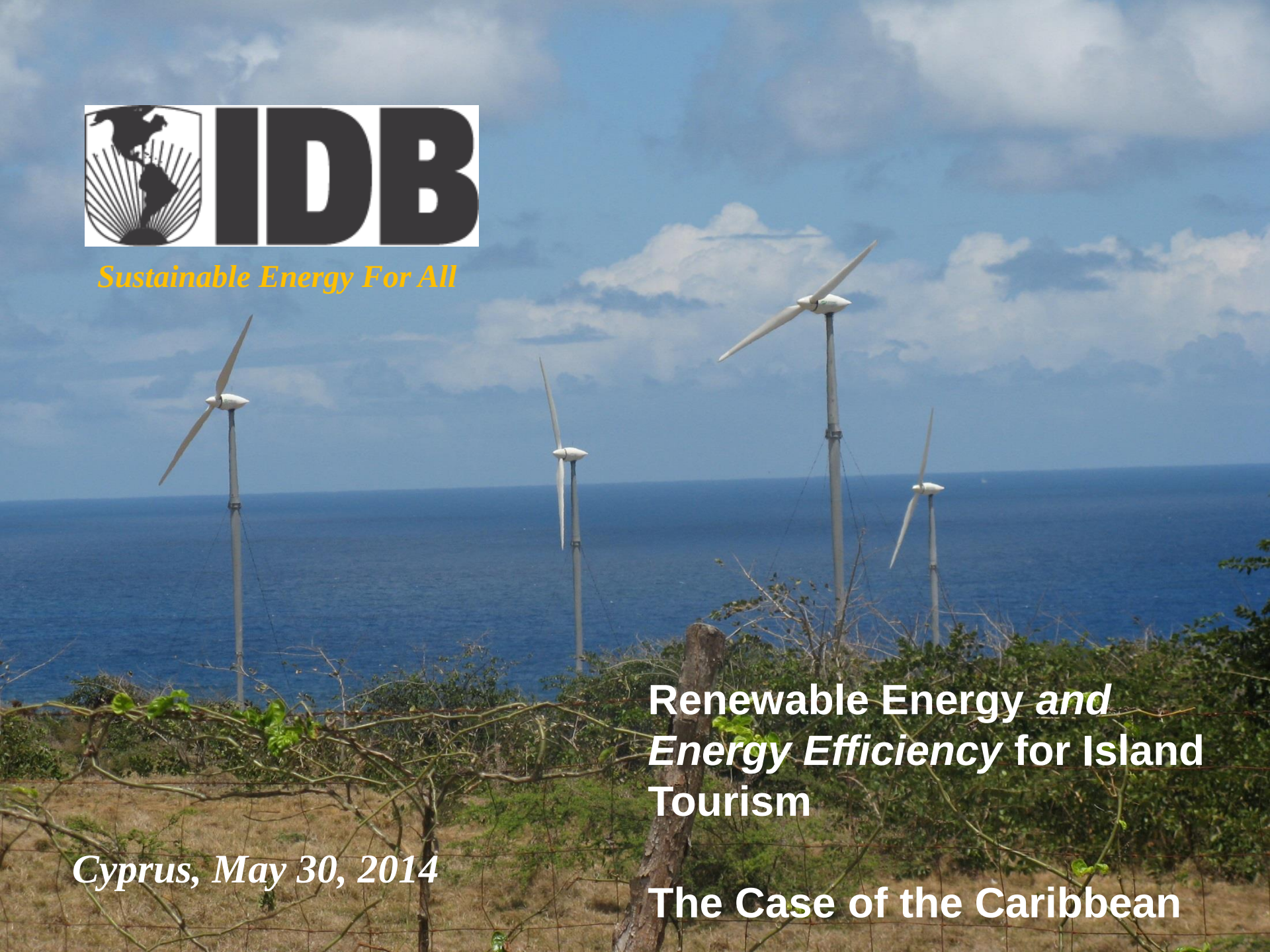


Sustainable Energy For All

Renewable Energy *and Energy Efficiency* for Island Tourism

The Case of the Caribbean

Cyprus, May 30, 2014

Outline

- **Challenges of the Energy Sector in the Caribbean**
- **Energy and Tourism**
- **Case of Barbados**
- **CHENACT Program and lessons learned**
- **Opportunities for collaboration**

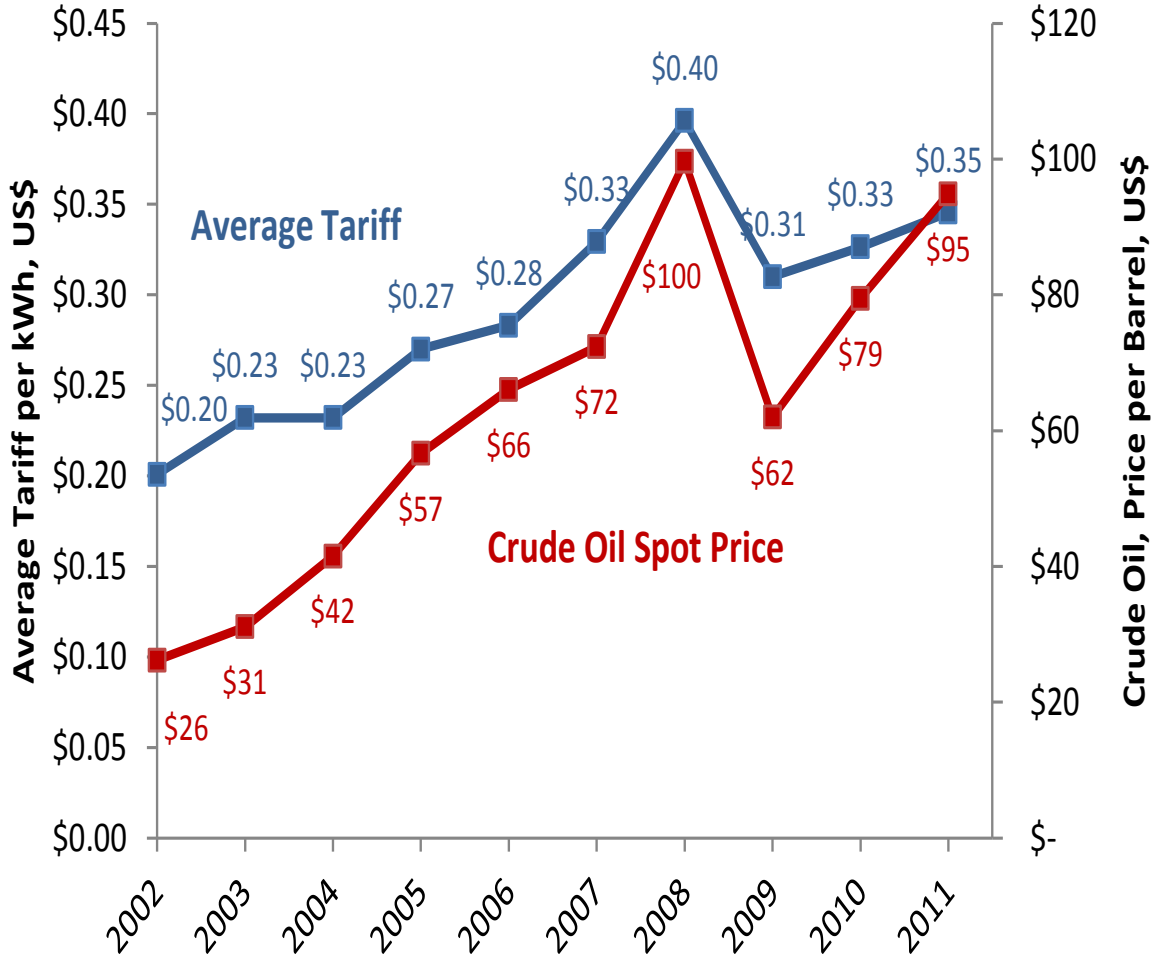
Caribbean Energy Sector Characteristics and Challenges

- **Technical**
  - Heavy dependency on fossil fuels
  - Disaggregated small and isolated loads, difficult to achieve economies of scale
  - High cost of interconnections
  - Load growth projected to increase by more than 3% annually in the next two decades
    - Conservative estimate of 500-MW additional capacity

Caribbean Energy Sector Characteristics and Challenges (cont.)

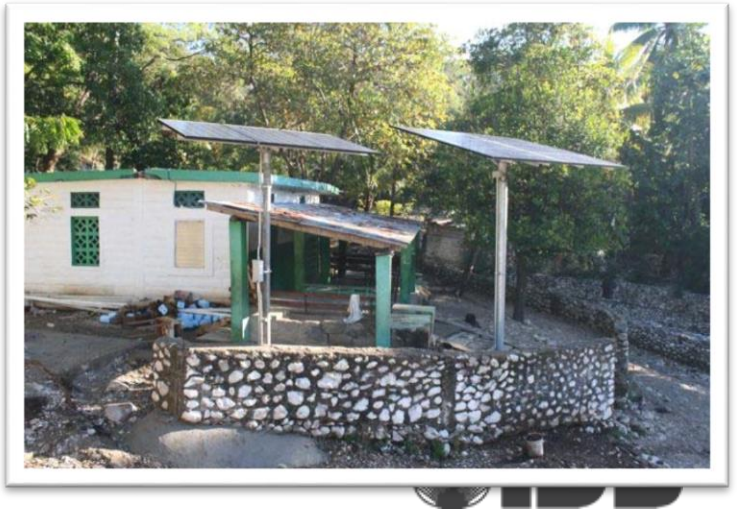
- **Social and Economic**
  - Utility monopolies
  - Low penetration of Renewable Energy (RE) and (EE)
  - Low capital investment capacity
  - Low-skilled work force
  - Regulatory Frameworks do not promote RE and EE (with some exceptions)

Tariffs and Oil Prices



Challenges in Haiti's Energy Sector

- Electricity access in Haiti is the lowest in the Latin American and Caribbean (LAC)
  - Over **70% of population** lacks access to electricity
  - Large commercial and technical losses



Tourism

- Key driver of the economy
- ~25 million tourists annually
- ~2,270 hotels in 25 countries (241,000 guestrooms)
  - Dominican Republic: 250 hotels and nearly 65,000 rooms
- 16-50% of employment
- Electricity costs ~30% to 50% of OPEX for hotels in Barbados

To remain competitive, the Caribbean hotel industry has to continue to provide quality services while maintaining an adequate cost structure.

The Case of Barbados

- Studies on RE/EE potential & feasibility
- Policies to promote RE and EE (i.e. National Sust. E. Policy)
- Plans to support RE and EE (i.e. phase-out plan for incandescent lights, safe disposal CFLs/ACs, rebate mechanisms, and awareness campaigns)
- CHENACT (more on next slide)→

- → Smart Fund (technical assistance and low interest loans to implement selected projects)
  - 17 grant applications approved for PV and EE for projects >US$6 M
  - 5 loans approved

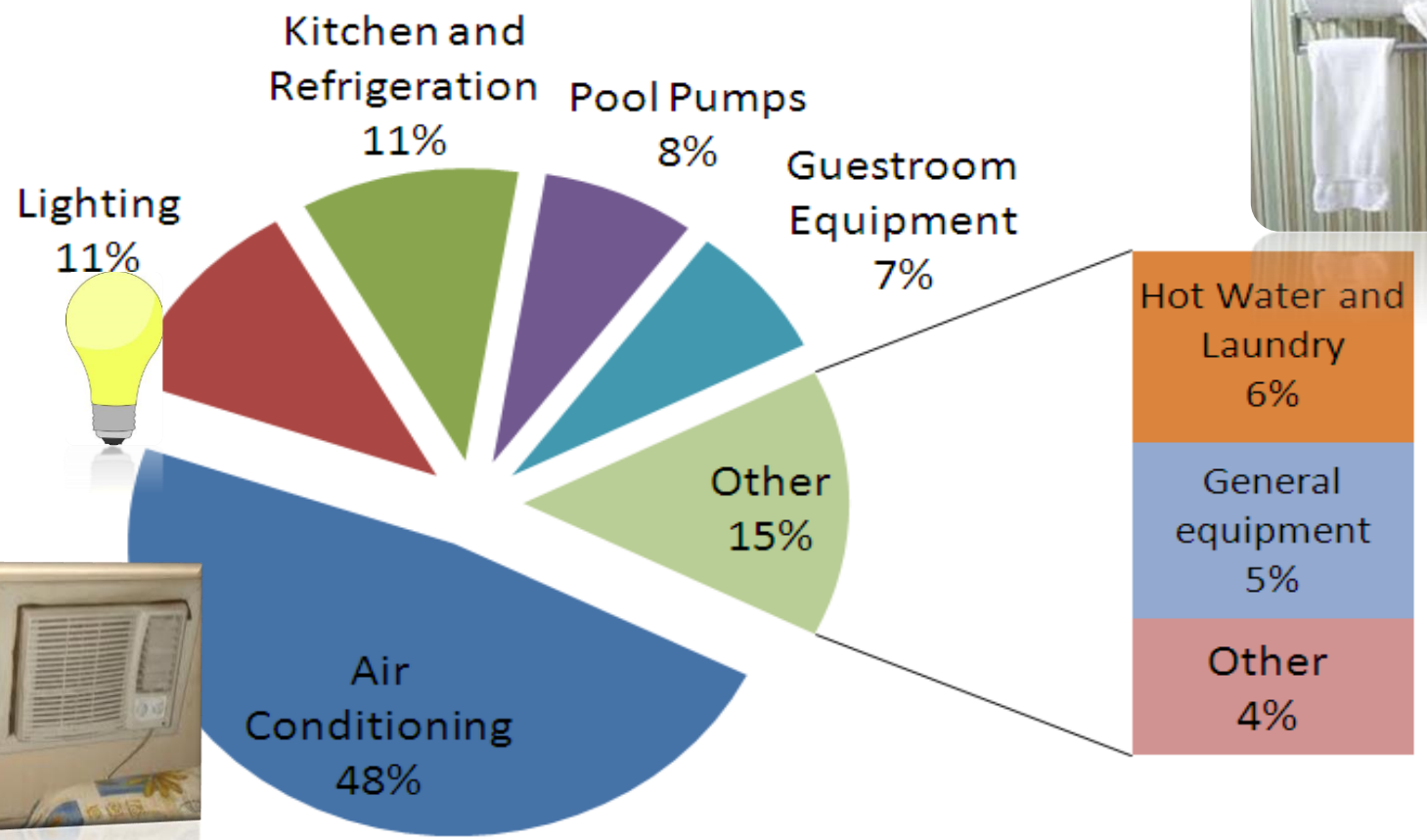
- Regulation to allow private individuals to sell excess power to the grid

Caribbean Hotel Energy Efficiency and Renewable Energy Action (CHENACT) Program

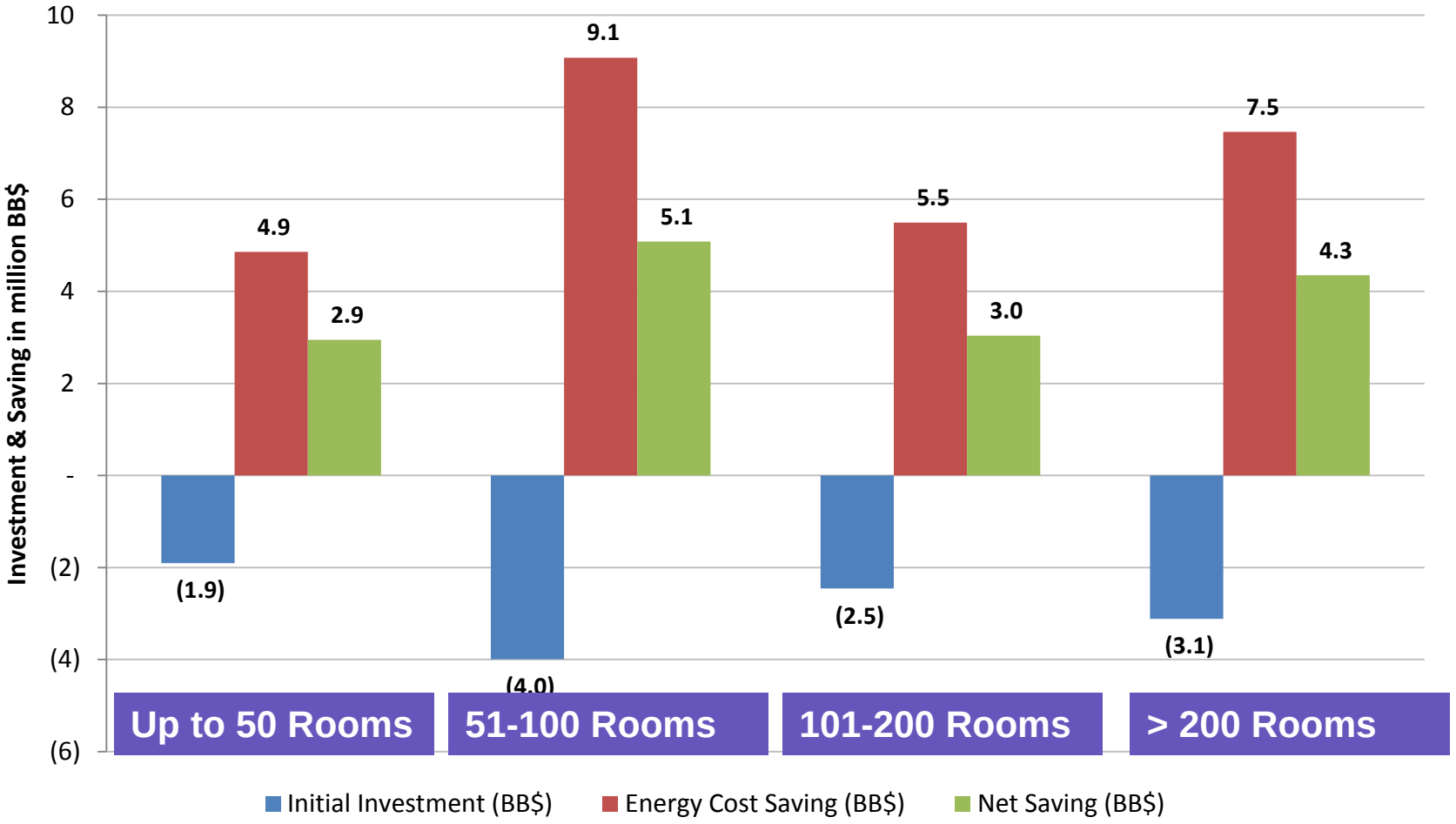
To develop **investment plans** in order to reduce energy demand through installation of EE appliances, adoption of EE practices, installation of RE and MG. In addition: carbon credits and reducing ODS.

- Detailed energy audits performed mainly in **Barbados** + currently in **Jamaica and Bahamas**
  - Also: **Dominican Republic, Trinidad and Tobago**, St. Lucia, St. Vincent, Antigua, Grenada, St. Kitts and Nevis; and Next phase: **Belize**

Energy usage by hotels (Results from CHENACT)

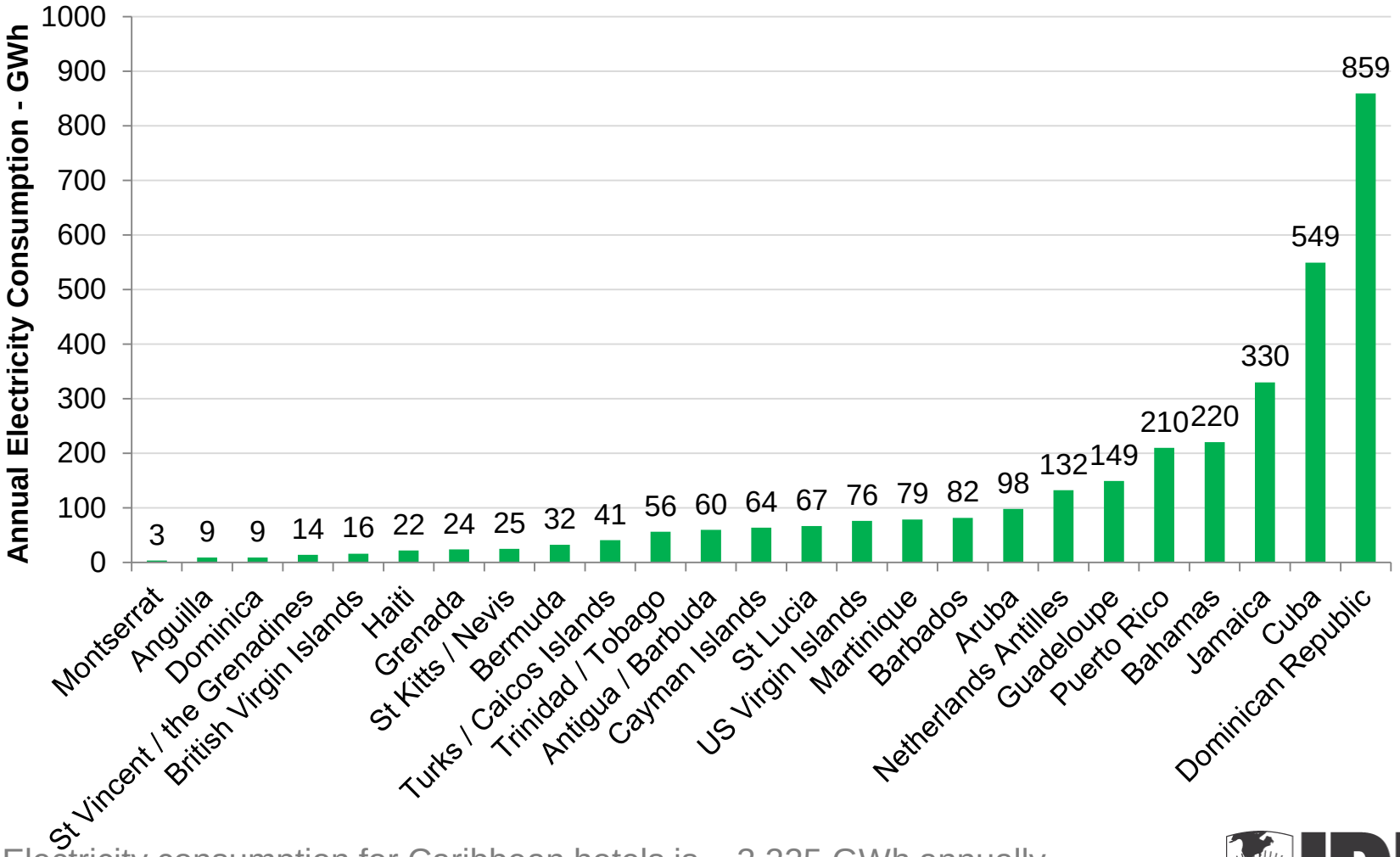


Analysis of Barbados Hotel Clean Energy Investments



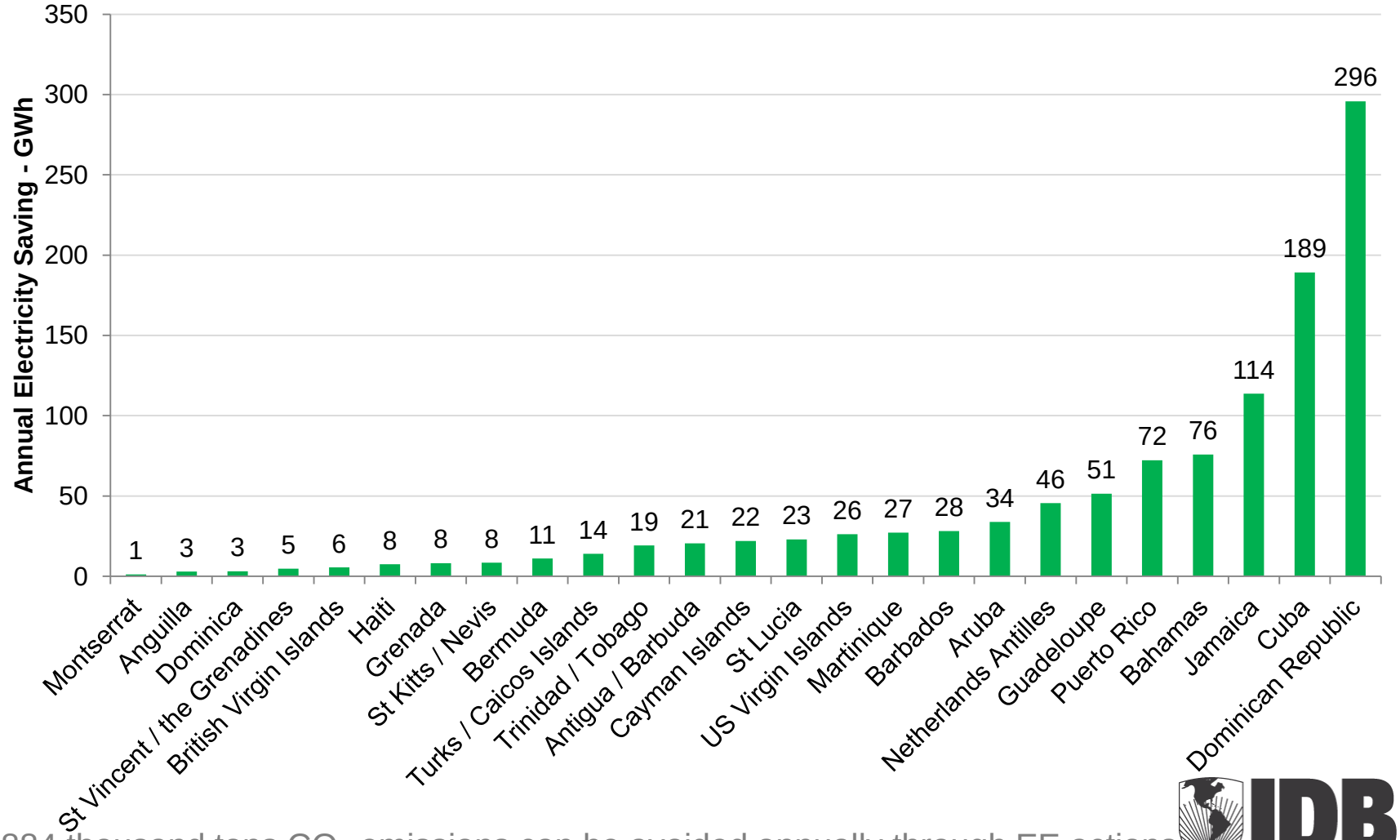
•*Assumptions:* Analysis period – 7 years, Discount rate – 12%, Average electricity tariff – 0.47 BB$/kWh, Electricity annual price escalation rate – 5.5% for Barbados.

Estimated Annual Electricity Consumption for Hotels in the Caribbean



Electricity consumption for Caribbean hotels is ~ 3,225 GWh annually emitting 2.3 million tons CO_2

Estimated Annual Electricity Savings for Hotels in the Caribbean –with EE



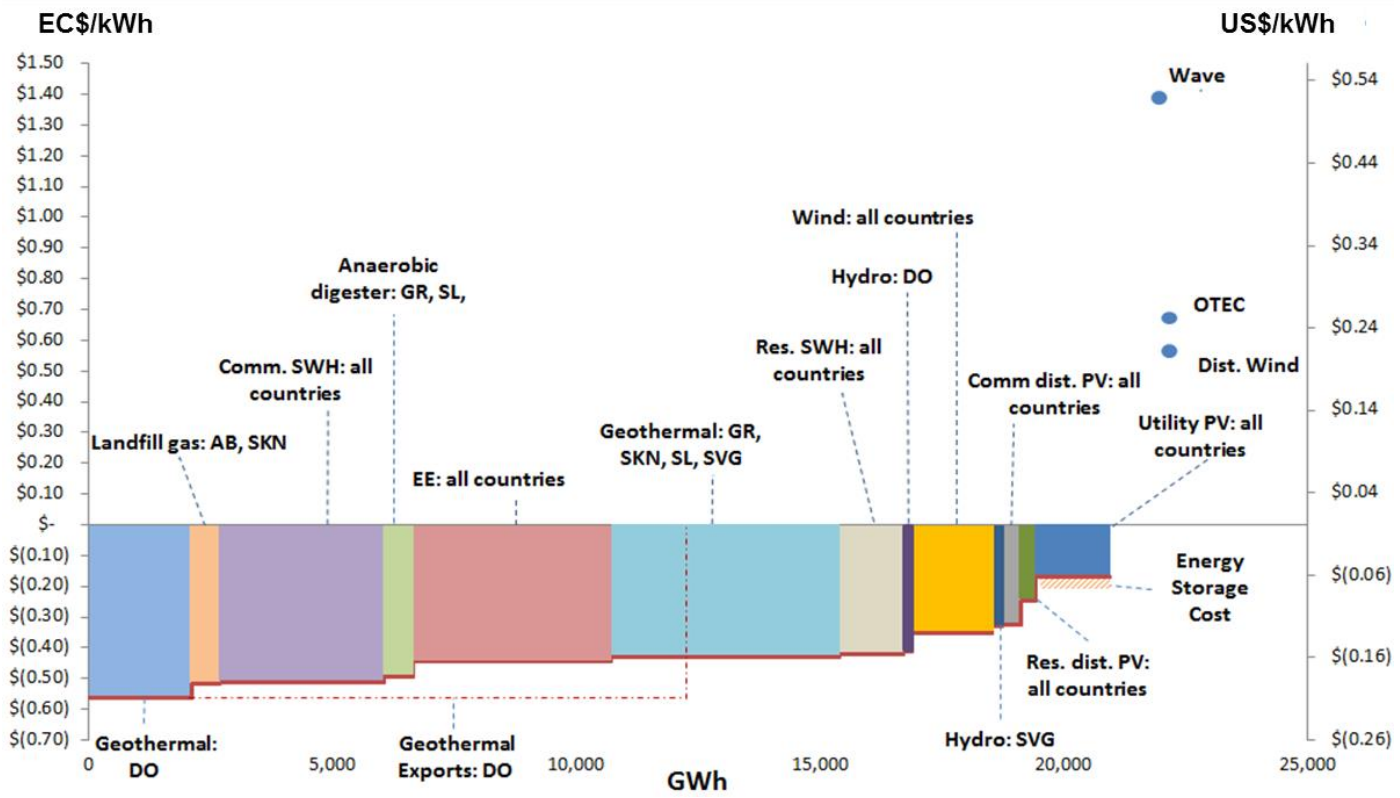
884 thousand tons CO_2 emissions can be avoided annually through EE actions

CHENACT Program -Regional Approach

- Transformation of energy audits into bankable proposals
- Linking the proposals to financial institutions (IDB and others i.e. IFC OPIC, EXIM);
- Demonstration projects;
- Reduction/regional phase out of ODS;
- Has attracted a number of organizations and donors, such as: CHTA/CAST, CTO, United Nations Environmental Program (UNEP), Center for Development Enterprise (CDE), United States Department of Energy (for larger hotels), International Finance Corporation (IFC)
- Capacity building for Energy Service Companies, local banking sector and hotel staff
- Development of a Program of Activities (PoA) to bundle the reduced carbon emissions derived from RE and EE

Large Energy Efficiency (EE) and Renewable Energy (RE) potential remains largely unexploited

- **An estimate of US$870 million in savings is yet to be realized by exploiting exiting EE and RE potential which would reduce or replace ~ *20TWh* of fossil fuels-based power generation**

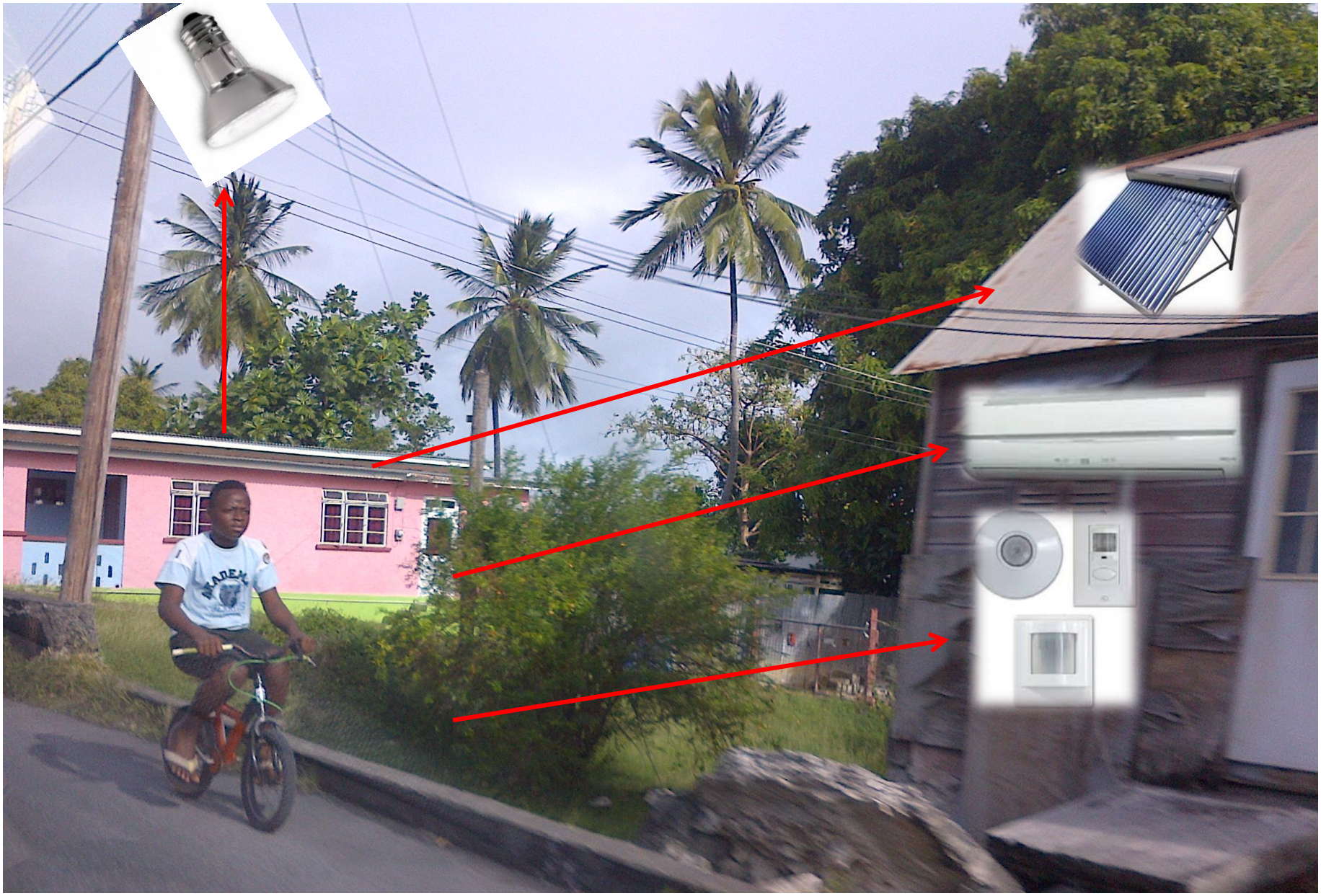


Y Axis (US$ and EC$ per kWh): difference between long-run marginal cost of RE/EE technology and fossil fuel generation cost

X Axis (GWh): cumulative avoided fossil fuel generation per RE /EE technology over twenty-year period (2013-2032)

Opportunities for cooperation

- Regulatory and legislative changes
- Promote smart grids in combination with RE, EE and Energy Storage
- RE in transportation -electric vehicles powered by RE sources
- Interconnection programs where they may make sense
  - St Kitts – Nevis
  - Guadeloupe- Dominica- Martinique
- Develop Smart Fund programs
- Aggregate purchases of common energy technologies and appliances
- Harmonize standards & customs duties (to create confidence and to provide preferential treatment to RE technologies)
- Make RE viable: RE for air conditioners, heat pumps, and H2O desalination
- Research in marine energy



Thank you!

Adriana M. Valencia

Tel: 202-623-1543

Emails: adrianava@iadb.org

Christiaan Gischler

Tel: 202-623-3411

Email: christiaang@iadb.org