

CATALYZING LOW-CARBON SUSTAINABLE DEVELOPMENT IN THE CARIBBEAN REGION:

Clean Energy Successes in Antigua and Barbuda, Belize & Trinidad and Tobago



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Sustainable Energy
Capacity Building Initiative
Caribbean Region



Energy and Climate
Partnership of the Americas

The United Nations Sustainable Development Goals (SDGs) identify specific targets to “end poverty, protect the planet, and ensure prosperity for all”¹. Significantly scaling up deployment and provision of clean energy will be essential to achieve these goals. There is a critical opportunity to further align clean energy action and sustainable development by articulating a low carbon development pathway to achieve crucial, interlinked climate and development goals.

Because of Caribbean economies’ high energy tariff rates, dependence on fossil fuels, and vulnerability to climate change impacts, these countries can benefit from integrating climate, energy security, and other key goals under a broad sustainable development vision. Within this context, Caribbean countries have called for action to catalyze sustainable development.

To support this call to action, Caribbean countries are leading the design and implementation of clean energy initiatives that generate significant investment. The governments of Antigua and Barbuda, Belize and Trinidad and Tobago are inspiring action in the region and globally through the design and implementation of robust clean energy strategies with impactful results.

The Organization of American States (OAS), through its Energy and Climate Partnership of the Americas (ECPA) program called the Sustainable Energy Capacity Building Initiative (SECBI) being executed by the Department of Sustainable Development, and the Clean Energy Ministerial’s Clean Energy Solutions Center, are supporting Caribbean countries in design and implementation of robust sustainable energy action plans and broader clean energy policy frameworks. Current market conditions are ideal to leverage private sector skills and capital to develop local capacity to implement projects.

The studies are complete. Energy and financial markets are primed. The time is right to focus on deployment.

The Sustainable Energy Capacity Building Initiative (SECBI) partners with Caribbean governments to address critical commercialization challenges in expanding the development and use of sustainable energy alternatives.

> Learn more about SECBI at ecpamericas.org/initiatives.

The Clean Energy Solutions Center (Solutions Center) is an initiative of the Clean Energy Ministerial that supports policymakers and clean energy practitioners around the world in design and implementation of effective clean energy policies through robust analysis and adoption of good practices based on international experience.

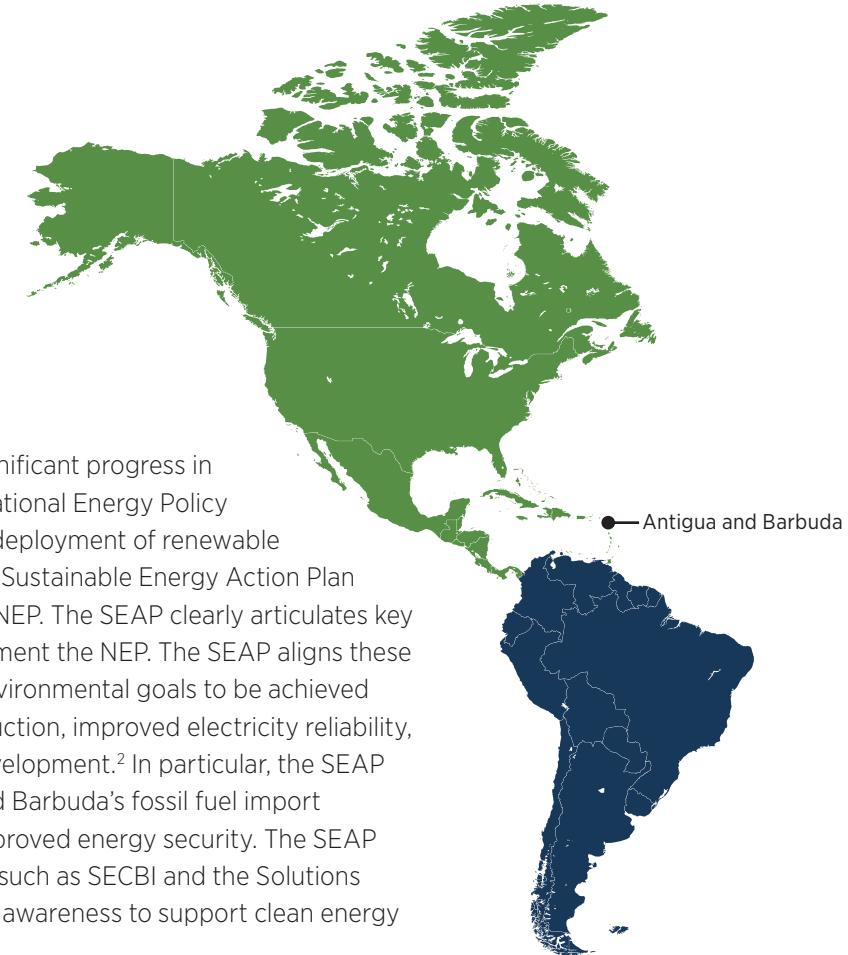
> Visit the Solutions Center at cleanenergysolutions.org.

¹ www.un.org/sustainabledevelopment/sustainable-development-goals/

Antigua and Barbuda

Antigua and Barbuda continues to make significant progress in advancing sustainable energy policy. The National Energy Policy (NEP), adopted in 2011, supports scaled up deployment of renewable energy and energy efficiency. The country's Sustainable Energy Action Plan (SEAP), released in 2013, complements the NEP. The SEAP clearly articulates key measures and policies to successfully implement the NEP. The SEAP aligns these actions with critical economic, social and environmental goals to be achieved through energy diversification and cost reduction, improved electricity reliability, environmental protection and economic development.² In particular, the SEAP emphasizes actions to decrease Antigua and Barbuda's fossil fuel import needs and oil price vulnerability through improved energy security. The SEAP also focuses on partnerships with initiatives such as SECBI and the Solutions Center to build capacity and increase public awareness to support clean energy deployment.³ Further, building on this strong policy framework for clean energy transformation, the Renewable Energy Act of 2015 supports a robust legal and institutional environment for renewable energy development.⁴

Within this context, Antigua and Barbuda's intended nationally determined contribution (INDC) presents a target of 50 MW of on- and off-grid renewable electricity generation by 2030.⁵ Antigua and Barbuda is making significant progress to achieve this goal.



Antigua and Barbuda Renewable Energy Target: 50 MW of on- and off-grid renewable electricity generation by 2030

WIND AND SOLAR POTENTIAL

Wind



Potential: >400 MW
Installed Capacity: 0

Solar



Potential: 27 MW
Capacity: 0.25 MW

See www.nrel.gov/docs/fy15osti/64115.pdf for additional resource potentials.

² www.oas.org/en/sedi/dsd/Energy/Doc/EAP_AntiguaBarbuda_web.pdf

³ www.nrel.gov/docs/fy15osti/64115.pdf

⁴ www4.unfccc.int/submissions/INDC/Published%20Documents/Antigua%20and%20Barbuda/1/INDC_Antigua_Barbuda.pdf

⁵ www4.unfccc.int/submissions/INDC/Published%20Documents/Antigua%20and%20Barbuda/1/INDC_Antigua_Barbuda.pdf



Antigua Barbuda Association for Persons with Disabilities' community solar demonstration project. *Source:* www.ecpacmericas.org/news/Default.aspx?id=1234&archive=1

Antigua and Barbuda: Successes and Progress

Antigua and Barbuda has successfully implemented a number of clean energy measures and policies aligned with the SEAP. Key successes and areas of progress, supported by SECBI, the Solutions Center and other partners, include:

- Submission of an INDC, Climate Action Plan that builds on the Sustainable Energy Action Plan and puts forth strong goals and targets to reduce greenhouse gas emissions through renewable energy deployment and other key measures.⁶
- Improving local capacity to manage the Sustainable Island Resource Framework (SIRF) Fund established under the national environmental law. The SIRF Fund is positioned to serve as the national implementing entity for the country, linking domestic and international capital sources to catalyze investments in climate change adaptation and mitigation initiatives. To inform this effort, and with support from the Solutions Center, international funding sources (such as the Green Climate Fund, Adaptation Fund and Global Environment Facility) were reviewed in relation to requirements and accreditation needs. A SIRF Fund Concept Note was developed to support the government in preparing a full business plan to operationalize the Fund. The SIRF Fund looks to provide solid opportunities for Antigua and Barbuda to invest in renewable energy.

⁶ newsroom.unfccc.int/unfccc-newsroom/antigua-and-barbuda-submits-its-climate-action-plan-ahead-of-2015-paris-agreement/, www4.unfccc.int/submissions/INDC/Published%20Documents/Antigua%20and%20Barbuda/1/INDC_Antigua_Barbuda.pdf

ANTIGUA AND BARBUDA CLEAN ENERGY POLICY ACTION			
Energy Efficiency		Renewable Energy	
Energy Efficiency Standards	■	Feed-in Tariff	■
Tax Credits		Net Metering/Billing	●
Tax Reduction/Exemption		Interconnection Standards	●
Public Demonstration	■	Renewables Portfolio Standard/Quota	
Restrictions on Incandescent Bulbs	■	Tax Credits	
Appliance Labeling Standards	■	Tax Reduction/Exemption	
Targets		Public Loans/Grants	■
Renewable Energy	●	Green Public Procurement	
Energy Efficiency	●	● In Place ■ In Development	

- Advancing distributed renewable generation through the adoption of interconnection standards and a net billing program through the Antigua Public Utilities Authority.⁷
- Implementing and assessing key renewable energy projects, including a 3-MW solar photovoltaic project at the VC Bird International Airport, pre-feasibility studies for a 10-MW pumped-hydro system to support energy storage and balancing for a proposed 18-MW wind farm at Crabbs Peninsula.⁸

⁷ www.nrel.gov/docs/fy15osti/64115.pdf

⁸ www.nrel.gov/docs/fy15osti/64115.pdf

TESTIMONIALS

The Department of Environment in the Government of Antigua and Barbuda submitted a project titled, “Capacity building to support the SIRF Fund” to the OAS in response to a call under SECBI. Through the successful project, we joined forces with the Solutions Center, which was able to provide complementary support and enhance results of the capacity building project.

The SIRF Fund is a sustainable financing initiative that will attract investments in high-impact areas, such as renewable energy, and the revenue will be reinvested into environmental management in Antigua and Barbuda. The country needs an estimated \$5 million per year to effectively manage our protected areas and forests, of which the government can meet less than half of required financial support for effective management. In addition, Antigua and Barbuda's Climate Action Plan, or INDC, which was submitted to the United Nations in October 2015, identifies a financing shortfall of approximately US\$20M per year to meet its adaptation targets through 2030, and US\$220M in total to implement the mitigation targets.

The SIRF Fund is a key implementation arrangement for the Department of Environment's new comprehensive legislation, the Environmental Protection and Management Act of 2015. The goal for the SIRF Fund is to demonstrate cost-effective and sustained financing to meet the range of environmental and climate needs for the climate-vulnerable small island developing state.

Together, the OAS and the Solutions Center are providing capacity building support that is assisting Antigua and Barbuda to operationalize our national environmental Fund. The support includes analyzing similar Funds as case studies for the SIRF, and the three selected funds include FONERWA in Rwanda, the Caribbean Biodiversity Fund, and the BVI Climate Change Trust Fund. Lessons learned from these funds will be referenced in reviewing the Fund's business model. The capacity building support also includes developing key template agreements and training Fund management on risk management and due diligence. **The OAS and Solutions Center collaboration delivers high-value impacts on the ground.**

Department of Environment, Government of Antigua & Barbuda

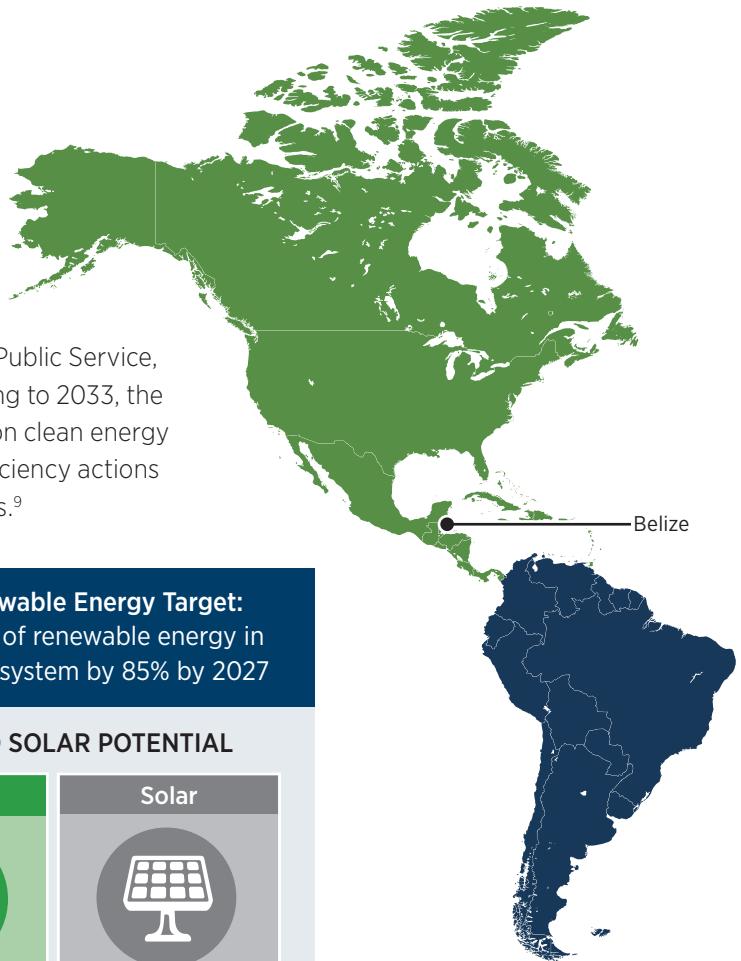
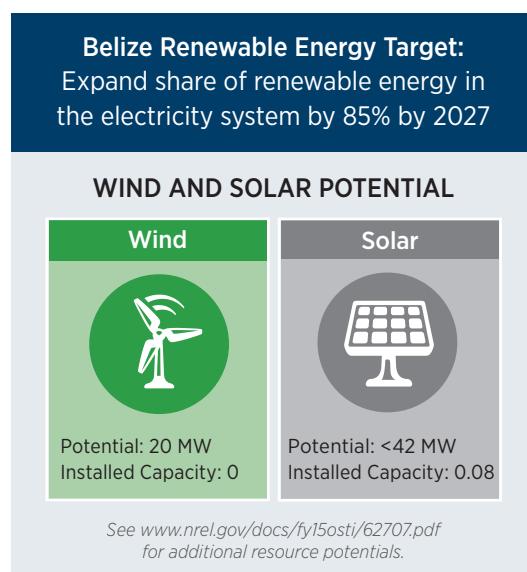
We were impressed with the OAS and Solutions Center for their professionalism and knowledge on issues in Small Island Developing States (SIDS). This is really helpful to us since technical experts based abroad can find it difficult to understand our issues. **With their help we have had stronger and more relevant results on the ground.** The Solutions Center was great on SIDs issues and I hope we can work with them in the future.

H.E. Ambassador Diann Black-Layne, Director, Department of Environment, Government of Antigua & Barbuda

Belize

The government of Belize's 2012 National Energy Policy includes key recommendations to catalyze clean energy transformation. Building on this policy framework, the country's Sustainable Energy Strategy was developed through a partnership of the Ministry of Public Service, Energy, and Public Utilities. Within a time frame extending to 2033, the strategy presents concrete actions to support low-carbon clean energy development through renewable energy and energy efficiency actions aligned with key economic and social development goals.⁹

Belize is partnering with key initiatives such as SECBI and the Solutions Center to implement the Sustainable Energy Strategy and support utility business model transformation. Providing a sound basis for continued action, Belize submitted an INDC in October 2015 that puts forth strong goals for renewable energy development: by 2027, Belize seeks to expand the share of renewable energy in the electricity system by 85% resulting in a 62% reduction in carbon dioxide emissions as compared to a business as usual scenario.



Belize: Successes and Progress

Belize is making significant progress in advancing its clean energy development through strong leadership and action. Key successes and progress, supported by SECBI, Solutions Center and other partners, include:

- Implementing an innovative approach to redefine the role of energy utilities with support from SECBI by facilitating transformation of traditional utility business models focused on provision of reliable electricity and to also consider quality of life for customers. The approach integrates local capacity building for new small clean energy businesses to support both economic development and reduced fossil fuel dependence. By leveraging experiences around the world and technology advancement, Belize is enabling development of a modern utility business model to support clean energy deployment and high quality 21st century electricity service.

⁹ www.nrel.gov/docs/fy15osti/62707.pdf

BELIZE CLEAN ENERGY POLICY ACTION		
Energy Efficiency		Renewable Energy
Energy Efficiency Standards		Feed-in Tariff
Tax Credits		Net Metering/Billing
Tax Reduction/Exemption		Interconnection Standards
Public Demonstration		Renewables Portfolio Standard/Quota
Restrictions on Incandescent Bulbs		Tax Credits
Appliance Labeling Standards		Tax Reduction/Exemption
Targets		Public Loans/Grants
Renewable Energy	●	Green Public Procurement
Energy Efficiency		● In Place ■ In Development

- Launching an energy efficiency standards and labeling program for at least four products in partnership with the Collaborative Labeling and Appliance Standards Program (CLASP). The program will support consumers in making informed purchase decisions related to energy use to reduce energy consumption and lessen peak demand. Belize intends to align with current standards adopted by countries in the region and support development of common standards at the regional level to reduce trade barriers and accelerate program implementation.
- Supporting competitive procurement of renewable energy through a 2014 request for proposal for 15 MW of solar or wind generation, with 20 projects under evaluation.¹⁰



Wind turbines in Baldy Beacon, Belize powering air navigation and control equipment for the Central America region. Source: <http://bergey.com/baldy-peak-belize>

¹⁰ www.nrel.gov/docs/fy15osti/62707.pdf

TESTIMONIAL

The Ministry of Energy within the Government of Belize submitted a project, titled, “Towards the Intensification of Energy Efficiency Efforts in Government, Businesses and Households in Belize” to the OAS in response to a call under SECBI.

In conjunction to this project, Belize is also implementing a sub-regional project named Energy for Sustainable Development in Caribbean Buildings (ESD-Caraibes) along with Antigua & Barbuda, Grenada, St. Lucia and St. Vincent & the Grenadines. A key outcome of this project is to drive energy intensity in buildings below 20% compared to [a business as usual scenario].

To achieve these outcome key pieces of the puzzle for an enabling framework must be in place. Of these mechanisms the OAS and Solutions Center are supporting the Financial & Market Mechanisms, Energy Standards and Labels and Monitoring Verification & Enforcement.

[Under this effort] critical players have been engaged namely McGeown Associates and CLASP that will make Belize a pilot country in the Caribbean and Latin American Region for the intensification of rational end-use of energy.

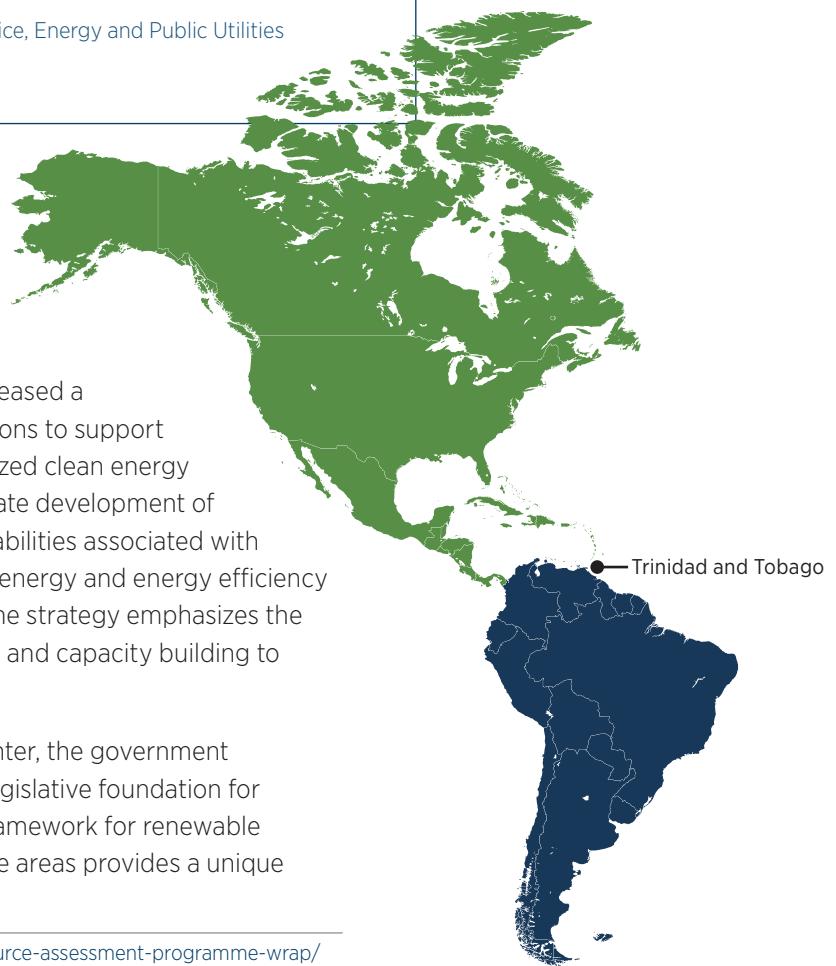
The quality of work that has been provided to date is second to none and will enable Belize to meet its target of reducing its energy intensity for appliances and in buildings, and to serve as a replicable case study for the rest of the region.

Ambrose Tillett, Energy Director, Ministry of Public Service, Energy and Public Utilities

Trinidad and Tobago

In 2013, the government of Trinidad and Tobago released a SEAP that includes key policies and budget allocations to support clean energy development. The country has prioritized clean energy action to address climate change challenges, facilitate development of new industries and economic sectors and reduce liabilities associated with significant fossil fuel subsidies. Because renewable energy and energy efficiency measures are not widely deployed in the country, the strategy emphasizes the need for improved public education and awareness and capacity building to support successful outcomes.¹¹

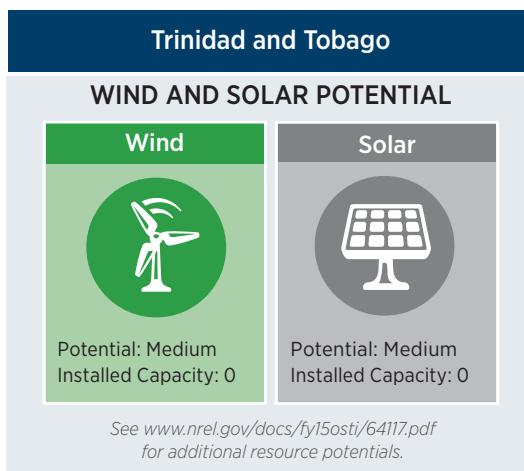
With support from the SECBI and the Solutions Center, the government has recently focused on development of a strong legislative foundation for independent renewable power production and a framework for renewable power purchase agreements (PPAs). Action in these areas provides a unique



¹¹ www.energy.gov.tt/our-business/alternative-energy/wind-resource-assessment-programme-wrap/



University of Trinidad and Tobago PV installation. Source: <http://trinidadandtobago.acp-cd4cdm.org/media/353735/re-ee-policy-trends-initiatives-tt.pdf>



opportunity for Trinidad and Tobago to diversify its energy portfolio and expand the PPA framework that is currently specific to fossil fuel generation. These and other key energy actions across the industrial, power generation, and transport sectors will support Trinidad and Tobago in reducing GHG emissions by 15% by 2030, as compared to a business as usual scenario.¹²

Trinidad and Tobago: Successes and Progress

Trinidad and Tobago is scaling up clean energy action to support critical national goals. Key successes and progress, supported by SECBI, the Clean Energy Solutions Center and other partners, include:

- Submission of an INDC emphasizing importance of renewable energy and energy efficiency actions to reduce emissions.
- Implementing a pilot project for the development of a feed-in tariff with support from the SECBI, the Solutions Center and the United Nations Environment Program.
- Facilitating PPA development through stakeholder engagement and workshops. In particular, a 2015 workshop supported by SECBI and the Solutions Center brought together key stakeholder groups necessary to

¹² www.trinidadexpress.com/20151109/business/olivierre-10-use-of-renewable-energy-by-2021

TRINIDAD AND TOBAGO CLEAN ENERGY POLICY ACTION			
Energy Efficiency		Renewable Energy	
Energy Efficiency Standards	[■]	Feed-in Tariff	[■]
Tax Credits	[●]	Net Metering/Billing	[■]
Tax Reduction/Exemption	[●]	Interconnection Standards	[■]
Public Demonstration		Renewables Portfolio Standard/Quota	
Restrictions on Incandescent Bulbs	[■]	Tax Credits	[●]
Appliance Labeling Standards	[■]	Tax Reduction/Exemption	[●]
Targets		Public Loans/Grants	
Renewable Energy	[●]	Green Public Procurement	
Energy Efficiency		● In Place ■ In Development	

implement, monitor and enact renewable energy PPAs. Key stakeholders, including all three current independent power producers, discussed PPA development and implementation. The workshop focused on interaction of the feed-in tariff policy with existing legislation and a model PPA. The event provided one of the first opportunities to discuss cross-cutting interactions of the new feed-in tariff policy, PPAs and other clean energy policies, and clarifications needed to support successful PPA development and implementation.

- Assessing wind resources for potential development of utility-scale wind generation facilities in up to five locations.¹³ In addition, the government is considering assessment of waste-to-energy opportunities to support energy provision and waste management in the context of island nation size constraints.
- Raising awareness and building support for renewable energy through small-scale pilot projects, including a grid-connected 2.5-kW solar photovoltaic and wind facility in South Trinidad and other small-scale off-grid PV projects.¹⁴
- Considering support for development of a domestic solar photovoltaic industry through establishment of a module manufacturing plant to support photovoltaic cost reductions and panel demonstration at the regional level.¹⁵

¹³ www.energy.gov.tt/our-business/alternative-energy/wind-resource-assessment-programme-wrap/

¹⁴ www.nrel.gov/docs/fy15osti/64117.pdf

¹⁵ www.investt.co.tt/blog/investt-blog/2014/june/heres-a-leading-us-magazine-on-solar-pv-manufacturing-in-trinidad

TESTIMONIALS

Trinidad and Tobago remains committed to developing its renewable energy resources in keeping with the country's sustainable energy agenda. Major barriers to the achievement of this objective in the electricity subsector have been the lack of a supporting legal and regulatory framework and supporting incentives. Both the OAS and the Solutions Center have been supporting the Government, through its Ministry of Energy and Energy Industries, in addressing these barriers as follows:

- The OAS, through SECBI, has been providing technical assistance for the development of PPAs for renewable energy integration.
- The Solutions Center has also provided technical support to the Inter-Agency Feed-in tariff Committee in its development of a feed-in tariff policy for Trinidad and Tobago.

An important element of this support has been capacity building involving all relevant stakeholders, which has been fostering knowledge and awareness in an open environment, on the critical issues involved in enabling renewable energy generators to connect to the national electricity grid.

Ultimately this will support the achievement of the renewable energy targets set by the Government, which seeks to achieve 10% of electricity generated from renewable sources by 2021. This will also support Trinidad and Tobago's goals, more specifically, in relation to its carbon reduction strategy for the power generation sector, as articulated in Trinidad and Tobago's INDC, which was submitted to the United Nations Framework Convention on Climate Change earlier this year.

Randy Maurice; Senior Energy Analyst (Ag.); Ministry of Energy and Energy Industries, Trinidad and Tobago

The OAS is assisting with the design of a toolkit for the development of renewable energy power purchase agreements and contracts. In support of the regulatory framework, the Trinidad and Tobago Bureau of Standards has developed product and technical standards related to renewable energy technologies.

Nicole Olivierre, Energy Minister, Trinidad and Tobago

Source: www.guardian.co.tt/business/2015-11-12/tt-looks-wind-and-waste-energy

Front page photo from iStock 35107256