Renewable Energy Nexus in the Caribbean Context

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at the
Caribbean Workshop on Renewable Energy In Small Island Developing States: How to Strengthen Resilience and Accelerate Renewable Energy
Aruba, 28 – 30 November, 2018
Organization

- Nexus of Energy, Food and Water
- Caribbean Economic Challenges
- Caribbean Peculiarities
- Caribbean Opportunities
- Special Issue – Vulnerability, Resilience and RE
- Caribbean Success
- Conclusion
IRENA’s Water, Energy, Food Nexus

(from IRENA’s Renewable energy in the water, energy & food nexus)
Caribbean Context: Economic Challenges

- Small Non-integrated Markets
- Growth
- Fiscal Circumstances
- Debt
- Foreign Direct Investment
- Trade and Balance of Payments
Caribbean Economic Challenges: Growth

Caribbean GDP Growth Rates: 2013 - 2017

- Per cent

-6.0 to 2.0

2013 2014 2015 2016 2017

Caribbean Goods Producers Service Producers
Caribbean Economic Challenges: Debt

Total Public Debt - Percentage of GDP

- Caribbean
- Goods Producers
- Service Producers
Caribbean Peculiarities: High Dependence on Energy and Food Imports

- Very little domestic agricultural production – except Jamaica, Guyana, Belize, Dominican Republic

- Limited energy resources – except Trinidad and Tobago, Guyana, Suriname, Belize?, Barbados?
Caribbean Peculiarities: High Dependence on Imported Energy

Energy Supply/Consumption Ratio

- Bahamas
- Barbados
- Belize
- Guyana
- Jamaica
- Suriname
- Trinidad and Tobago
- LAC Average
Caribbean Peculiarities: High Dependence on Imported Food

Food Import Dependence Ratio - 1995 and 2011

- Antigua and Barbuda
- Bahamas
- Belize
- Barbados
- Dominica
- Guyana
- Jamaica
- Suriname
- Trinidad and Tobago
- Regional Average
Caribbean Peculiarities: Water - High Energy Use for Desalination

- Desalination plants widely used in the Caribbean
- First used in the region in the 1920’s. Sixty-eight new plants commissioned since 2007
- Use to supplement natural water availability in drier islands, or to meet rapidly growing water demand on others
- Current installed capacity – 780,000 cubic meters per day
- Energy is the biggest cost factor in desalination – up to 75% of operational costs
- Energy costs also high for traditional municipal water production and distribution
- Per capita water use high especially in tourism dependent economies

- The Caribbean has abundant resources of sun, wind, geothermal, and limited hydro
- Has also been exploring Ocean Thermal Conversion
- Solar averages 5.46 KWh/M². Higher than Hawaii, California, Texas, Spain
- Wind averages 7 m/s. Equals Texas and California
- Significant Geothermal potential in Volcanic islands – SLY, DOM MTQ, SVG

Source: Schmidt and Sangermano, 2017
Caribbean Opportunity: Improving Strategic and Policy Framework for RE

Recently revised National Energy Policies now give priority to the development of RE in several Caribbean Countries:

- Antigua and Barbuda
- Barbados
- St. Lucia
- St. Kitts and Nevis
- Cayman Islands
- Jamaica
- Guyana
- Trinidad and Tobago
Special Issue: Vulnerability, Resilience and RE

- Risk assessment
- Removal of barriers
- Adjustment of governance frameworks
- Enhancing data and information collection

- Capacity building
- Modernization of the energy sector
- Enhancement of demand-side energy efficiency
- Grid modernization

- Deployment of renewable energies
- Monitoring and verification
Caribbean Success

- Solar Water Heating – Barbados
- Geothermal Energy – Guadeloupe
- Wind Energy – Jamaica, Aruba,
- Bio-fuels Jamaica
- Solar PV – Antigua and Barbuda, Aruba, Barbados, St. Lucia, St Kitts and Nevis
Conclusion

The challenge of balancing the elements of the energy, food and water nexus has been made more difficult by a number of structural and economic issues in the Caribbean. However, renewable energy provides many prospects for overcoming these limitations.
THANK YOU!