

Disaster Risk Reduction & Ocean Sustainability Challenges





- Waste ends up in oceans, fish & us
- Inequality increases after repeated adverse events
- Climate Change leads to increased adverse events
- **Biodiversity loss** increases vulnerability & adverse events
- More adverse events increases Inequality
- Increased inequality increases vulnerability, decreases human & social capital

Coastal Development: red flags & "blue" economy

- Infrastructure exposed to hazards e.g. JFK
- Islands & coasts of tropical states are often highly tourism-dependent
 - Suppliers & employers are not diverse
 - Potential for very high economy damage coupled with narrow economic base can lead to slow recovery when infrastructure is damaged. (e.g. Ivan, Cayman Islands)
 - Effect on livelihoods is often neglected in favour of supporting the industry



Vulnerable economic assets

- On-beach Hotels
- Coastal Roads
- Low elevation Airport Runways beside the sea or on flood plains



Paradise

- High Dependence on tourism (IDB)
- Little money spent conserving or managing coastal ecosystems
- High cost and high levels of erosion



Tourism-based economies depending on natural resources ... If beach erosion rates stay the same as in 2011, 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 could increase this to US\$33 million *per annum*.

Erosion could reduce tourist visitation by 9,000 to 18,000 stopover visitors annually; costing the industry US\$9 to US\$19 million annually & costing the entire economy 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 Policies: Beaches

- increase beach rental to fund mitigation
- tax businesses that use the beach
- Use these taxes to protect the beach
- increase enjoyment of beach users

Alexandrakis et al 2015



... Need to be resilient to external shocks

- Meteorological
- Climate Change
 - Rainfall patterns
 - Floods
 - Sea Level Rise
 - Tropical Cyclones
 - Drought
- Geological
 - Volcano
 - Seismic
- Anthropogenic
 - Oil spills
 - waste in rivers
- Biological
 - Pandemics
 - Algal blooms
 - Invasive species

• Economic

- Brexit
- Changes in policies of the OECD or the BRICS
- Recessions in Europe, China or the USA.
- Changes in tariffs or WTO decisions
- Oil prices
- -War



Saint Vincent & The Grenadines, 2021 Photos from UWI Seismic Research Centre



Money is needed for resilience

Use another criterion for eligibility to concessional funds instead of *per capita* GDP; e.g. a HDI of >0.800 for countries with small populations

• (GDP is **not** a measure of *human well-being* Sitglitz, Sen & Fitoussi, 2009)

Improve access to funds, reduce administrative hurdles: "often cumbersome administrative requirements from the funds, limited SDS' capacity to meet those requirements"

IMF (2021) Meeting the Sustainable Development Goals in Small Developing States with Climate Vulnerabilities: Cost and Financing.

Climate Change (unequal)

Unprecedented climates will happen first in the tropics (2038); years before the rest of the World (2053)

http://www.soc.hawaii.edu/mora/PublicationsCopyRighted/Cities%20Ti ming.html

- Tropical & sub-tropical countries must adapt to new climate regimes.
 - temperatures are already higher
 - rainfall patterns are changing
 - Major hurricanes are becoming more frequent
 - The Ocean is more acidic than it was

Money is needed for mitigation and adaptation:



Jeff Sachs: "I see no financial obstacles to getting to net zero by 2050"

More capital needed in the relevant development banks at low interest rates

Data from Ministry of Finance, Government of Jamaica

Financing resilience in developing countries



From Systemic Risk - CDM and the Pathway to Resilient Development in the Caribbean Jeremy Collymore, Evangeline Inniss-Springer & David Smith, Institute for Sustainable Development The University of the West Indies

Possible Actions by Businesses



SMALLER ONES



Possible Policies

- Build Human Capital
 - create the means for economic diversification
- Conserve Natural Capital
 - Manage the ecosystems
 - Use natural means to build resilience
 - Supplement with engineering
- Help small businesses to access capital & reduce risk
- Ensure infrastructure is properly built,



References

- G. Alexandrakis, C. Manasakis, N. A. Kampanis, *Valuating the effects of beach erosion to tourism revenue. A management perspective*. Ocean & Coastal Management, Vol 111, 2015.
- Stiglitz, J. E., A. Sen, & J.P. Fitoussi. "*Report by the commission on the measurement of economic performance and social progress.*" 2009.
- Managing Crises in Tourism Resilience Strategies from the Caribbean. A. Lewis-Cameron, L. Jordan & S. Roberts. (Eds.) 2021

Let's Talk

