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WEBINAR

MICROGRID TRADE ORIENTATION

SEPTEMBER 22, 2023

10:00 am - 12:30 pm Mountain
1:00 pm - 3:30 pm Atlantic

OPENING REMARKS

ANOUK KENDALL, PRESIDENT, DECENTRALISED ENERGY CANADA

GOVERNMENT OF CANADA

CLAUDIA GUTIERREZ, REGIONAL TRADE COMMISSIONER, CLEAN TECHNOLOGIES, LATIN AMERICA AND THE CARIBBEAN

ABOUT EXPORT DEVELOPMENT CANADA

TAMARA FATHI, CHIEF REPRESENTATIVE, ANDEAN REGION, CENTRAL AMERICA & THE CARIBBEAN, EXPORT DEVELOPMENT CANADA

ISLANDS ENERGY PROGRAM

DAVID GUMBS, DIRECTOR, ROCKY MOUNTAIN INSTITUTE

SUSTAINABILITY IN THE CARIBBEAN HOTEL AND TOURISM SECTOR

TED VOGEL, GOVERNING COUNCIL MEMBER, CARIBBEAN ALLIANCE FOR SUSTAINABLE TOURISM

CREATING AN ESG VALUE PROPOSITION

NANCY FORAN, PRESIDENT AND FOUNDER, ESG PARTNERS INC.

WRAP UP AND NEXT STEPS

WILL OVEREND, PROGRAM MANAGER, DECENTRALISED ENERGY CANADA

CANADA: A GLOBAL LEADER IN CLEAN TECHNOLOGY

Claudia Gutierrez
Regional Trade Commissioner – Déléguée commerciale régionale
Clean Technologies – Technologies propres



AGENDA

1. Working with the Trade Commissioner Service
2. Why do business with Canada
3. Canadian Capabilities in the Energy Sector



OUR NETWORK

We are your global team on the ground. An unbeatable network with offices across Canada and around the world to help you grow globally.

125+ YEARS SUPPORTING CANADIAN SMEs

10,000+ CLIENTS EACH YEAR

1,000+ TRADE COMMISSIONERS

160+ LOCATIONS WORLDWIDE

6 OFFICES IN CANADA



REGIONAL NETWORK



Atlantic:

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Quebec & Nunavut:

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Manitoba & Saskatchewan:

kimberly.brown@international.gc.ca

Alberta & Northwest Territories :

Carmen.Sparrow@international.gc.ca

British Columbia & Yukon:

Heather.McDermott@international.gc.ca



The Trade Commissioner Service in Latin America



We are present in 21 offices, covering 44 countries and territories.

We provide 4 core services in the local markets:

- Market intelligence and information to prepare for international markets
- Support assessing market potential for your company
- Connection to opportunities and the right contacts
- Problem solving





Why do Business in Canada?



Do Business with Canada



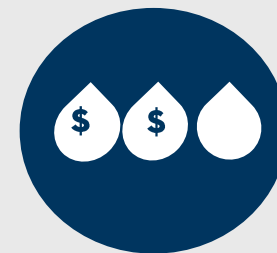
INNOVATE WITH CANADA

As a world leader in science and technology we can connect you with the right R&D partners in Canada



INVEST IN CANADA

Benefit from a stable economy with competitive business costs and a safe and inclusive environment



BUY FROM CANADA

There are many Canadian organizations available to meet your needs for high-quality products, services and technologies



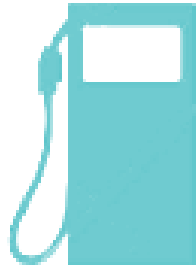
Why Choose Canada for Cleantech?

- ❑ Canada is a strong innovator and producer of clean technology and climate solutions and is ready to meet the world's needs
- ❑ A dynamic marketplace supported by an innovative economy and welcoming business community
- ❑ 15 free trade agreements in force with 51 countries, covering 1.5 billion consumers worldwide
- ❑ Strong capabilities in numerous industry sectors with an open and transparent environment for global investors
- ❑ Canada's leading clean technologies include solutions in renewable energy, water and wastewater, energy storage, Hydrogen and fuel cell technologies, smart grid, carbon capture, utilization and storage (CCUS), and waste-to-value



Cleantech is Driving Innovation in Many Sectors

- Clean technology companies are building solutions for challenges faced by large, established industries, such as, energy, mining, transportation and agriculture



- These solutions will drive new economic, environmental and resource efficiencies into the heart of traditional business models, improving long-term productivity and international competitiveness of companies
- Canadian clean technologies exist at all levels of the value chain to help industries reduce emissions

Key Canadian Cleantech Strengths

- ☐ Renewable energy
- ☐ Water and wastewater
- ☐ Energy storage
- ☐ Hydrogen and Fuel cells
- ☐ Energy Efficiency
- ☐ Smart grid
- ☐ Carbon capture, utilization and storage (CCUS)
- ☐ Waste-to-Value





Canadian Capabilities in the Energy Sector



Renewable Energy

- Canada, a leader in electricity generation, is producing some of the cleanest and most affordable power worldwide.
- Canada produces over 82% of its electricity from non-emitting sources; total electricity emissions decreased by 53% from 2000 to 2019 because of increased generation from renewable and non-emitting sources.
- Canada is the 7th largest renewable energy producer in the world, ranking 3rd globally for hydroelectricity and 8th for wind.
- Canada has a diversified mix of renewable-energy resources, including hydro, solar, wind, biomass and tidal power.
- Canadian companies have demonstrated expertise in Renewable Energy generation, electricity transmission, power distribution, engineering consulting, legal and advisory services, as well as financing and insurance.



Energy Storage



- Canadian firms are well placed to capture a significant share of the global energy storage market which is expected to quadruple from 2022 to 2030 – adding more storage by 2030 than Japan’s entire power generation capacity.
- With expertise across the energy storage value spectrum from energy arbitrage services, flexibility services to off-grid electrification.
- Canadian companies are active across the full range of energy storage technologies and in every segment of the storage industry value chain.
- Canada is a leader in cutting-edge storage and off-the-grid technologies, which are transforming remote power storage, including for mines.

Energy Efficiency

- Canadian firms are well positioned to capture a significant share of the \$66 billion global investment in energy efficiency as part of pandemic-response measures.
- Canada's thriving energy-efficiency sector offers world-leading products, technologies, and expertise to global residential, commercial and industrial, government, and utility markets.
- Energy-efficiency products and services constitute Canada's second-largest source of cleantech exports.
- Close to 51,000 establishments within the six industry groups were involved in energy efficiency activities across Canada

Smart Grid



- Canada is a smart grid pioneer and one of the world's earliest adopters of smart grid technologies with:
 - Greater than 80% smart meter penetration.
 - Roll out of second generation smart meters has started.
 - Over 16 GW in distributed electricity generation.
 - 200, 000 electric vehicles (EV) on the road and over 13 k EV charging outlets.
- Internationally recognized expertise in smart meters, electric vehicles and electric vehicle chargers.
- Leader in software intensive solutions that enable Smart Energy Models.



Thank you!

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ABOUT EXPORT DEVELOPMENT CANADA

Presented by
Tamara Fathi
September 2023

Canada



EDC

EXPORT DEVELOPMENT CANADA IS CANADA'S EXPORT CREDIT AGENCY

For over 75 years, we've helped Canadian companies navigate, manage and take on risk, enabling them to grow and succeed in global markets.



OUR PURPOSE: TO MAKE CANADA AND THE WORLD BETTER THROUGH TRADE.

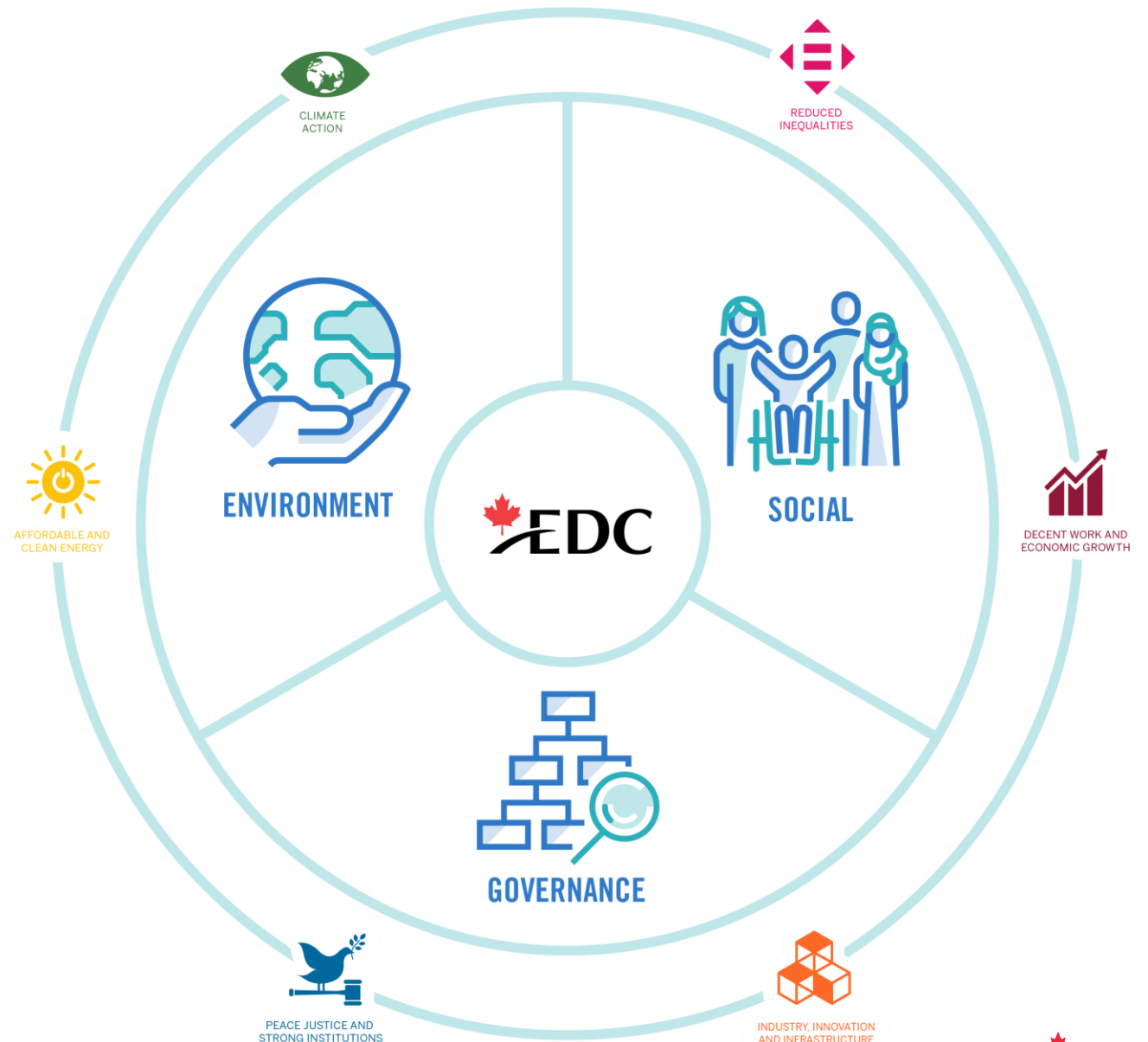
Our Mission:

We use our unique trade knowledge and financial solutions to develop trade between Canada and other countries, and to enhance Canada's competitiveness in the international marketplace.



WE BELIEVE IN THE POWER OF ESG AS A GLOBAL BUSINESS ACCELERATOR.

EDC partners with Canadian companies to help them turn sustainable practices into sustainable actions, so that they can seize opportunities to thrive in global markets, while changing the world for the better.



OUR ECOSYSTEM

TCS

TRADE COMMISSIONER
SERVICE
International market
intelligence

EDC

EXPORT DEVELOPMENT
CANADA
Knowledge, insurance, and
financial solutions to help
manage risk

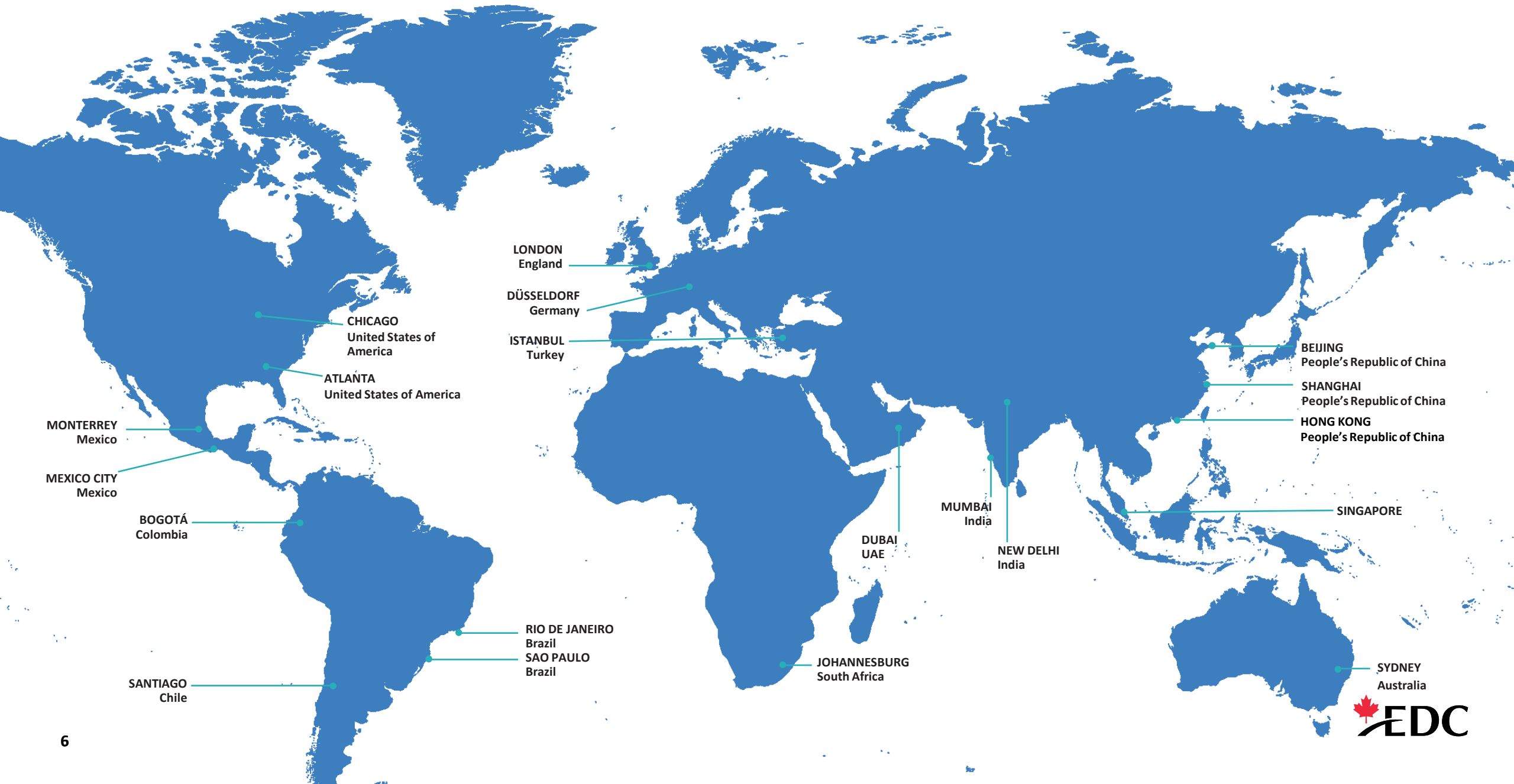
CCC

CANADIAN COMMERCIAL
CORPORATION
International contracts and
general business support

BDC

BUSINESS DEVELOPMENT
BANK OF CANADA
Financing, advisory
services and capital

FEET ON THE GROUND WORLDWIDE



OUR SOLUTIONS

We equip Canadian businesses with the tools they need to grow their business with confidence.

FINANCING

We help Canadian companies get access to capital.

INSURANCE

We offer protection that lowers the risk for Canadian companies doing business beyond our borders.

KNOWLEDGE

We provide expertise that enables our customers to make informed decisions and learn more about international markets.

CONNECTIONS

We connect Canadian and international companies to help both parties grow.

EDC BUSINESS VOLUME IN THE CARIBBEAN

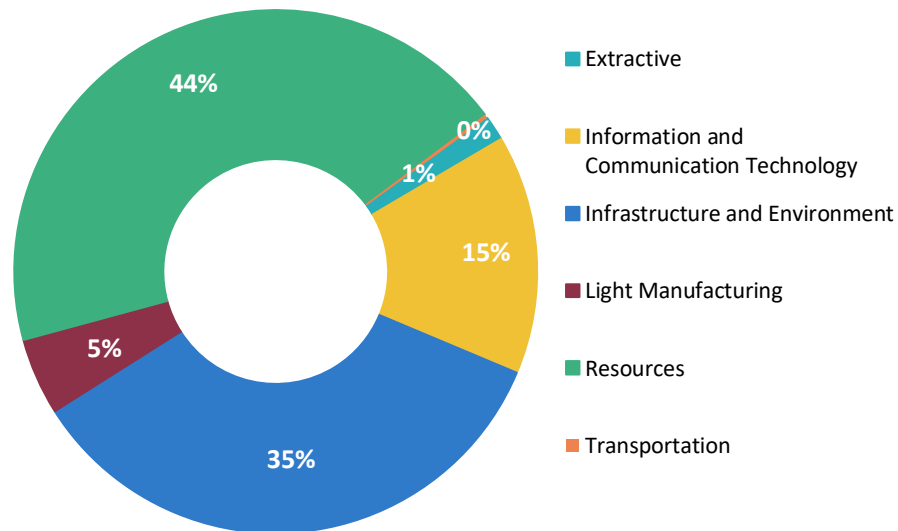
FINANCIAL HIGHLIGHTS 2022

\$1.8 BILLION
IN TOTAL VOLUME

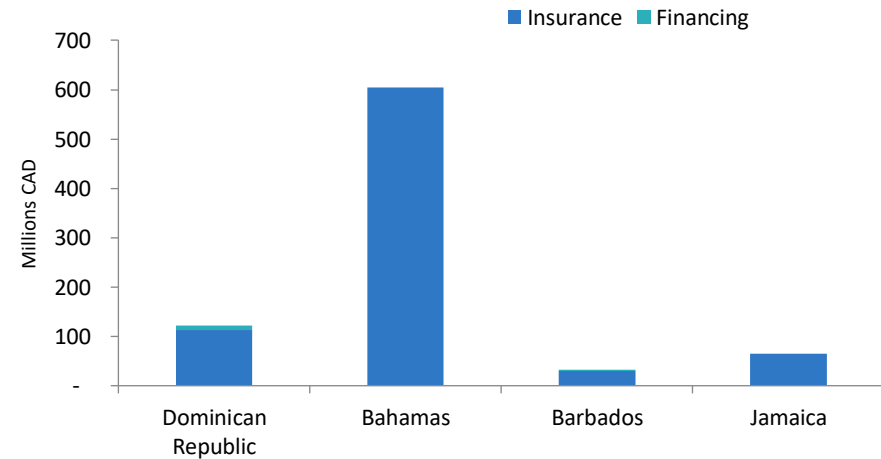
\$16 MILLION
IN FINANCING

409 CUSTOMERS
SERVED

BUSINESS VOLUMES BY SECTOR
AS AT DECEMBER 31, 2022



BUSINESS VOLUMES BY COUNTRY
AS AT DECEMBER 31, 2022



SAMPLE OF FINANCING TRANSACTIONS

AS AT DEC 31, 2022

| Date of Signing | Country | Principal Counterparty | EDC Product | Transaction Description | Range (CAD \$) | Canadian Company |
|-----------------|--------------------|--|-------------|--|----------------|--|
| 5/20/2022 | Dominican Republic | Elevate Export Finance Corp., Packaging Solutions Packsol, S.R.L | Guarantee | Buyer Financing | 1 - <5 million | Husky Injection Molding Systems Ltd. |
| 6/15/2022 | Dominican Republic | Elphege & Norbert LeBlanc, Ltd. | Guarantee | Working Capital Support/General Corporate Purposes | 1 - <5 million | Elphege & Norbert LeBlanc, Ltd |
| 8/25/2022 | Barbados | Integrated Sustainability Consultants Ltd. | Guarantee | Support for Canadian Direct Investment Abroad | 1 - <5 million | Integrated Sustainability Consultants Ltd. |
| 5/5/2022 | Guyana | Export-Import Bank of the United States | Guarantee | Buyer Financing | <1 million | Pratt & Whitney Canada Corp |

MEET THE TEAM

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Islands Program

DEC Microgrid Trade Orientation

22 September 2023

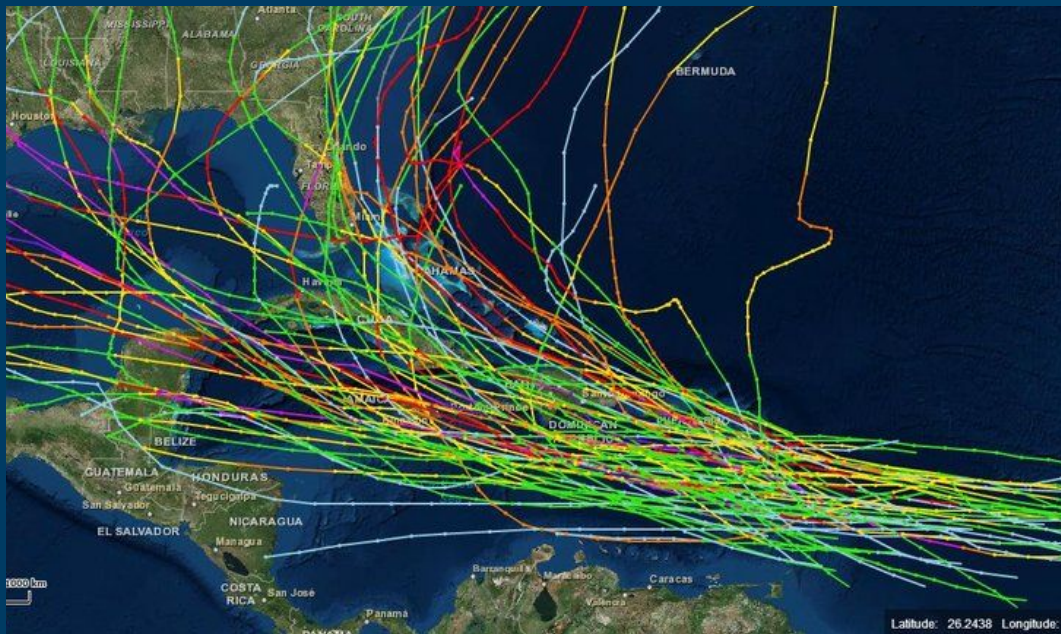


RMI is an independent, global nonprofit organization of experts accelerating the clean energy transition.

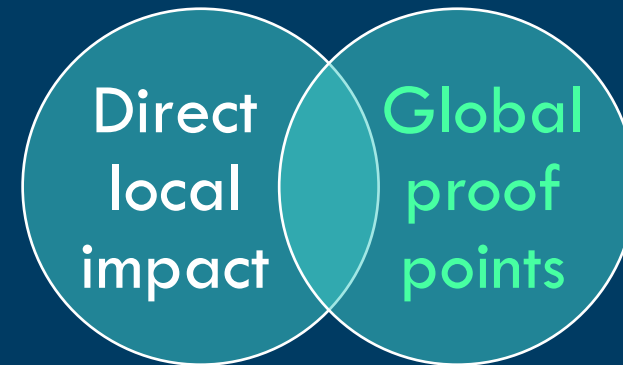
Our mission is to transform the global energy system to secure a clean, prosperous, zero-carbon future for all.

Why we do this work

Islands are ground zero for climate change. They are taking action to define their energy futures and demonstrate how pursuing a soft energy path addresses the climate challenge while providing other benefits.



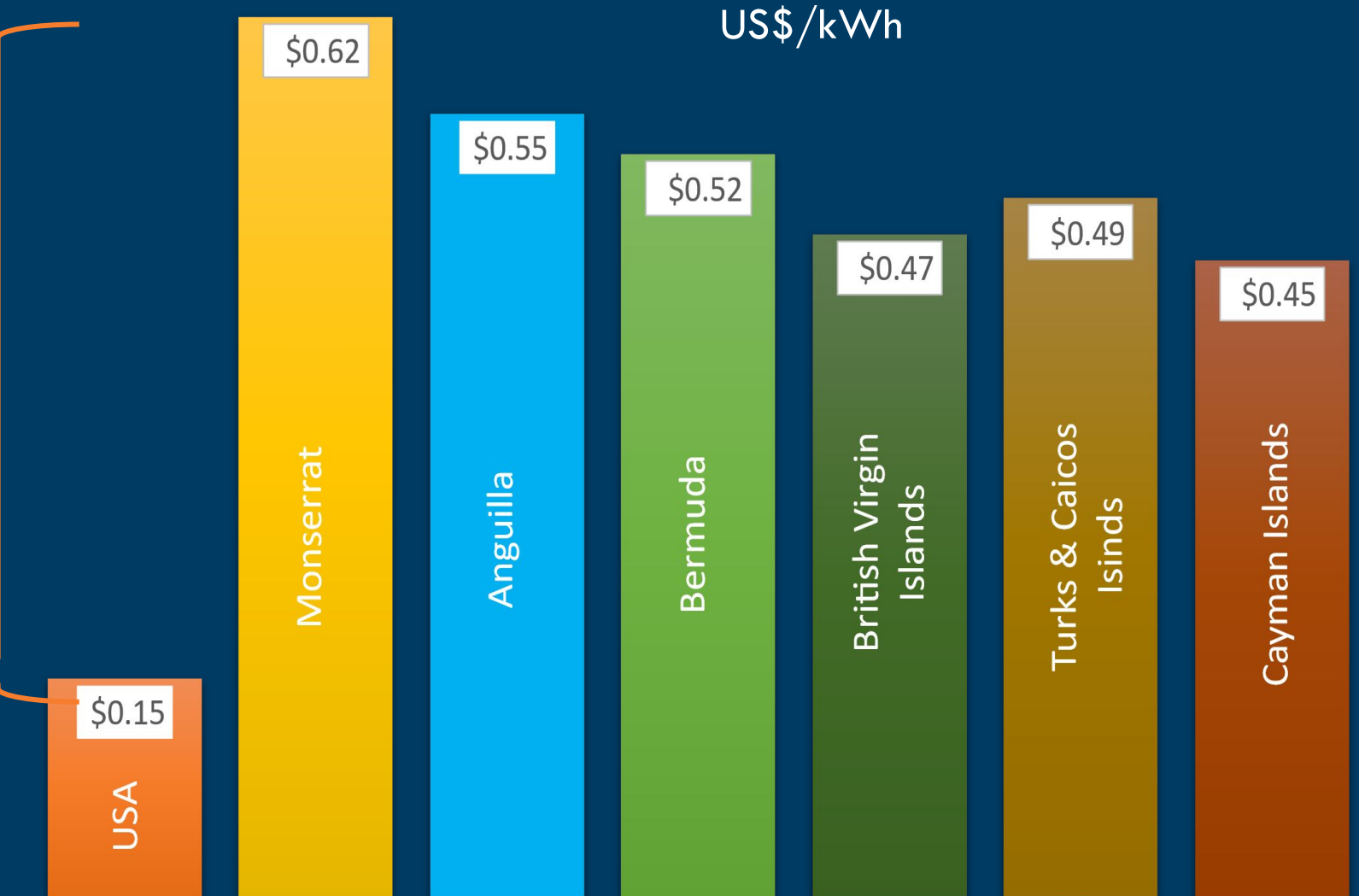
We work with islands to advance two outcomes:



Why? Electricity prices in the Caribbean have hit record highs.

Imported fossil fuels make the region vulnerable to geopolitical shocks and global energy crises

Montserrat citizens pay over 4x more for electricity than the average US consumer



We listen to country partners and assess their level of vulnerability based upon three critical criteria

1

Energy Equity

2

**Energy
Resilience**

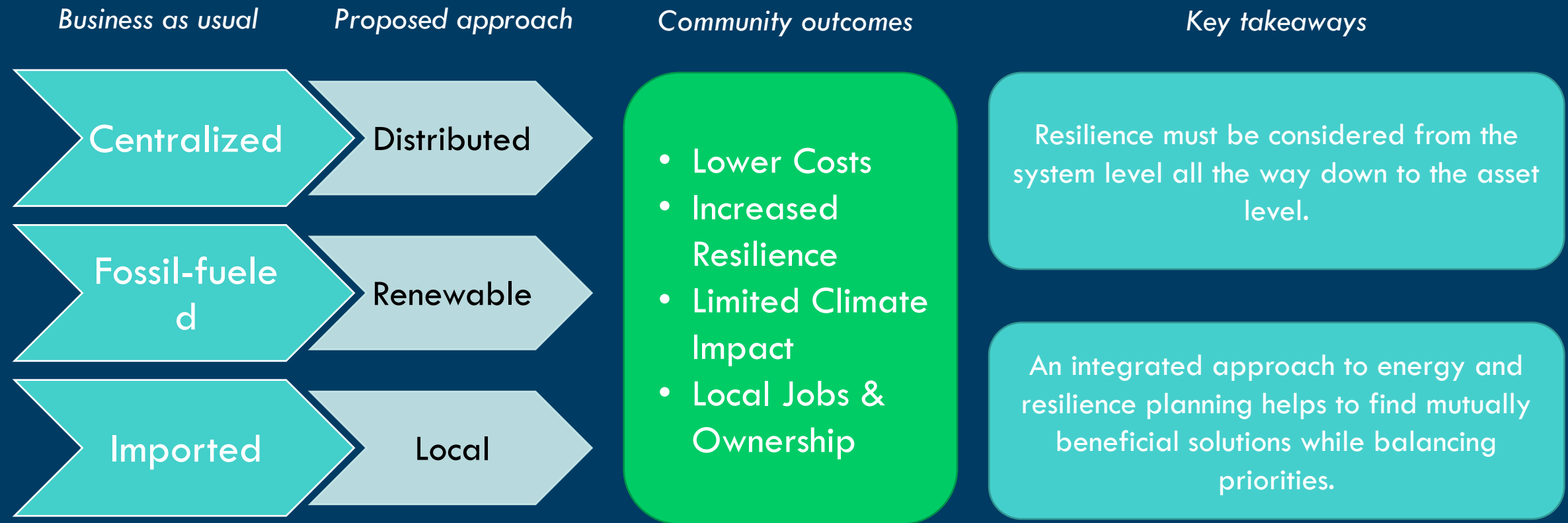
3

Climate Impacts

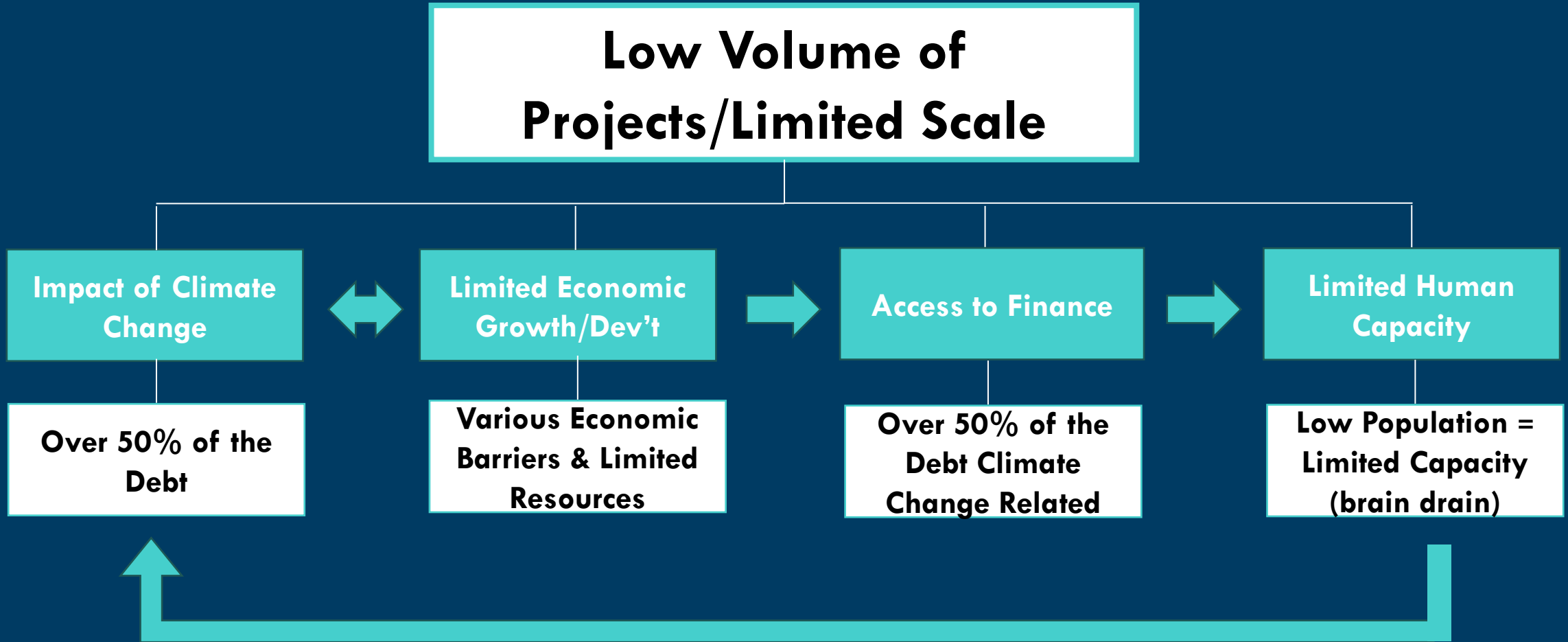
Rejecting a 'one-size fits all' approach to climate action

Energy Resiliency

Energy systems that are more distributed and utilize local, clean resources are more resilient.



The Challenge



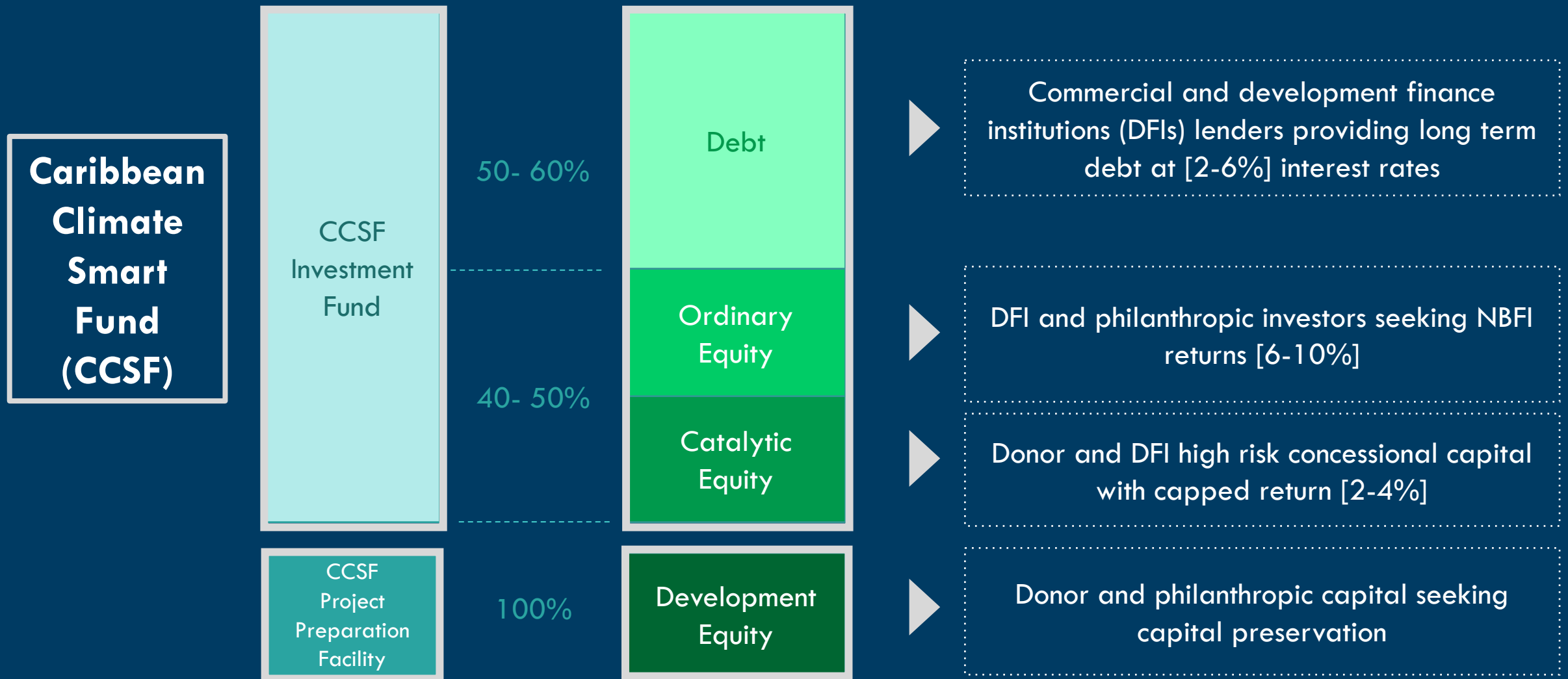


Local barriers mean that capacity to prepare projects for investment is limited

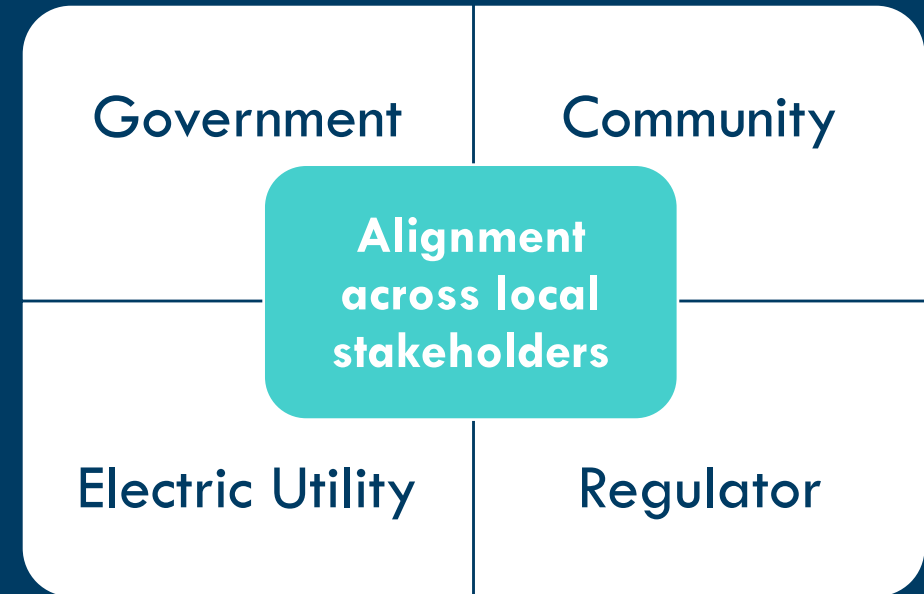
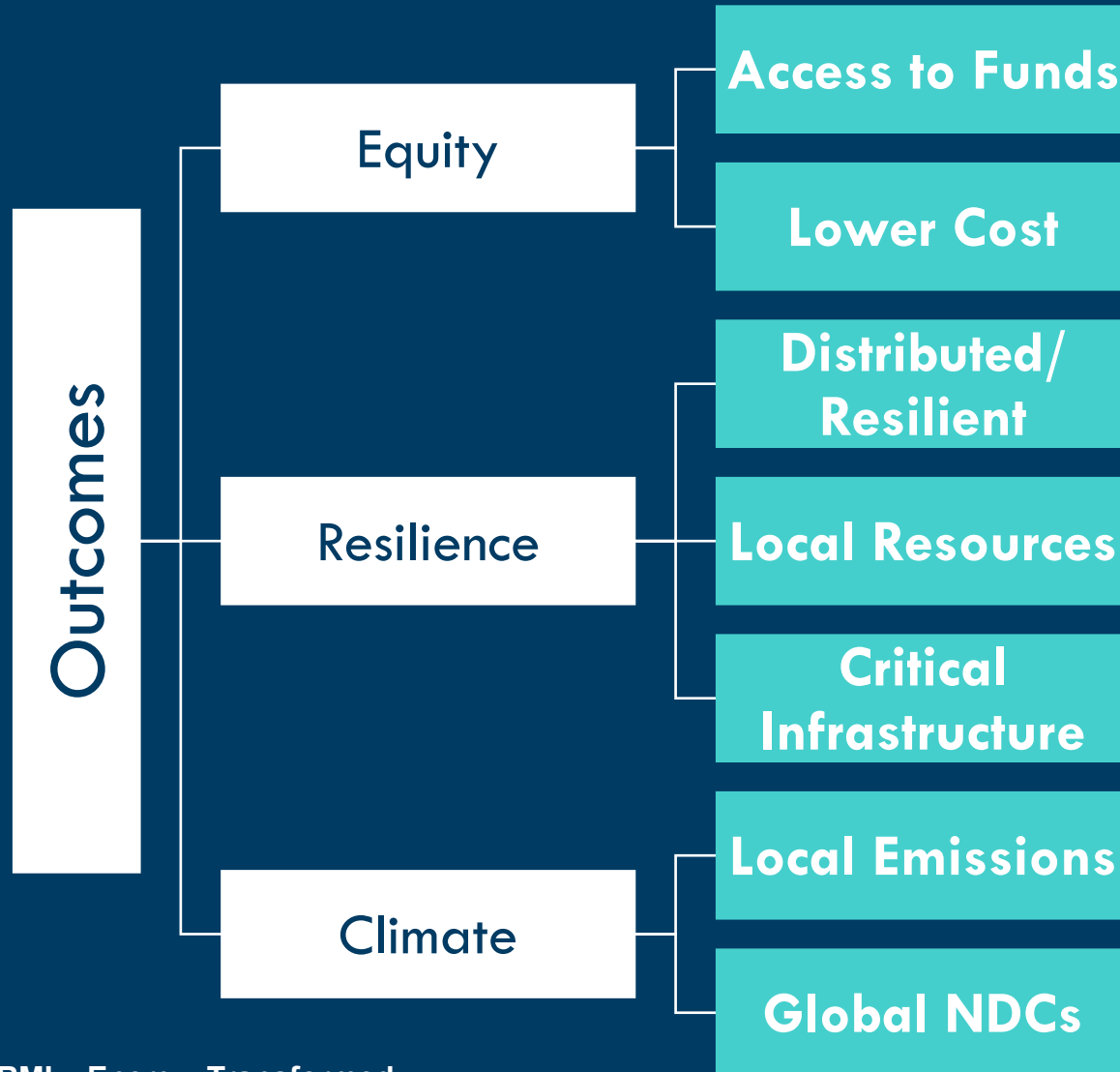
...90 percent of island clean energy projects fail in the “Project Preparation” stage. This creates ...a lack of bankable clean energy project pipelines

Caribbean Climate Smart Fund (CCSF)

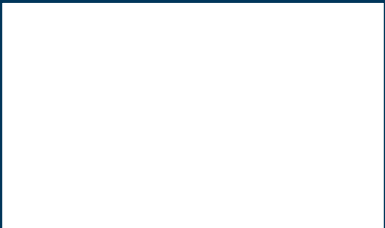
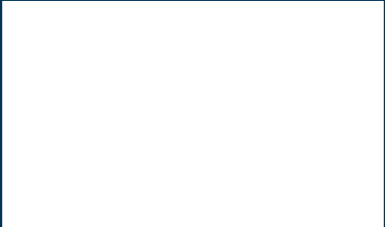
Capital structure creates tranches to suit a variety of investor profiles



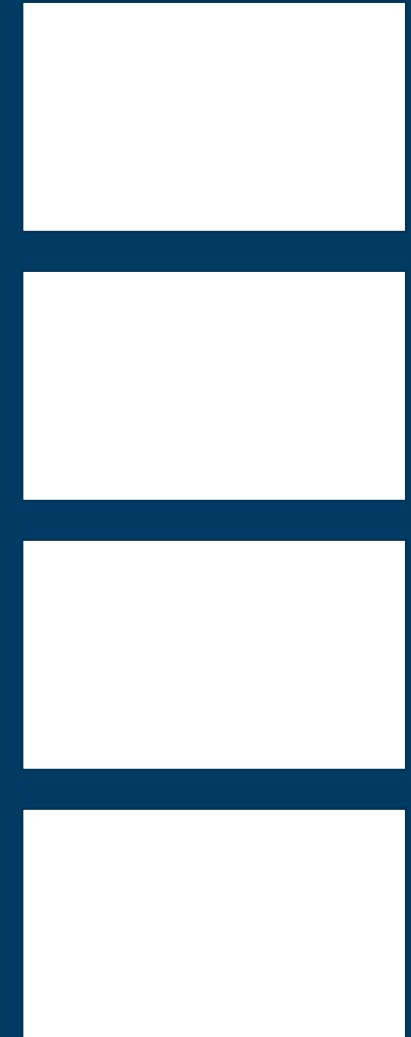
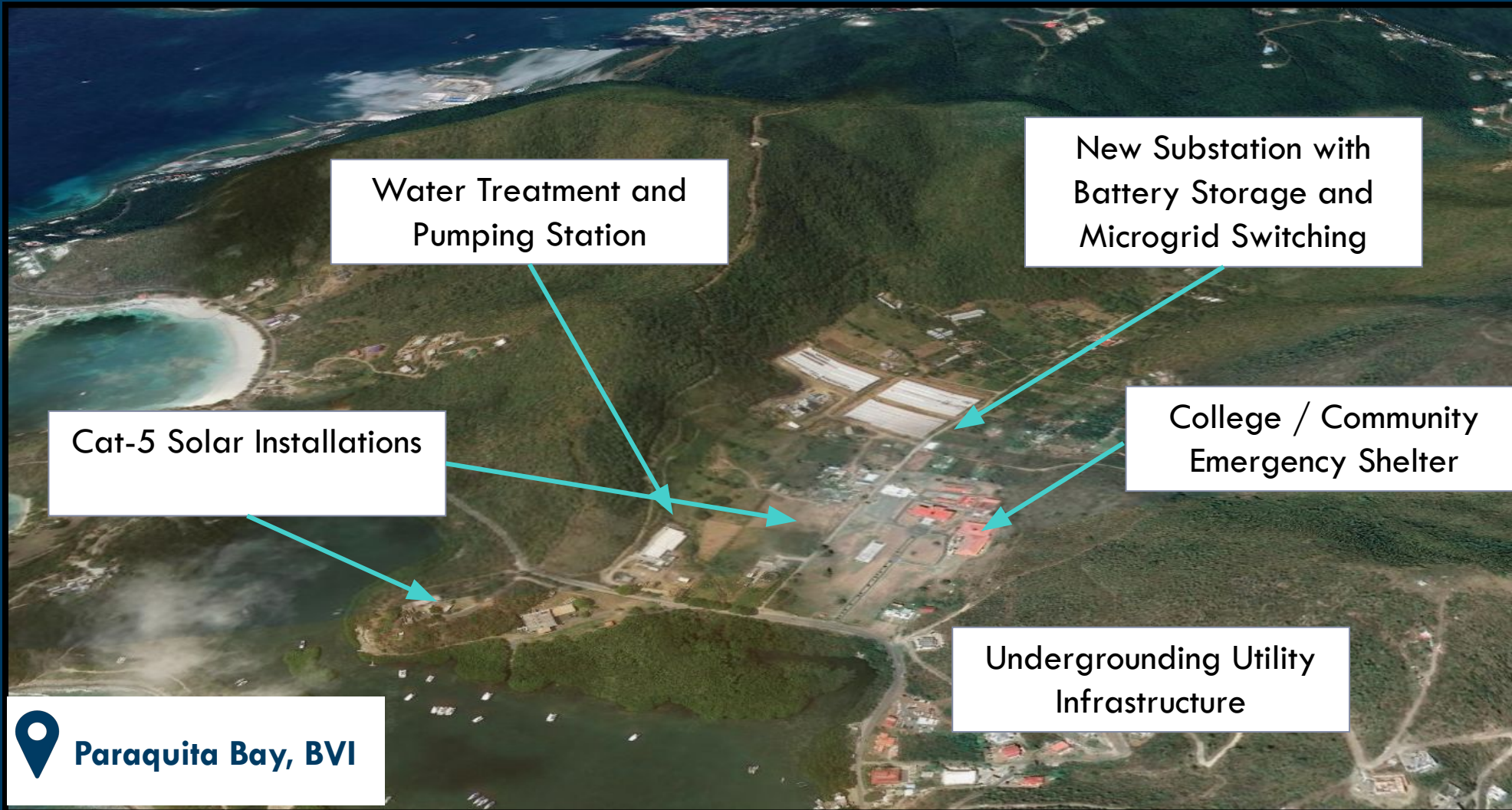
What does this approach look like at scale?



The Bahamas as a model for energy equity



British Virgin Islands as a model for energy resilience





Thank You

Contact

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Sustainability in the Caribbean Hotel and Tourism Sector

September 2023

Presented by Ted Vogel, Renewable Energy and Sustainability Consultant,
Member, Board of Governors Caribbean Alliance for Sustainable Tourism

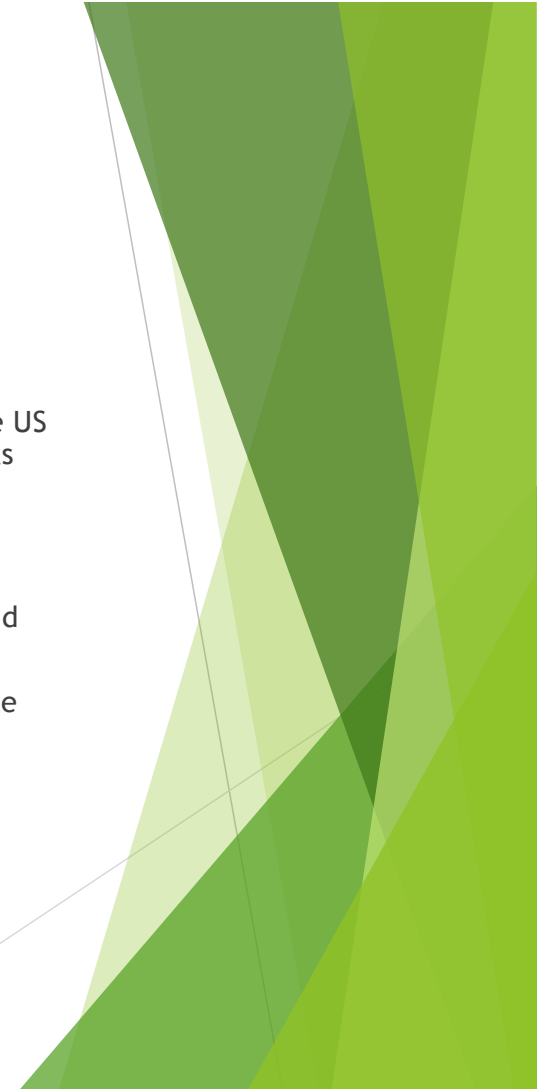
Introduction

▶ Myself

- ▶ 20years in industry
- ▶ Worked in regional wind power and remote, US Govt hybrid operations
- ▶ Currently working in Bahamas and Jamaica on aggregated funding projects and in the US in market development for distributed energy projects in Oklahoma, Texas and Kansas
- ▶ In consultation with RMI to create new hospitality funding vehicle

▶ CAST

- ▶ CAST serves as an internal advocacy arm for sustainability for the Caribbean Hotel and Tourism Association (<https://caribbeanhotelandtourism.com/>)
- ▶ We promote member engagement on island and regionally specific climate, renewable energy and sustainability matters
- ▶ CHTA/CAST are currently engaged in developing fiscal programs to leverage member access to RE funding in the region



The Value of Tourism: Where Microgrids meet Macro Applications

- ▶ The COST of Energy for Tourism
 - ▶ 45-60% of OPEX
 - ▶ Hostage to Fuel Surcharge and Geo-politics
 - ▶ Hotels and Hospitality C&I run tight margin\$
 - ▶ Impedes CAPEX improvement planning
 - ▶ Peak Stressed Grids (JA Spinning Reserves)
- ▶ Can you “Island” (your property) on your Island?
 - ▶ YMMV
 - ▶ Solar - near universal acceptance
 - ▶ Wind - same acceptance (but NIMBY)
 - ▶ ENERGY Data precedes and predicates design
 - ▶ Known knowns v known unknowns
 - ▶ Energy COSTS v LOST Savings

The Devil is in the (Microgrid) Details: No “solution” can be valued with out DATA/Rules

▶ DATA (Questions)

- ▶ Are you getting what you are paying for?
- ▶ Are you hostage to single provider rules and costs
- ▶ How much can you do - *within the current rules?*

▶ DATA (Collection)

- ▶ Bills
- ▶ Three phase metering (DENT, Fluke)
- ▶ Point of use monitoring (Hobo, Proprietary data - HVAC, Etc.)

▶ Rules

- ▶ In the Caribbean, can you microgrid yourself? *Probably not 100% (space)*
- ▶ **IF you do**, you may lose support from Utility in emergency situations
- ▶ You can push cost to others
- ▶ Monopolies / Local govt.

▶ Rules and “bending” them to microgrids

- ▶ You can over produce (OP) kWh
- ▶ OP is “valueless” (Except Bahamas)
- ▶ Add Batteries/Ice storage to keep OP

▶ Rules

- ▶ Solar/Battery/Software It isn't cheap

Great, that was depressing... what can you do to make me feel optimistic?

▶ B.A.B.E.E. Steps

- ▶ Baseline and set Goals
- ▶ Assess - SLD, Roof health, age of current plant, near term renovation plans
- ▶ Brainstorm (Solutions) - not spending is easier than spending
 - ▶ human factors - mind set can affect easy outcomes
 - ▶ "in country" v "off island"
- ▶ Energy - executable projects
 - ▶ Small RE/EE first
 - ▶ Execute what you can afford ASAP AKA "low hanging fruit"
- ▶ Engage current/ new partners
 - ▶ Funding options
 - ▶ Value driven deliverables
 - ▶ The cost of waiting: you will lose money every day if you do not act



Solar saves money...now. *REALISTIC* terms in cost of energy is < \$.29 per kWh (200kW example system):

| | |
|--|--------------------|
| 12 Year Projected Energy Production | 3,900,000 |
| 12 Year Loan Payment | \$1,093,416 |
| 12 Year Value of Energy | \$1,965,765 |
| Lease Net Value | \$872,349 |
| COE/kWh for Term of Lease | \$.280 |

The Numbers Game - The Source of confusion...

- ▶ When the “game” is too large, confusion and bad information abounds...
- ▶ Terms like “cost per watt” / “roof mount” / “Inter connection requirements” / “UL Listed” / “Smart inverters” / “bi-directional meters” / “net metering” ...etc..

The Numbers Game - Shrink the “Playing Field”

- ▶ To the best of your ability:
 - ▶ Now the data that you *HAVE*
 - ▶ Know the data that you *DO NOT HAVE*
 - ▶ Consider local resources or hired SMEs
- ▶ Engage wherever needed to better unpack options
- ▶ Look at local options for support, do NOT count on Govt. to give you everything you want (they change)

In Closing:

- ▶ Chose the Battle(field)
 - ▶ Know the Rules
- ▶ Mine the data you have
- ▶ Engage to Close Data Gaps
 - ▶ Find assessment assistance
- ▶ Determine the shortest path to the best savings scenario - *for you*
- ▶ Act now but keep the future in mind - *you may get to implement a FULL microgrid sooner than you think...*

Where you can find me:

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