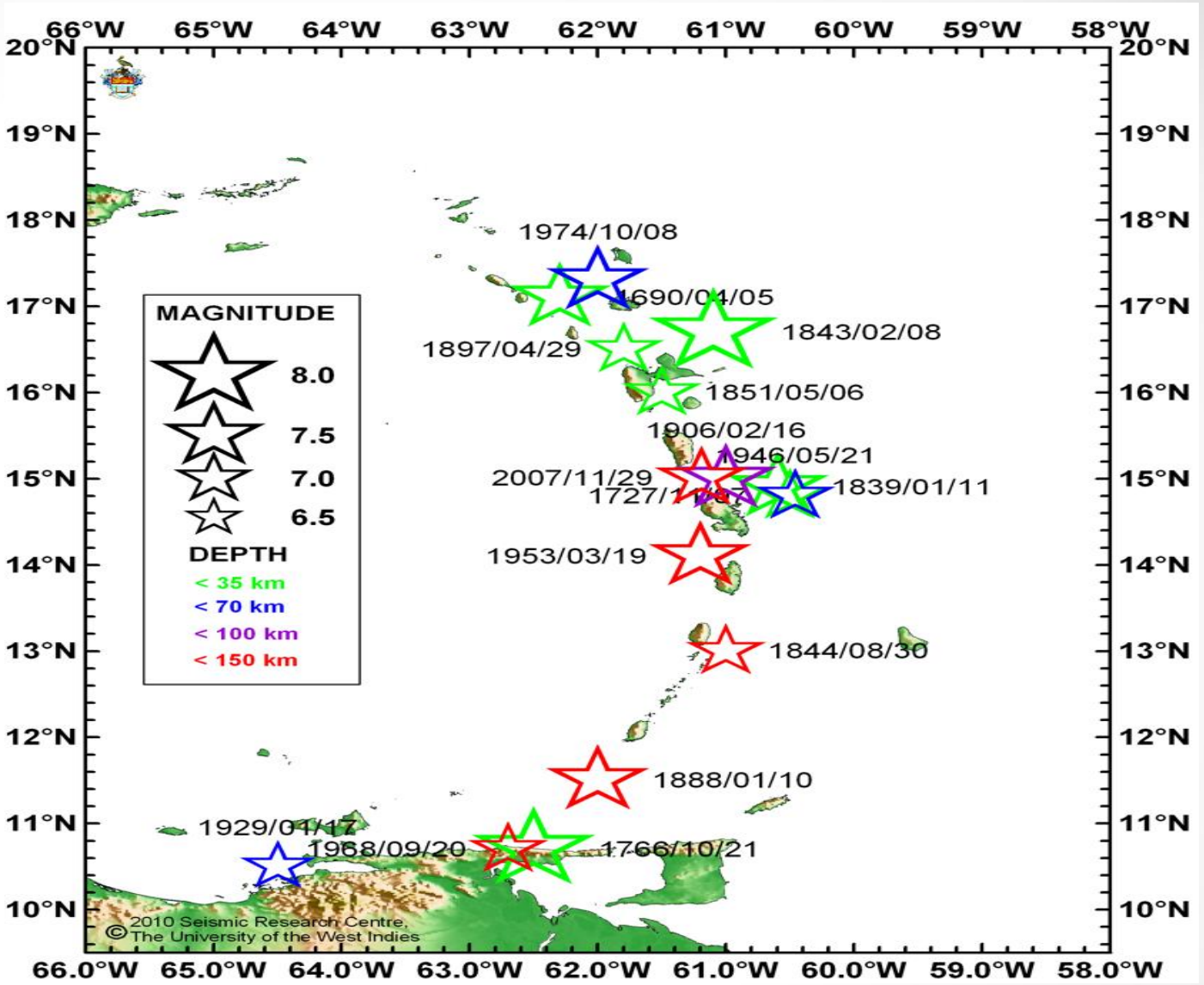
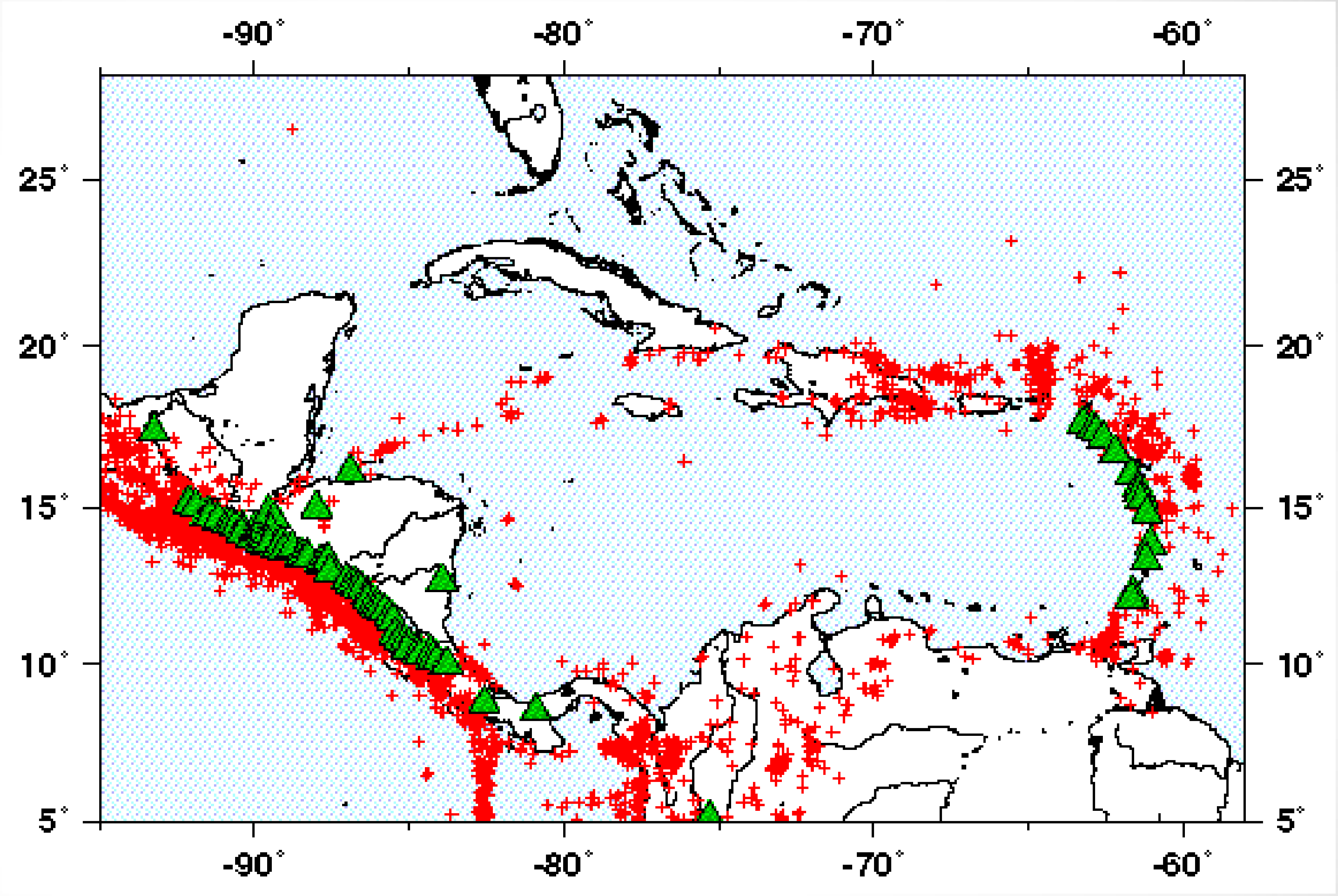


Fig. 1: Known major Eastern Caribbean epicentres (magnitude 6.9 and above). Historical events from Terremotos Destructores del Caribe 1502-1990 and An Earthquake Catalogue for the Eastern Caribbean 1530-1960

Figure 2: Earthquake & Volcanic source in the Caribbean



UNPRECENDENTED RECOGNIZED

Large-scale disasters of the past few years

Appearance of previously unknown infectious diseases

Unusually extensive flooding in many parts of the Caribbean.

Damage to vital systems and infrastructures upon which our societies and economies depend

Difficulties created for traditional risk management and risk-sharing actors.

Major challenge for decision makers in government and the private sector

Need for urgent action.

Political recognition of need for Integrated Risk Management framework

Dr. The Hon. Ralph E. Gonsalves…

Climate Change…Single most important environmental issue facing St Vincent and the Grenadines

- **Critical crosscutting issue that touch and concern a broad range of activities including the economy, physical planning and building codes; disaster preparedness and the environment**

Ascertain the facts without any distortions…first requirement of any genuine developmental approach

Critical requirement…an inventory of our condition that shows the logical interconnections

- **What are the essential facts upon which to elaborate theories of explanations, to fashion practical solutions to problems, and to implement the corrective policies efficaciously?**

Proposition for Revisiting the Development Dialogue

Disasters in the Caribbean generally provide transformational moments in our development trajectory and in discourse on the institutional advancement of risk management (Collymore 2011)

- Irma and Maria provide another opportunity for a bold assessment of our work on resilient development.
- From awareness to committed action

Existential threat to our region: Calls for climate resilient communities [PMs –Dominica; Antigua and Barbuda; SVG]

- Speaks to an acceptance of comprehensive DRM as a legitimate value proposition for political and stakeholder discourse.
- Embodies a re-articulation of a number of issues related to programming and financing for resilience.

DRIVERS OF CHANGE

Society's capacity to manage the change.

Evidence of increase in extreme events

Increasing urbanization and concentrations of economic activity

Changing Demo-graphy

Changing Environ-ment

Change in Technology

V2R FRAMEWORK

FROM VULNERABILITY TO RESILIENCE

Understanding and adapting to future uncertainty

- Understanding trends and their local impact
- Access to relevant and timely information
- Confidence and flexibility to learn and experiment

Livelihoods security with investment for the future

- Access to productive assets and resources
- Access to skills and technologies
- Access to markets for inputs, sale of products and local employment

Good governance

- An enabling environment for change with social safety nets in place
- Community organisation and voice
- Decentralised, accountable and participatory decision making
- Feedback loops between scales with cross sectoral planning and action the norm

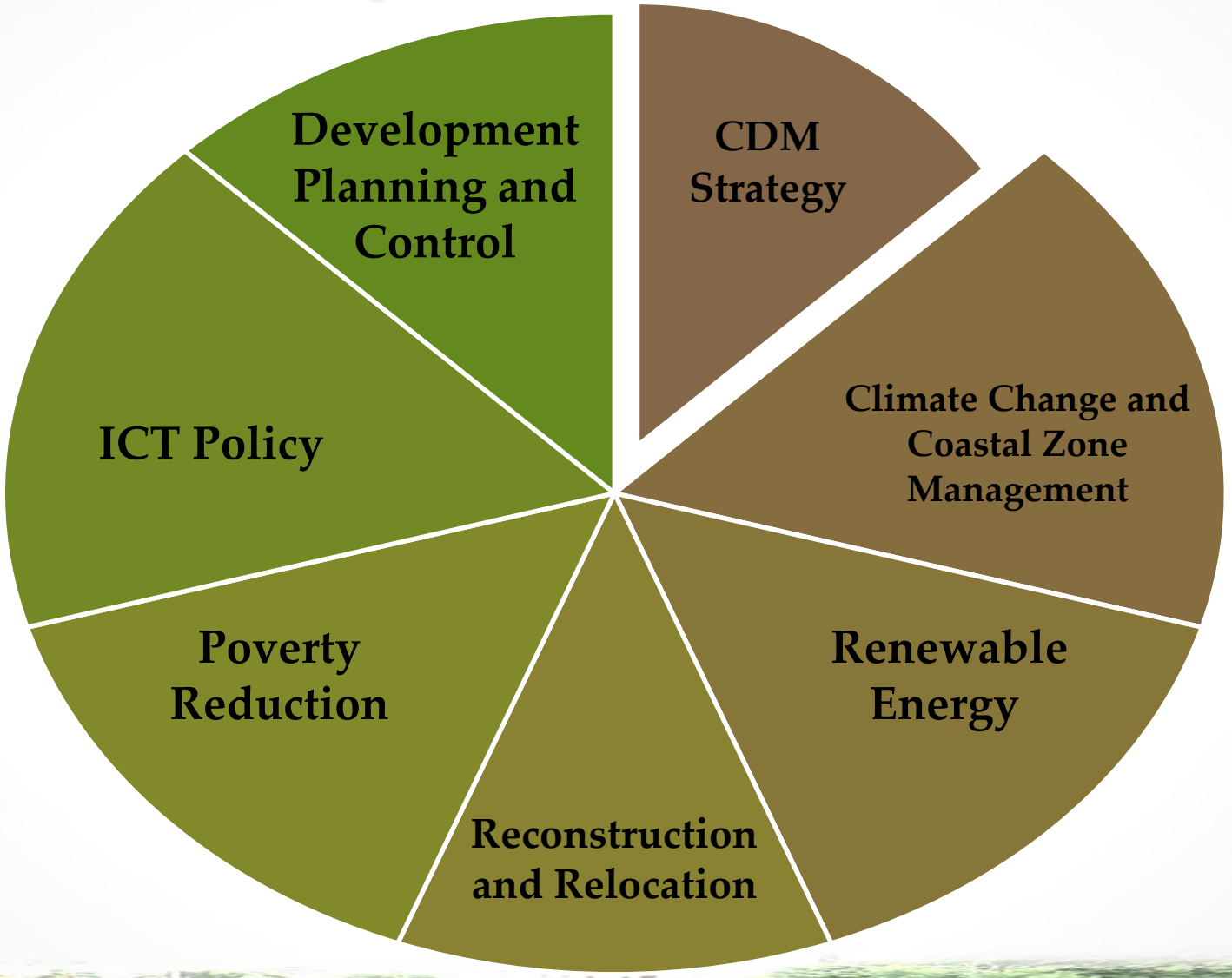
Effective responses to shocks and stresses

- Capacity to analyse and understand shocks stresses
- Hazard prevention and protection
- Early warning technologies, systems and awareness
- Learning and building back better

Resilience:
The ability of a system, community, or society to pursue its social, ecological, and economic development and growth objectives, while managing its disaster risk over time in a mutually reinforcing way.

Author - Pasteur and McQuistan 2016, cited in Sugden, J., (2016) Delivering Early Warning Systems for the Poorest: From flood-vulnerable to flood-resilient communities, Rugby, UK: Practical Action Publishing <http://dx.doi.org/10.3362/9781780447087

Policy Frameworks



Resilience Agenda…

Focus on resilience calls for **an integrated, whole of nation effort which encompasses**

A resilience agenda builds on rather than replaces strengths

Sustained behavioral change a long term outcome requiring long term commitment

- enhanced partnerships
- shared responsibility
- better understanding of the risk, environment, disaster impacts
- empowerment to work on its understanding

Context for Resilience Agenda

Despite improvements in response systems, repeated losses to environment, economy and infrastructure continue to erode development gains

Urgent need to develop new ways of doing things that enhance existing arrangements across and within government, businesses, private sector, and community to offset complacency and promote resilience

Platforms of the resilience agenda

- Leading the change and coordination process
- Understanding the risks
- Communicating and educating people about risks
- Partnering with those who effect change

Platforms of the resilience agenda

Empowering communities to exercise choice and take responsibility

Reducing risks in the built environment

Supporting capabilities for disaster resilience

Implementation Framework

Support for decision making

Competency development, resource mobilization and commitment

Robust implementation environment

Clearly defined roles and responsibilities

Monitoring, reporting and evaluation

HUMANITARIAN ACTION

Resilience

Determine the most appropriate uses and types of foreign and regional aid in risk reduction and recovery financing

Reduce socio-economic impact of hazards on individuals and families, small business, principal economic sectors and the countries' overall economy

Determine viable alternative systems, governance mechanisms, resource options and technologies that could alter failure and disruption potential

Develop policies, strategies and programmes to reduce losses to critical elements of our communities

OBJECTIVES

Identify opportunities created by disasters for redirecting development

Resilience Policyscape

Regional Foresighting Mechanism Built on research of HEIs and Diaspora

Institutional Resilience Initiative for private and public Sectors

Development a Technical Regional Crisis Management and Recovery Support Mechanism for impacted states

Mapping and Inventorying of Existing Tools and mechanisms and the accelerating of capacity for application

SMART Policies, Programmes and Facilities Strategy

CARICOM National Risk Profiling Programme

Establishment of a Regional Incentive Facility to promote investment and research in innovation for risk management tools, products and services

Establishment of a Resilience Diplomatic Think Tank/Task Force

Risk Communications and Management Blue Print

Establishment of Regional Public and Private Sector Resilience Alliance

Investment in DRM as the foundation for Resilience Building

LITMUS TEST OF RESILIENCE PATHWAYS

REFLECTIVE	• Uses past experience to inform future decisions
RESOURCEFUL	• Recognizes alternative ways to use resources
FLEXIBLE	• Willingness and ability to adopt alternative strategies in response to changing circumstances
INCLUSIVE	• Prioritizes broad consultation to create a sense of shared ownership in decision making
INTEGRATED	• Brings together a range of distinct systems and institutions

Rotterdam Resilience City 2016

CONCLUDING COMMENTS

Irma and Maria provided the tipping point for more robust dialogue and structured action on a Caribbean Resilience Agenda

New ways of thinking and working are now indispensable

Most of our conceptual and operational tools are designed to deal with 'TAME" problems

(Witter & Webber 1973)

Our mindsets, lexicons and rules need to adapt to an environment that is mutating around us

(Lapadec 2012

Resilience is not a Reaction…

It is an Investment

Forum must be seen as a signal that the Regional Community is ready to help forge this dialogue for a Resilient Caribbean Agenda

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