

Aspects of Caribbean Sustainable Development



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A brief history

- PhD. (Zoology) 1988, Lecturer, Department of Zoology, University of the West Indies
- Executive Director of the Jamaica Conservation and Development Trust, an environmental not-for-profit organization
- Regional Councilor for IUCN-The World Conservation Union 1994-2000; Chair of the Business Committee, member World Commission on Protected Areas.

A brief history

- Programme Specialist (Environment, Disaster Management & Climate Change) at UNDP Office in Jamaica (covered The Cayman Islands, The Bahamas, Bermuda, The Turks and Caicos Islands and Jamaica)
- Assistant Resident Representative (Programme) UNDP
- Coordinator, Institute for Sustainable Development, University of the West Indies.

Caribbean Environment

- Rainfall 300 – 6500 mm *per annum*
 - *Low: Puerto Rico (CI website op.cit.)*
 - *High: Millbank, Jamaica (Met Office Jamaica)*
- *Extent of the sea 2,640,000 km² (UNEP)*
- *Extent of the Land 229,549 km² (CI)*
- Tropical Forest: Lowland and Montane
- Savannah and arid lands
- Coral Reefs, Shallow shelves and deep trenches
 - Cayman Trench about 7500 m below sea level
- Wetlands and Rivers

The University of the West Indies

- A multi-national University with campuses in
 - Barbados
 - Jamaica
 - Trinidad & Tobago
 - and a virtual campus.
- Serves 17 English-Speaking Caribbean nations
- One of two such Universities in the World (University of South Pacific is the other).

Institute for Sustainable Development at the UWI

- Researches key issues that affect Sustainable Development in Caribbean SIDS.
 - Security
 - Environmental Management
 - Energy
 - Disaster Risk Reduction
- Teaches at the postgraduate level
- Links with CARICOM and the UN Sustainable Development Solutions Network

Current research at ISD, UWI

- Design, construction and operation of a **zero energy** or net-energy (ZEN+) building which is also hurricane resilient
- ERGO – adapting **Earthquake risk** estimation software to the Caribbean (with University of Illinois & UWI Seismic Research Centre) and better estimation of earthquake hazard (Jamaica & Barbados).

Current research at ISD, UWI

- Effects of
 - hazards on: livelihoods & communities,
 - land tenure on vulnerability,
 - Climate on crops, fisheries and agriculture,
 - Security on development
- Estimating flood hazards.

Policy support at ISD UWI

- National **Security** Policy and policing – Jamaica
- **Green Economy** transitioning – Caribbean SIDS and Jamaica
- **Economic Evaluation** of Natural Resources & Ecosystem Services – Jamaica
- Effect of **disasters on development**

Teaching and Learning

- The ISD through its Centre for Environmental Management offers a M.Sc. in Natural Resource Management
 - Marine and Terrestrial Ecosystems
 - Integrated Urban and Rural Environmental Management
 - Disaster Management
- We are working to have many of the modules available online in the next two years.

Future

SDGs and Environment

- 2 Zero Hunger
- 6 Clean Water
- 7 Affordable and Clean Energy
- 11 Sustainable Cities
- 13 Climate Action
- 14 Life below water
- 15 Life on Land

Global risks



- **Climate Change**

- Changed rainfall patterns leading to increased drought and floods
- Pattern of extreme weather events will change
- Effect of weather on development will increase
- The Sea level will rise
- This will happen in the tropics before the rest of the world.

The Caribbean & the tropics

- **Unprecedented climates will occur earliest in the tropics starting around 2023 in Indonesia & Jamaica.**
- *“Global mean ocean pH moved outside its historical variability in 2008 (± 3 years s.d.).” Mora et. al.*

Raven, J. A. et al. (eds). Ocean Acidification due to Increasing Atmospheric Carbon Dioxide (Royal Society, 2005).
Zeebe, R. E., Zochos, J. C., Caldeira, K. & Tyrrell, T. Carbon emissions and acidification. Science 321, 51–52 (2008).

Major environmental threats to the Caribbean (related to CC)

- Vector-borne diseases
 - Zika Virus
 - Chikungunya
 - Dengue
 - Malaria
 - Et al
- Drought
- Increased temperature & sea-level rise
- Will the availability of Fresh Water be affected by Climate Change?
- Will increased temperature increase energy (cooling) costs?
- Is tourism under threat from the sea?

Dependence of the economy on natural resources

- If beach erosion rates remain as they were in 2011, then by 2021, beaches in Negril, Montego Bay & Ocho Rios will lose value of US\$19 million *annually*.
- If reefs degrade further, the additional beach erosion will increase this loss to US\$33 million *per annum*.
- The erosion could reduce tourist visitation by 9,000 to 18,000 stopover visitors annually; costing the industry between US\$9 & US\$19 million annually and costing the entire economy between US\$11 to US\$23 million annually.
- Kushner, B., P., Edwards, L. Burke, and E. Cooper. 2011. *Coastal Capital: Jamaica. Coral Reefs, Beach Erosion and Impacts to Tourism in Jamaica. Working Paper. Washington, DC: World Resources Institute.*

Possible areas of research

- Climate adaptation
 - Water
 - Purifying water for rural impoverished communities
 - Drought preparation
 - Agriculture and water efficiency
 - Climate and epidemiology
 - Coastal zone management
 - Disaster Risk Reduction

Possible areas of research

- Energy
 - Increasing Efficiency
 - Applying Renewable Energy
 - Cleaning energy generation
- Economics and Environment
 - Valuing environmental goods and services
 - Managing ecosystem services
 - Fisheries management



Thank You