



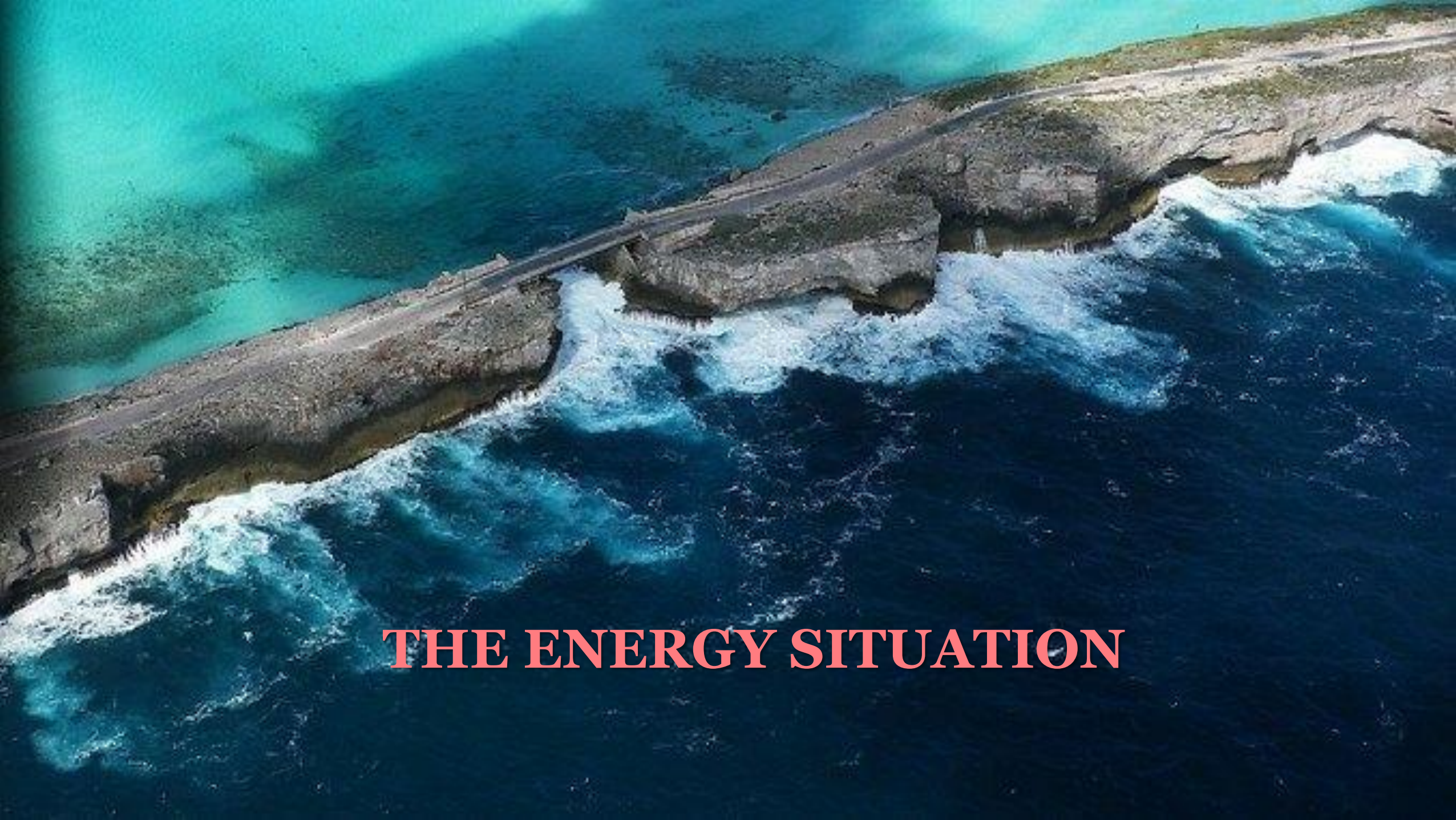
CURRENT STATUS AND CHALLENGES FOR RENEWABLE ENERGY WITHIN THE CARIBBEAN

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**Caribbean Energy Transition & Climate Change Congress
Hotel Embajador, Santo Domingo, Dominican Republic**

21 May 2019





THE ENERGY SITUATION

OIL IMPORT SITUATION, CARICOM

Country	Dependence on imports, %	Imported energy resources
Antigua and Barbuda	100% (2016)	Refined petroleum products
Barbados	90% (2017)	Refined petroleum products
Belize	63% (2016)	Refined petroleum products, electricity
Dominica	92% (2016)	Refined petroleum products
Grenada	93% (2016)	Refined petroleum products
Guyana	97% (2017)	Refined petroleum products
Haiti	85% (2016)	Refined petroleum products
Jamaica	91% (2016)	Petroleum, Refined petroleum products
Montserrat	100% (2017)	Refined petroleum products
Saint Lucia	98% (2016)	Refined petroleum products
St. Kitts and Nevis	87% (2017)	Refined petroleum products
St. Vincent and the Grenadines	95% (2017)	Refined petroleum products
Suriname	Less than 5% (2017)	Petroleum
Trinidad and Tobago	0%	

RENEWABLE ENERGY POTENTIAL

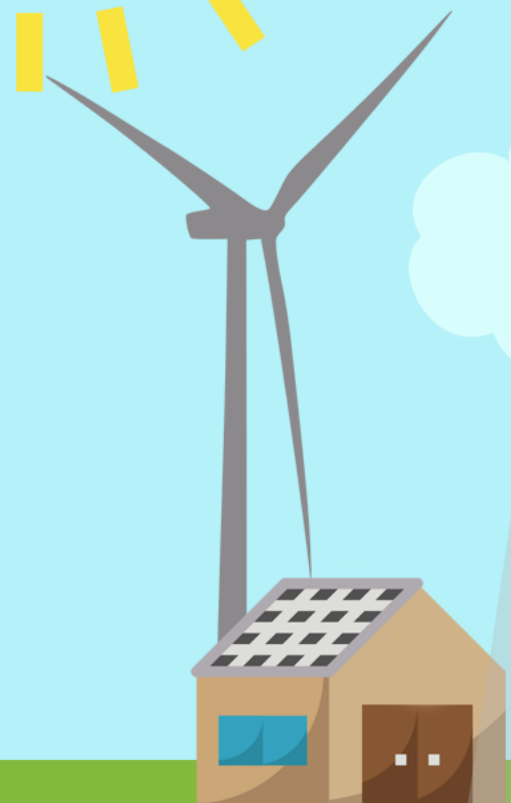
HYDRO

WIND

GEO
THERMAL

SOLAR

BIOMASS



	HYDRO	WIND	GEO THERMAL	SOLAR	BIOMASS
Antigua and Barbuda	INSIGNIFICANT	VERY HIGH	INSIGNIFICANT	MODERATE	INSIGNIFICANT
The Bahamas	INSIGNIFICANT	MODERATE	INSIGNIFICANT	LOW	LOW
Barbados	INSIGNIFICANT	LOW	INSIGNIFICANT	LOW	LOW
Belize	HIGH	INSIGNIFICANT	INSIGNIFICANT	MODERATE	HIGH
Dominica	HIGH	VERY HIGH	VERY HIGH	VERY HIGH	INSIGNIFICANT
Grenada	LOW	MODERATE	VERY HIGH	HIGH	INSIGNIFICANT
Guyana	VERY HIGH	INSIGNIFICANT	INSIGNIFICANT	INSIGNIFICANT	INSIGNIFICANT
Haiti	LOW	LOW	INSIGNIFICANT	VERY HIGH	LOW
Jamaica	LOW	LOW	INSIGNIFICANT	HIGH	LOW
Montserrat	INSIGNIFICANT	INSIGNIFICANT	VERY HIGH	MODERATE	INSIGNIFICANT
St. Kitts and Nevis	INSIGNIFICANT	LOW	VERY HIGH	MODERATE	LOW
St. Lucia	LOW	MODERATE	VERY HIGH	MODERATE	LOW
St. Vincent and the Grenadines	MODERATE	MODERATE	VERY HIGH	HIGH	LOW
Suriname	VERY HIGH	INSIGNIFICANT	INSIGNIFICANT	INSIGNIFICANT	MODERATE
Trinidad and Tobago	INSIGNIFICANT	MODERATE	INSIGNIFICANT	LOW	INSIGNIFICANT

VERY HIGH

HIGH

MODERATE

LOW

INSIGNIFICANT

THE CARICOM ENERGY POLICY (CEP): THE KEY GUIDING PRINCIPLES

1. Recognition that Member States' energy resources and level of energy sector development varies

The CEP is crafted with the understanding that member states will only “commit” to take **INDIVIDUAL ACTIONS** that are both *relevant* and *feasible*.

2. Consistency, complementarity and collaboration

The CEP is based on a principle of **COLLECTIVE APPROACH AND COOPERATION** that takes cognizance of the national energy policies for the respective Member States and seek to exploit synergies, *where available*.

3. Subsidiarity

The CEP seeks to emphasize **REGIONAL TREATMENT** of those actions that may gain comparative advantage vis-a-vis the “*country alone*” basis.

THE C-SERMS PATHWAY

Assessing Current Status and Potential

Energy System Analysis

- Production and consumption
 - Electricity sector
- Transportation sector
 - CO₂ emissions

Identifying Potential

- Renewable resource potential
- Energy efficiency potential
- Infrastructure needs

Policy Assessment

- Governance and administration
 - RE and EE support policies and goals
- Emissions reduction policies and goals

Setting a
common vision

2017

Regional Targets

- Renewable power generation
- Energy efficiency improvements
- CO₂ emissions reductions

2022

2027

Roadmap
for the
Caribbean

Priority Initiatives, Policies, Projects, and Activities (PIPPA)

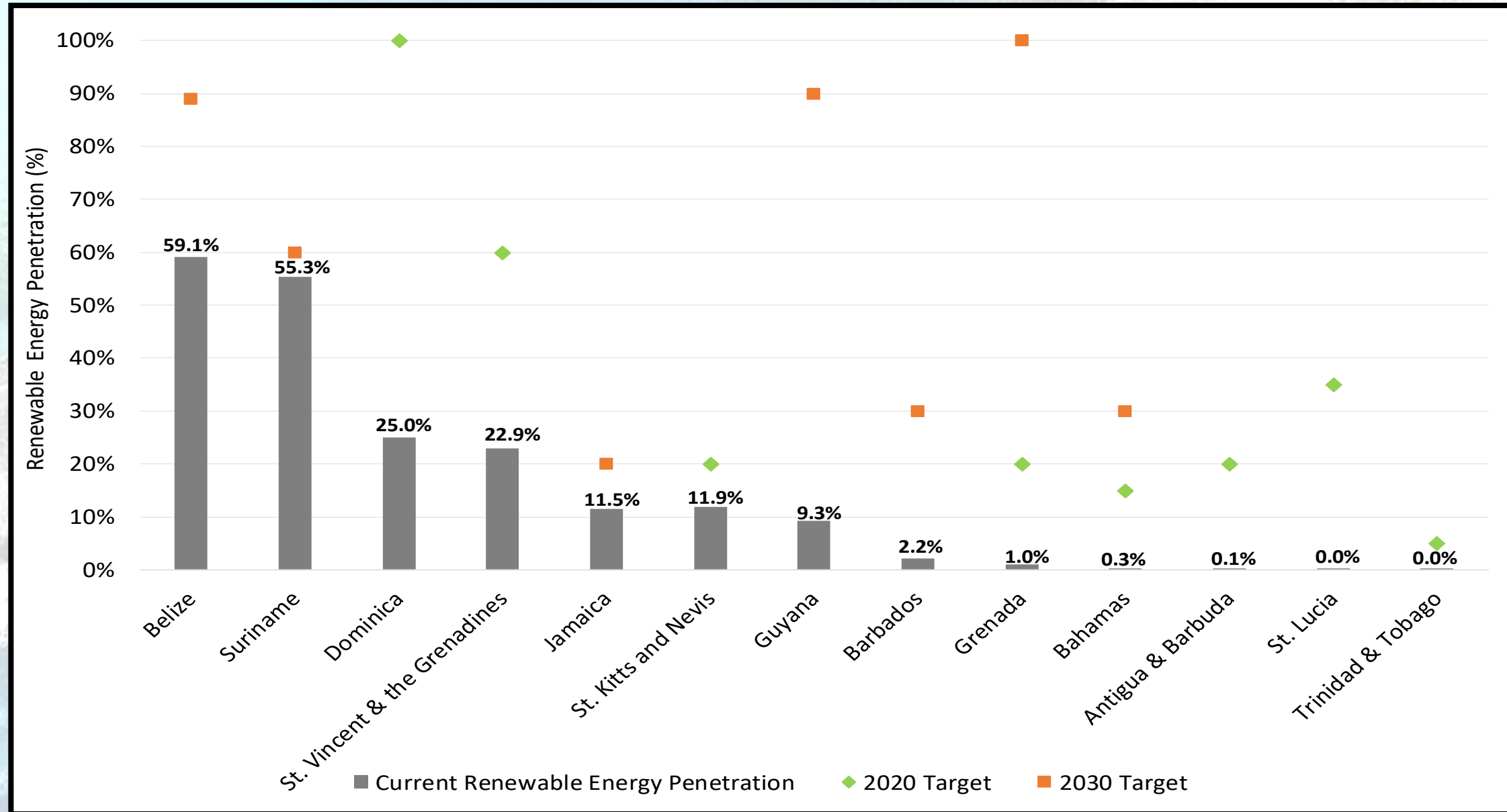
- Regional recommendations
- National recommendations

CARICOM RENEWABLE ENERGY STATUS

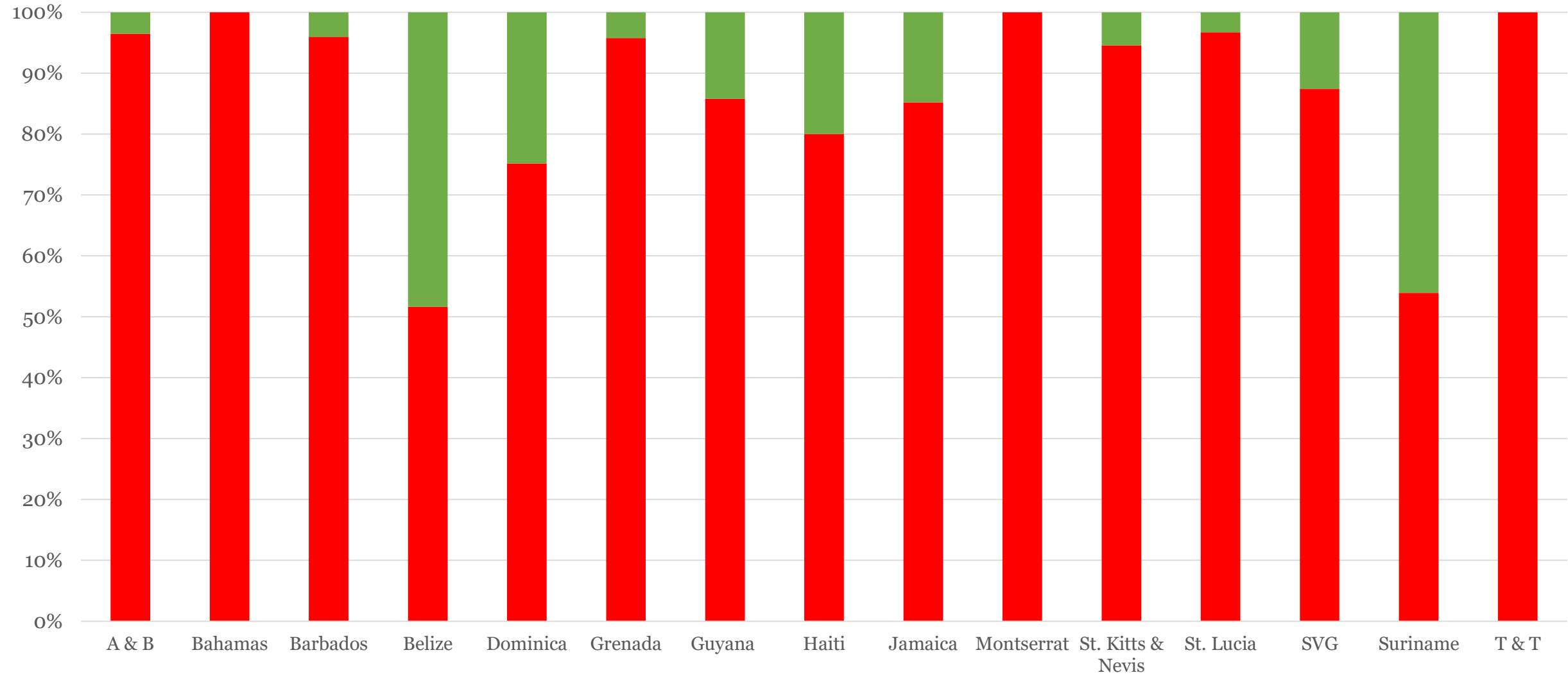
- Installed power capacity ~ 5,500 MW
- Annual electricity production 19,700 GWh
- Annual demand growth rate 3.6%
- RE Penetration ~10%

Though RE penetration, within the power sector, has doubled in the last decade, the rate of penetration is *way below* optimum

RE IMPLIMENTATION STATUS, CARICOM

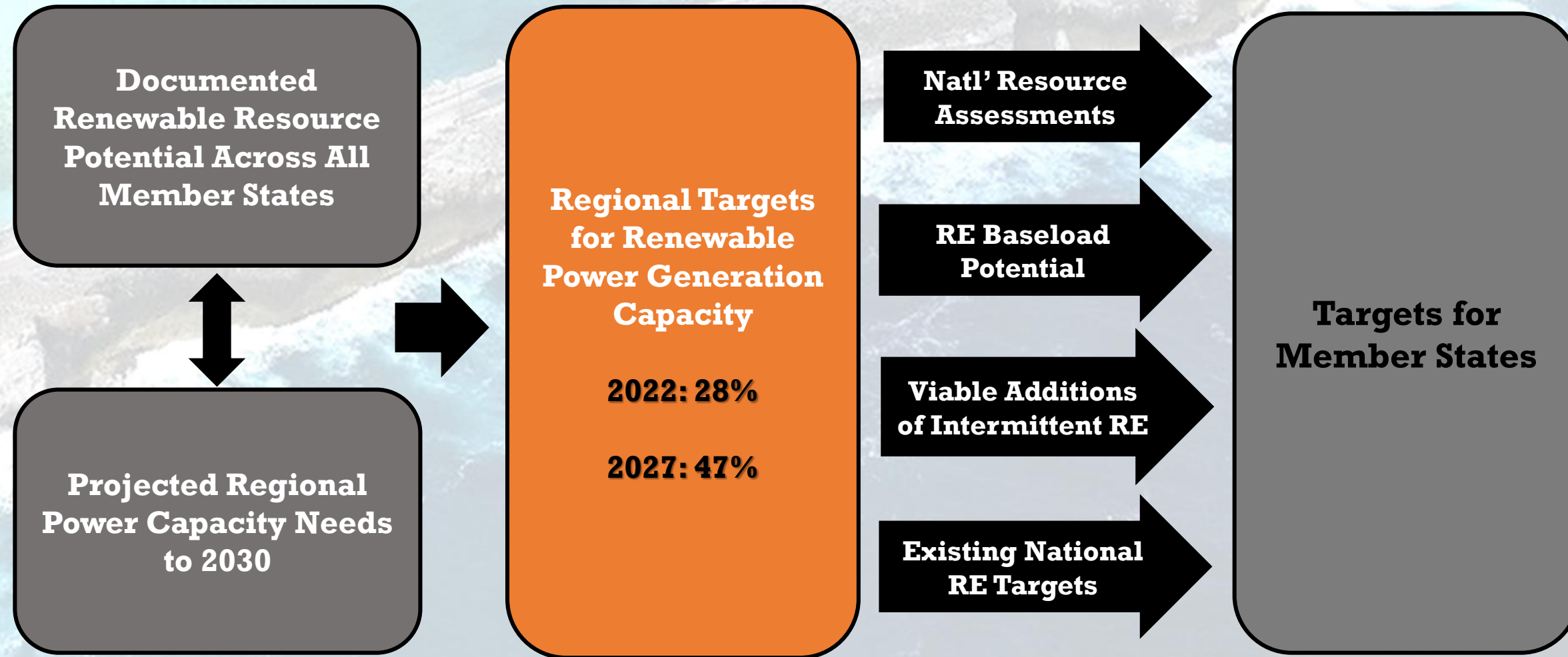


■ Renewable energy capacity (MW) ■ Fossil-fuel based capacity (MW)



Countries	Finalized Energy Policy/ Action Plan?	Renewable Energy (RE) /Energy Efficiency (EE)Targets?	RE/EE Act?	Net Metering/ Billing?	Independent Power Producers?	Feed-in-Tariff (FIT)	Interconnection Policy/ Standards
Antigua and	●	●	●	●	●	●	●
Bahamas	●	●		●		●	
Barbados	●	●		●	●	●	●
Belize	●	●			●		
Dominica	●	●		●	●		●
Grenada	●	●		●	●		●
Guyana	●	●			●		
Haiti	●	●			●		
Jamaica	●	●		●	●		●
Montserrat	●	●		●			
Saint Lucia	●	●		●	●		●
St. Kitts and Nevis	●	●			●		
SVG	●	●		●		●	●
Suriname	●				●	●	
Trinidad and Tobago	●	●		●	●		●

“NATIONALIZING” THE C-SERMS





WHITHER RENEWABLES?

RENEWABLE ENERGY POTENTIAL

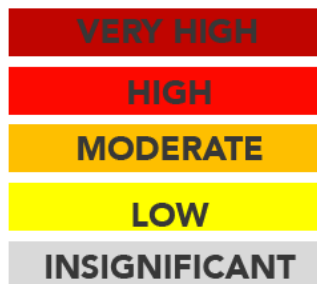
HYDRO

WIND

GEO
THERMAL

SOLAR

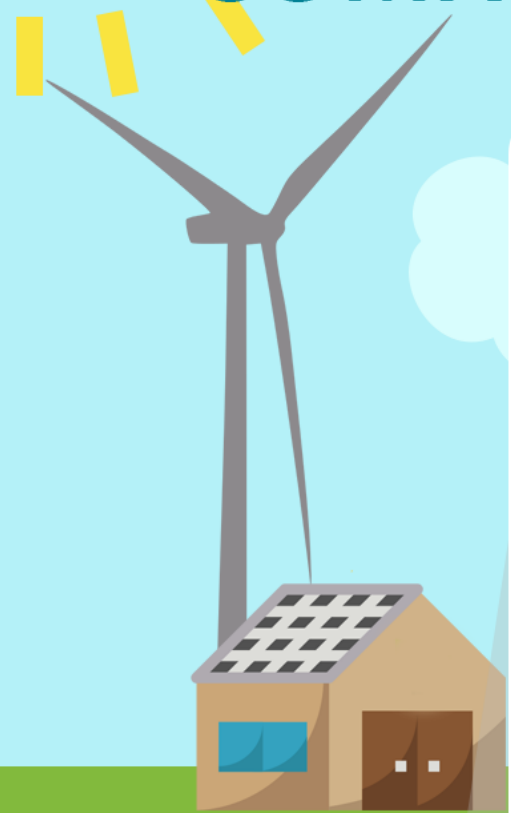
BIOMASS



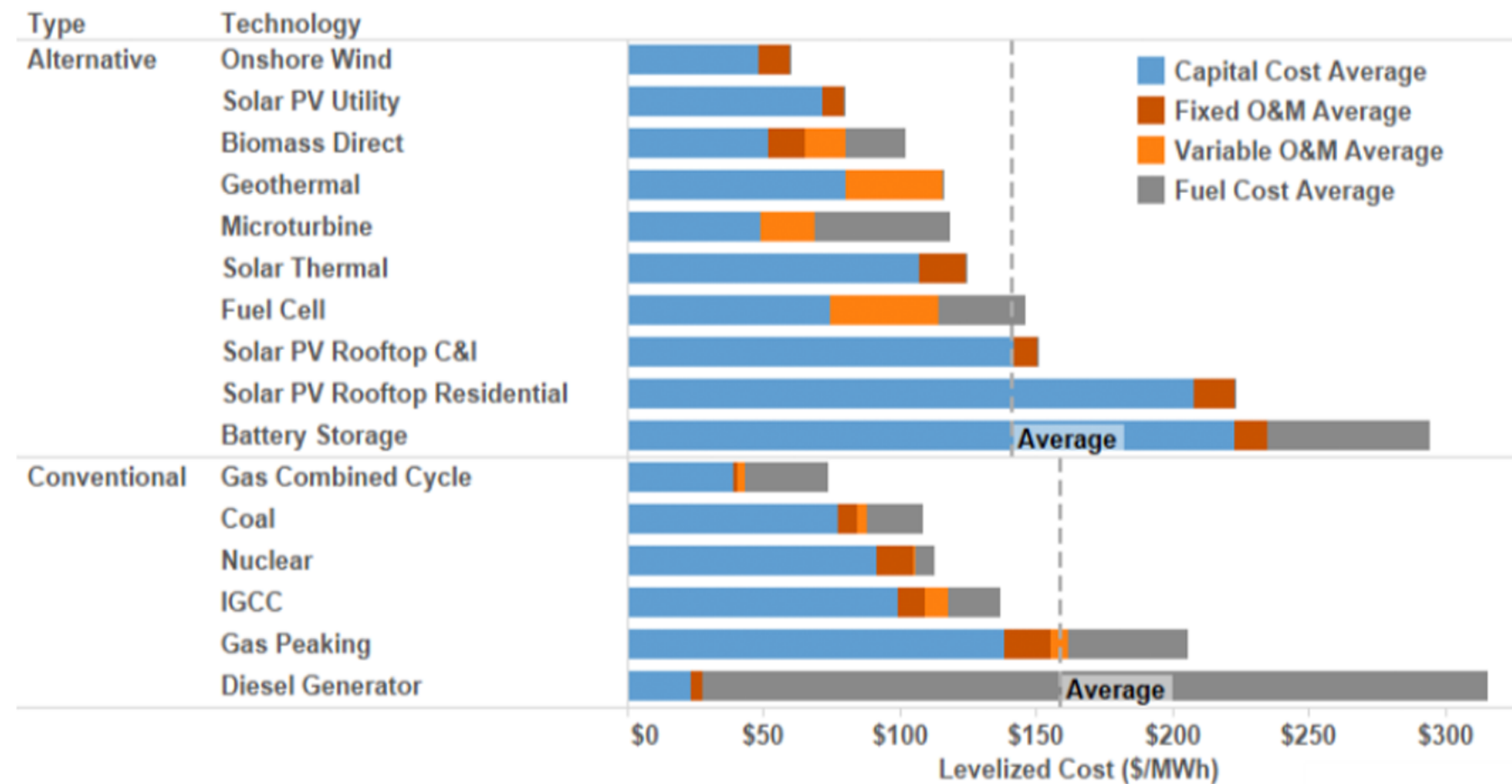
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St. Vincent and the Grenadines	MODERATE	MODERATE	VERY HIGH	HIGH	LOW
Suriname	VERY HIGH	INSIGNIFICANT	INSIGNIFICANT	INSIGNIFICANT	MODERATE
Trinidad and Tobago	INSIGNIFICANT	MODERATE	INSIGNIFICANT	LOW	INSIGNIFICANT

COMPARATIVE LEVELIZED COSTS OF ENERGY



Components of levelized cost of energy



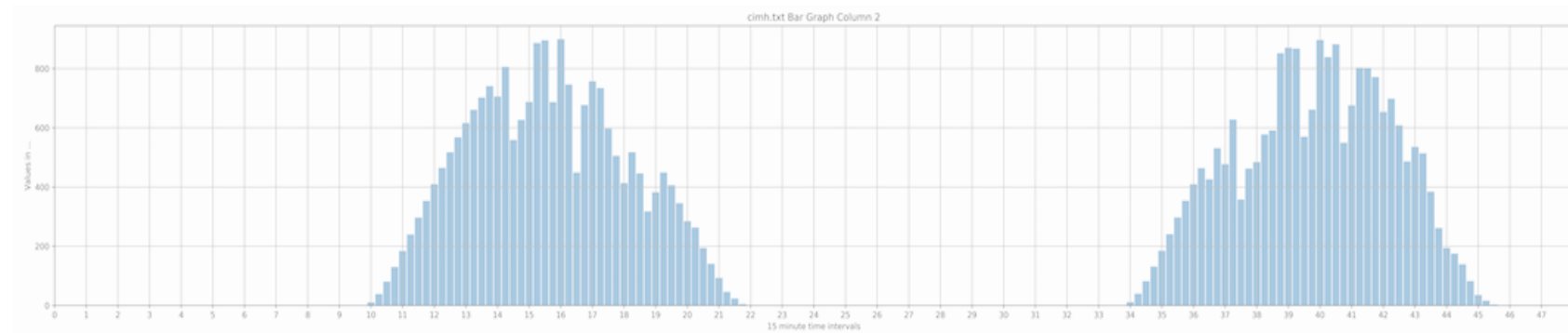
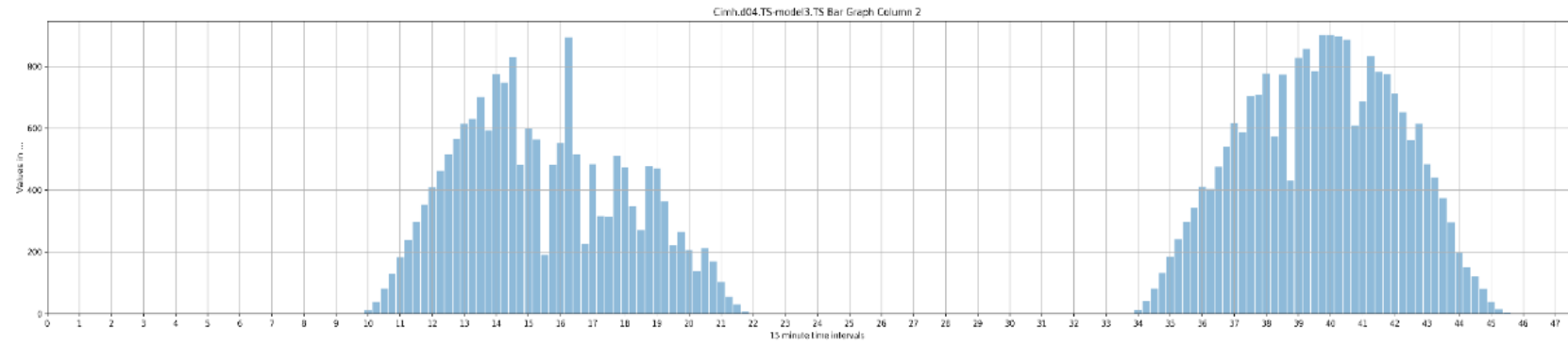


INTEGRATING VARIABLE RENEWABLES

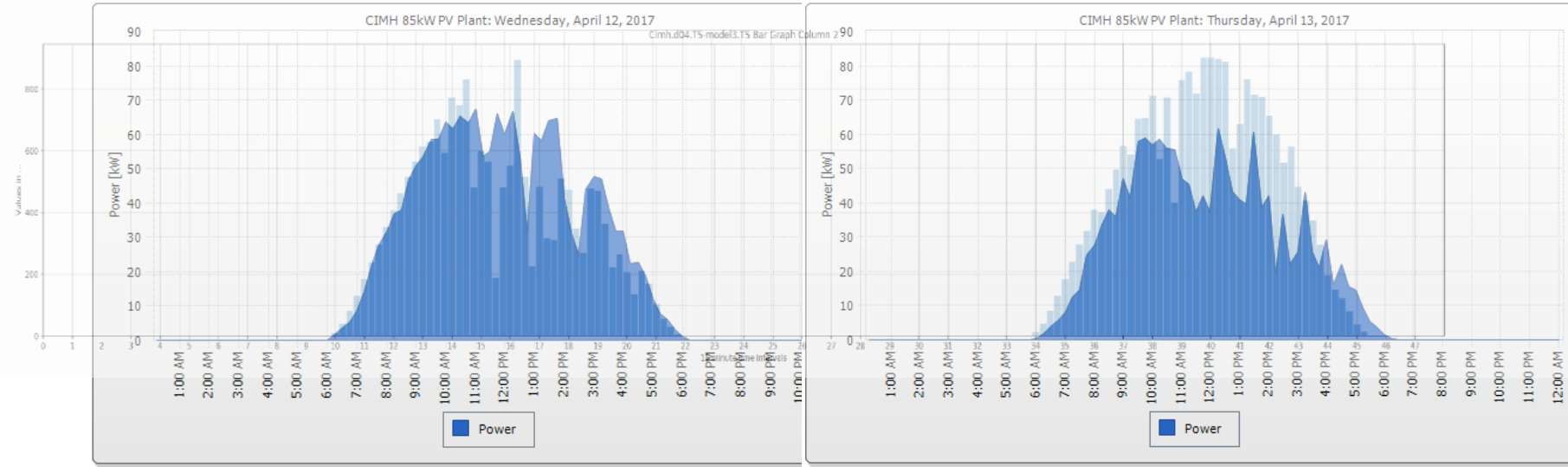
**INTEGRATING VARIABLE RE
INTO LONG-RANGE ENERGY
PLANNING**



Modeled Radiation Flux at CIMH

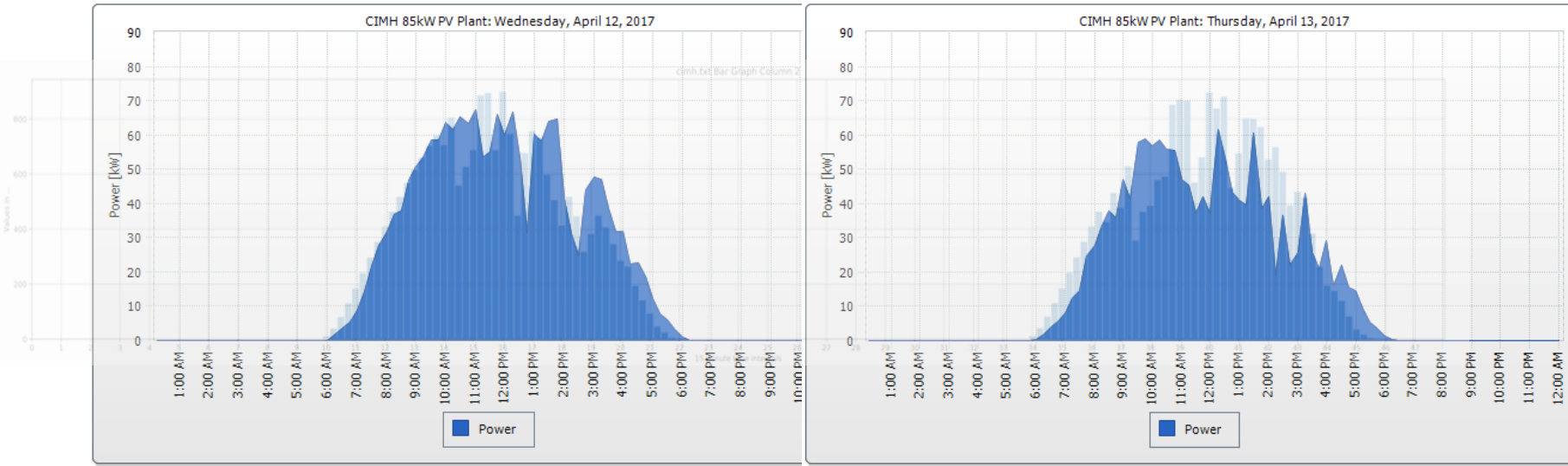


Production from CIMH PV system



4/12/2017

4/13/2017



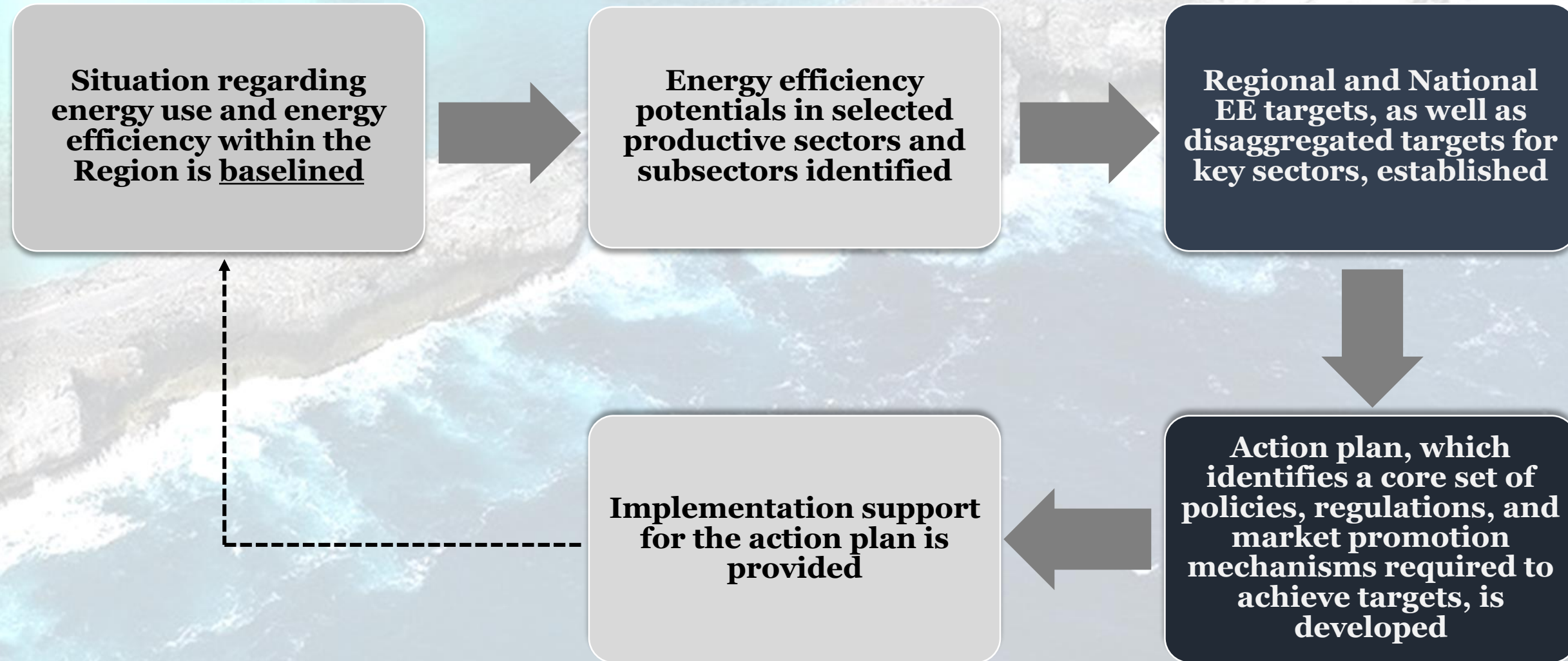
4/12/2017

4/13/2017



THE ROLE OF ENERGY EFFICIENCY...

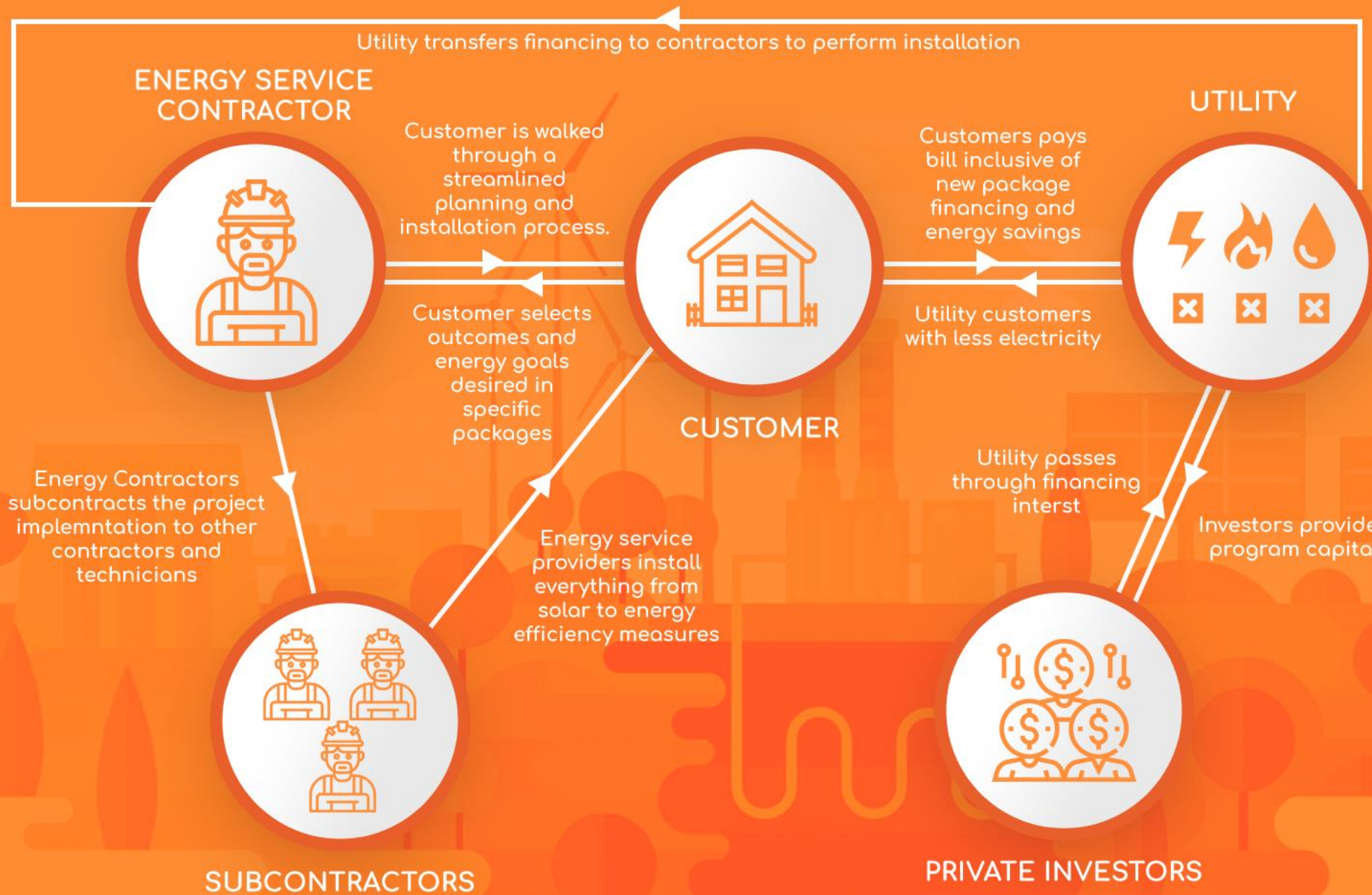
THE PATHWAY FOR THE REGIONAL ENERGY EFFICIENCY STRATEGY





...AND THE ELECTRIC UTILITIES

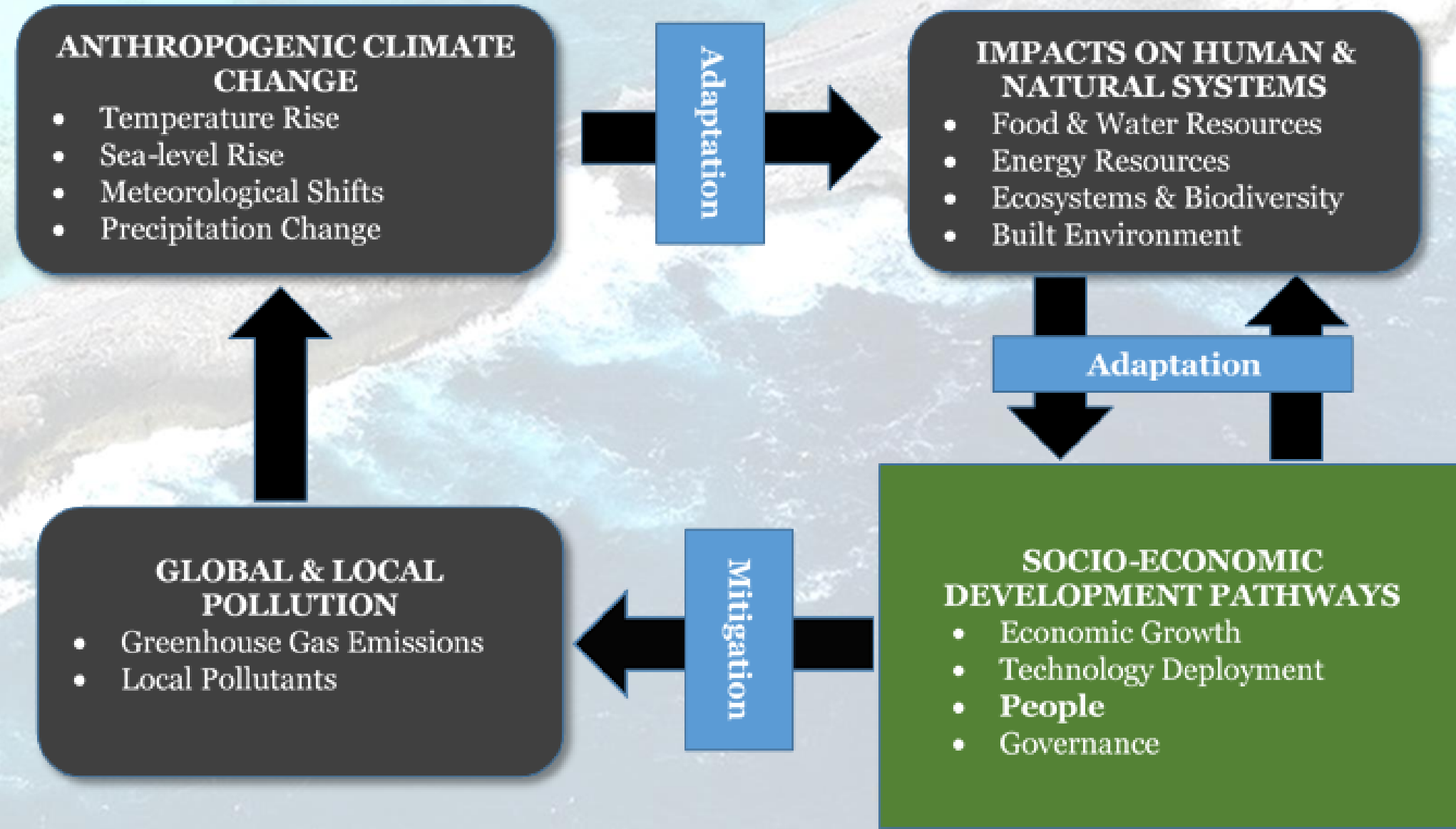
THE INTEGRATED UTILITY SERVICE MODEL





CLIMATE & DISASTER RESILIENCE

STRENGTHENING THE NEXUS CLIMATE & ENERGY





NAVIGATING COMPLEXITIES

CARICOM ENERGY: THE VISION AND GOALS

“Reliable, affordable, sustainable provision of energy services matched to the societal and development needs of the Caribbean Community over time, and based on robust, diverse energy sources and distribution systems that utilizes appropriate generation technologies, and equitably provided to all sectors of the society”

THE VISION OF CARICOM ENERGY

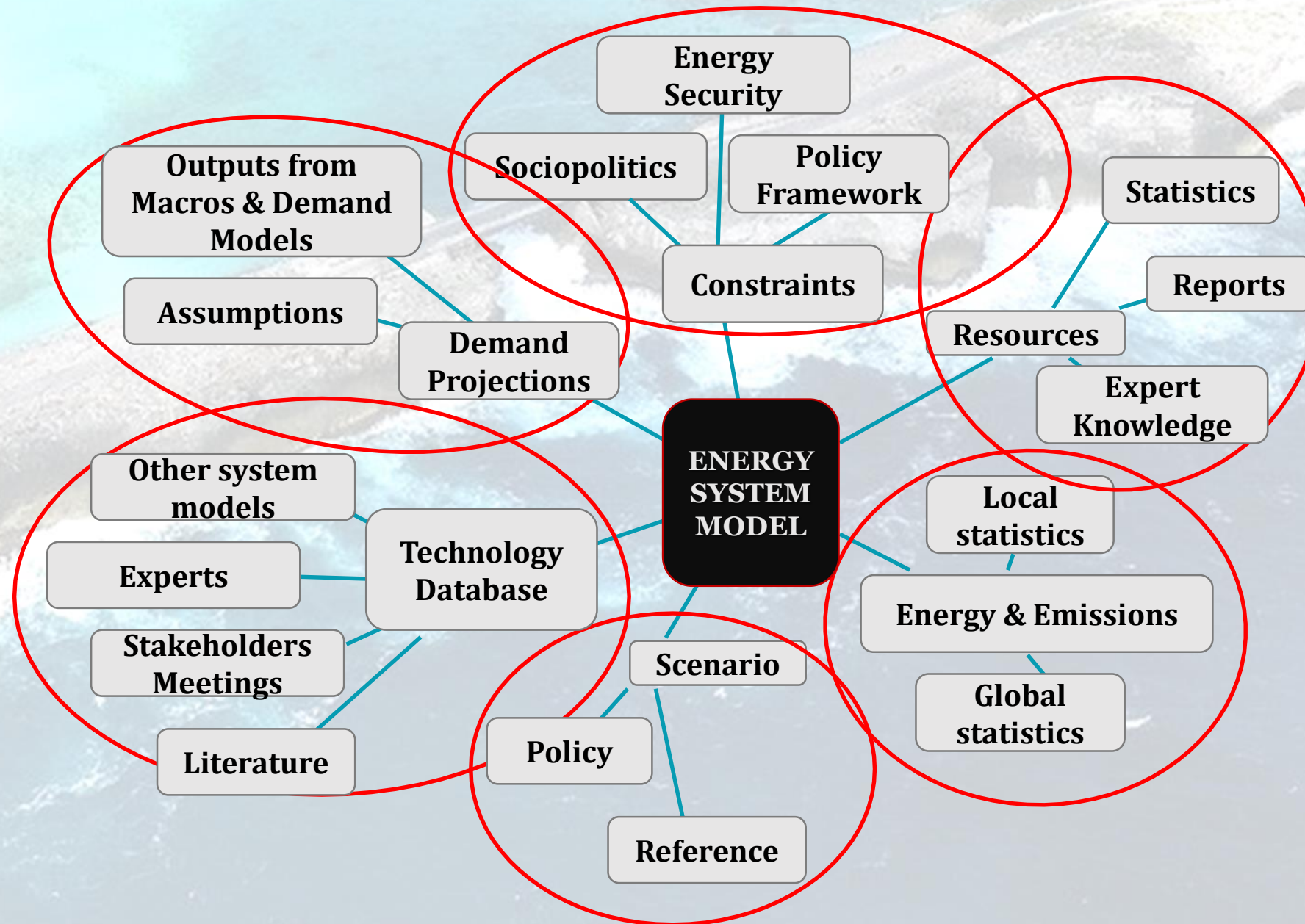
Goal 1: CARICOM citizens are well aware of the importance of energy conservation, use energy wisely and continuously pursue opportunities for improving their use of energy, with key economic sectors embracing eco-efficiency

Goal 2: Member States have modern energy infrastructure with clean and secure generation capacity, ensuring that energy supplies are reliably and affordably transported to homes, communities and the productive sectors on a sustainable basis

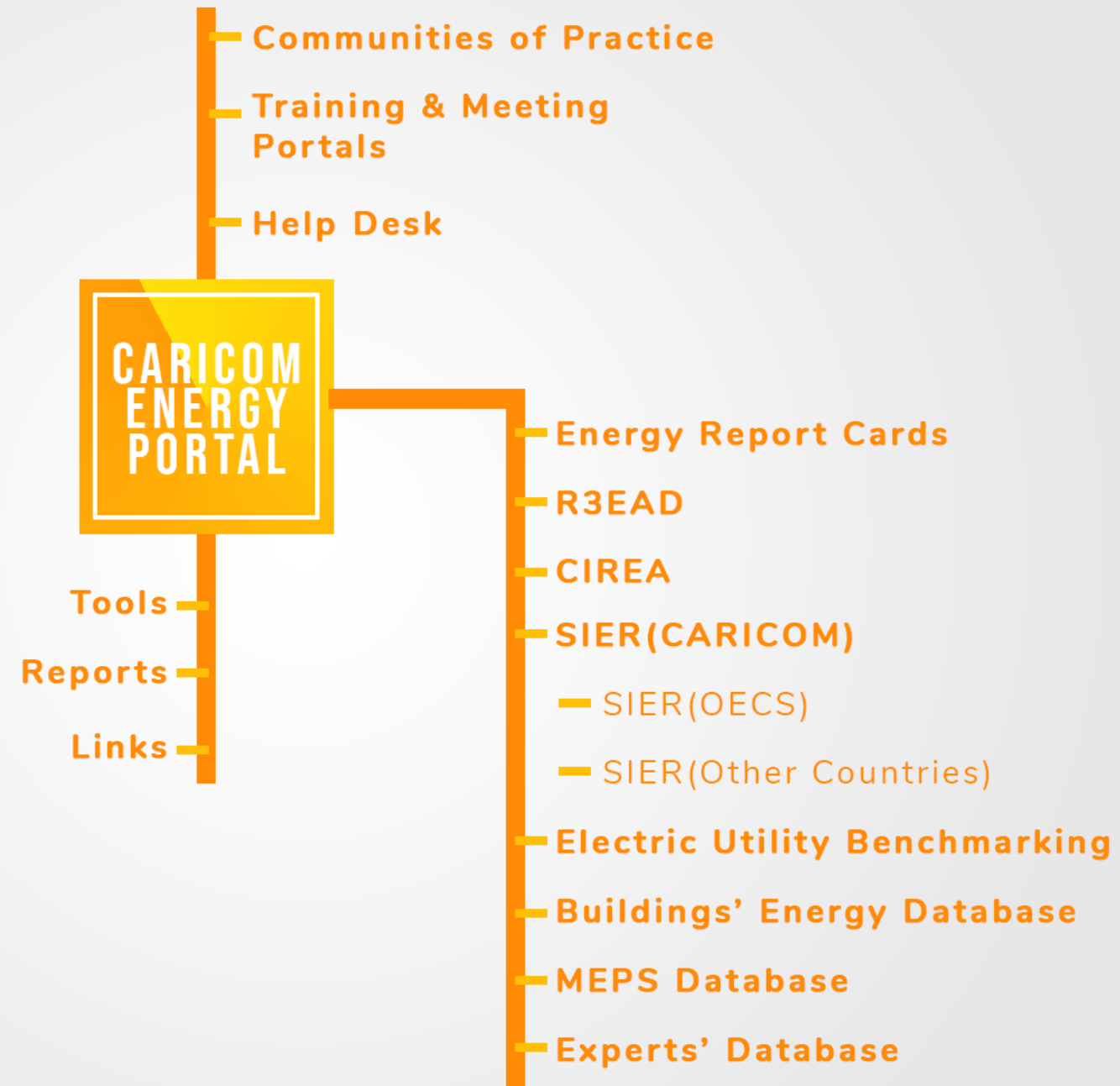
Goal 3: The Region is a global example for renewable energy use, providing secure intra-regional energy supplies at internationally competitive prices and a small carbon footprint, capable of supporting medium- and long- term economic growth, social development and environmental sustainability

Goal 4: Countries have a well-defined and established governance, institutional, legal and regulatory framework to support the future developments in the energy sector, underpinned by high levels of consultation and citizen participation in this sector

Understanding the puzzle...



CARICOM ENERGY KNOWLEDGE HUB



***“For the things we have to learn
before we can do them,
we learn by doing them.”
-Aristotle***

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