Trinidad & Tobago –

New Destination for PV Manufacturing

Marcia Maynard
Manager, Energy Industry Development (Ag.)

Presentation at the Clean Energy Conference 2017

June 2017

PHOENIX PARK GAS PROCESSORS LIMITED
ngl Trinidad and Tobago NGL Limited
NGC CNG Company Limited
National Energy CORPORATION OF TRINIDAD AND TOBAGO

MEMBERS OF THE NGC GROUP OF COMPANIES

OUTLINE

1. • National Energy Overview
2. • The Solar Cluster Opportunity
3. • Trinidad and Tobago's Value Proposition
4. • A Developed and Sustained Energy Industry

National Energy - About Us

Incorporated by Trinidad and Tobago Government in 1979

Subsidiary of the National Gas Company of Trinidad and Tobago

Scope of Business:

- Develop and promote the orderly management and utilization of the hydrocarbon resources of Trinidad and Tobago.
- Engage in any enterprise within the hydrocarbon based and energy intensive industries.
- Own and operate marine and other infrastructure to facilitate the import and export requirements of petrochemical and metal plants.

National Energy
CORPORATION OF TRINIDAD AND TOBAGO

National Energy - Current Mandate

The conceptualization, promotion, development and facilitation of new energy-based and downstream industries in Trinidad and Tobago

Identifying and developing new industrial estates

Identifying and developing new industrial deep water ports to facilitate these estates

Own and operate marine and other infrastructural assets to facilitate all gas-based petrochemical and metal plants

Development and Management of La Brea and Union Industrial Estates

Towage and Harbour operations

Sustainable management of the environment

Solar Cluster Concept

PHASE 1

Metallurgical Silicon (MGSi)

- 33 ktpy
- USD 155 Million
- 20 ha

Polysilicon (PolySi)

- 10 ktpy,
- USD 550 Million
- 30 ha

Integrated Photovoltaic Modules (Solar-PV)

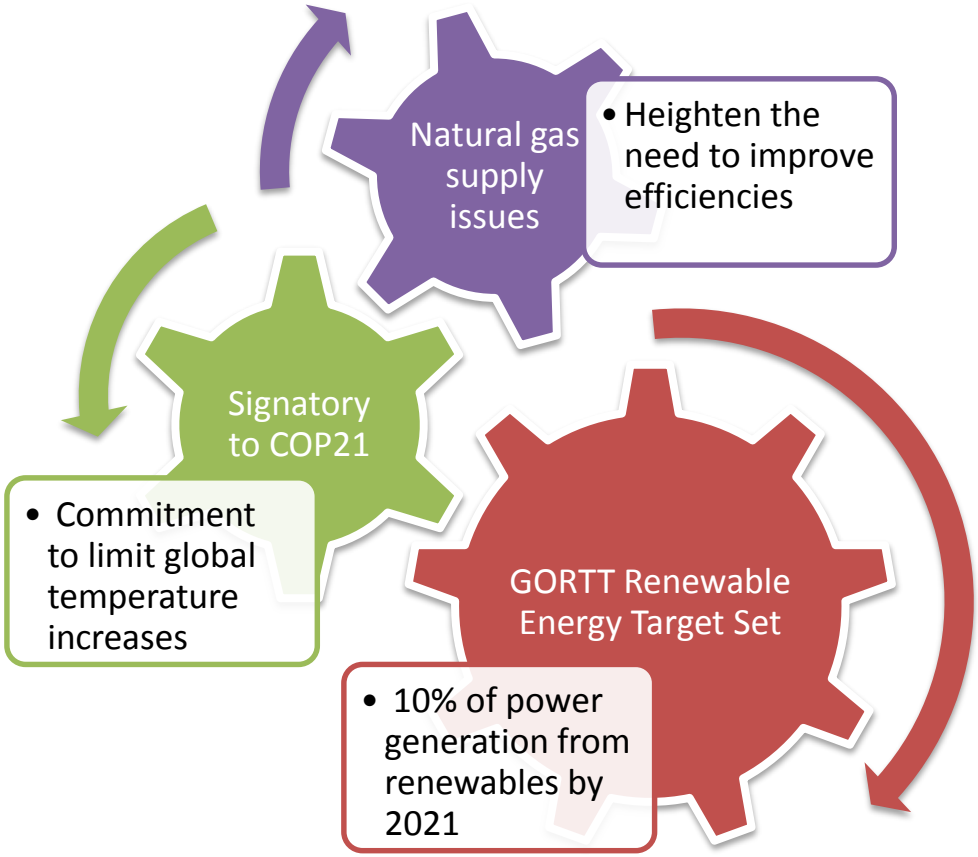
- Ingots, wafer, cell, module
- 750 MW
- USD 375 Million
- 25ha

Float Glass plant

- 500 tpd
- USD 185 Million
- 17ha

Why Solar Cluster Park in Trinidad & Tobago?

Internal Drivers



External Drivers

Photovoltaics has emerged as a sustainable and cost-competitive energy generation technology.

Strong global production capacity projected over the next 15yrs to contribute to meeting COP21 targets

Demand for low-cost locations and areas that further diversify production base.

Solar Concept Project Details

			PHASE 1	
	MgSi	PolySi	**PV**	**Float Glass**
Proposed Capacity	33,000 Mt/y	10,000 Mt/y	**750 MW/y**	**150,000 MT/y**
Estimated Plant Capex (Million USD)	155	550	**375**	**185**
Estimated Employees	140	350	**1460**	**150**
Direct Natural Gas Usage (MMSCFD)	n/a	1.2	**n/a**	**5**
Natural Gas Usage (Electricity) (MMSCFD)	12	23	**6**	**1**
Energy Demand (GWh/y)	400	770	**200**	**30**

National Energy
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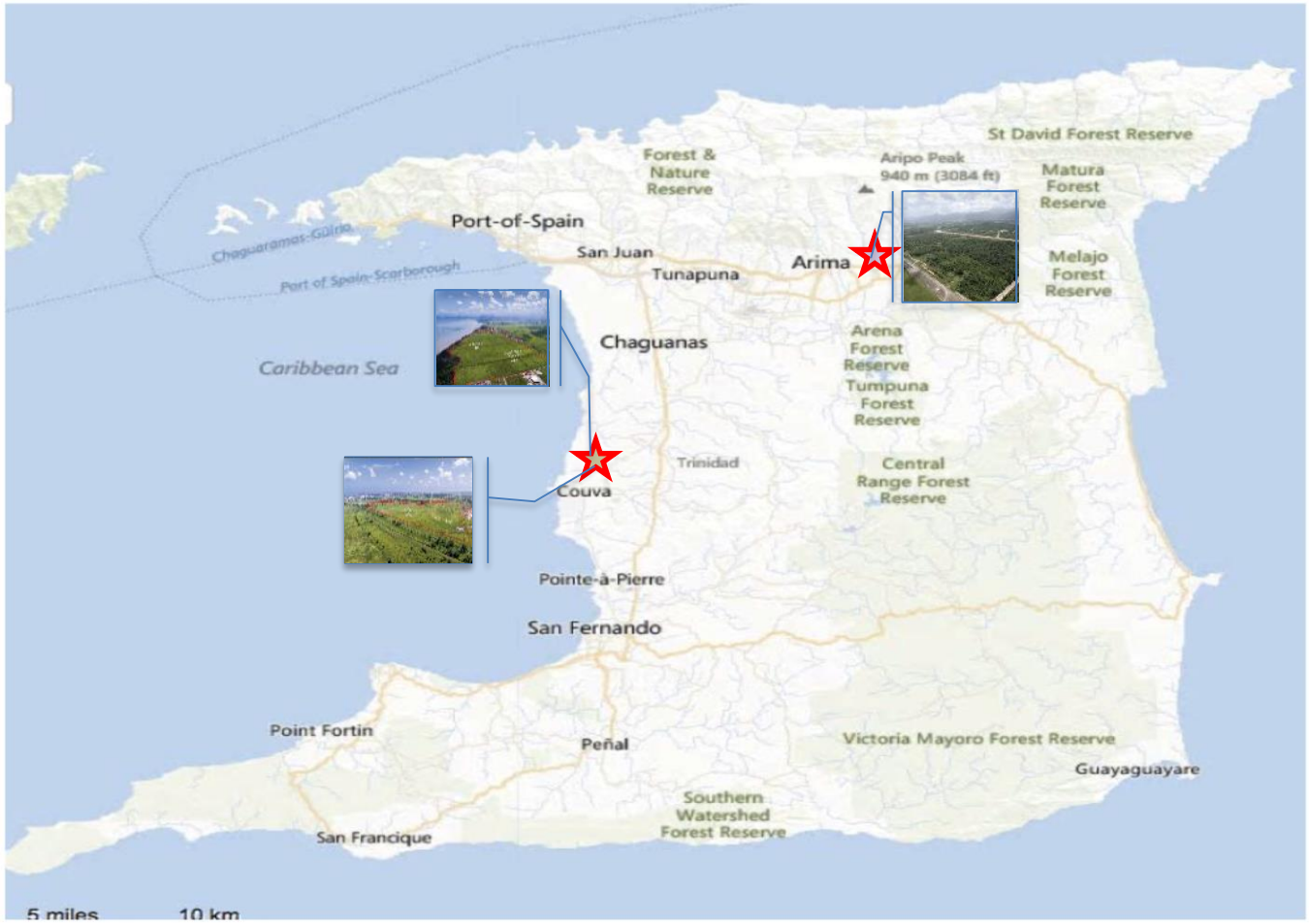
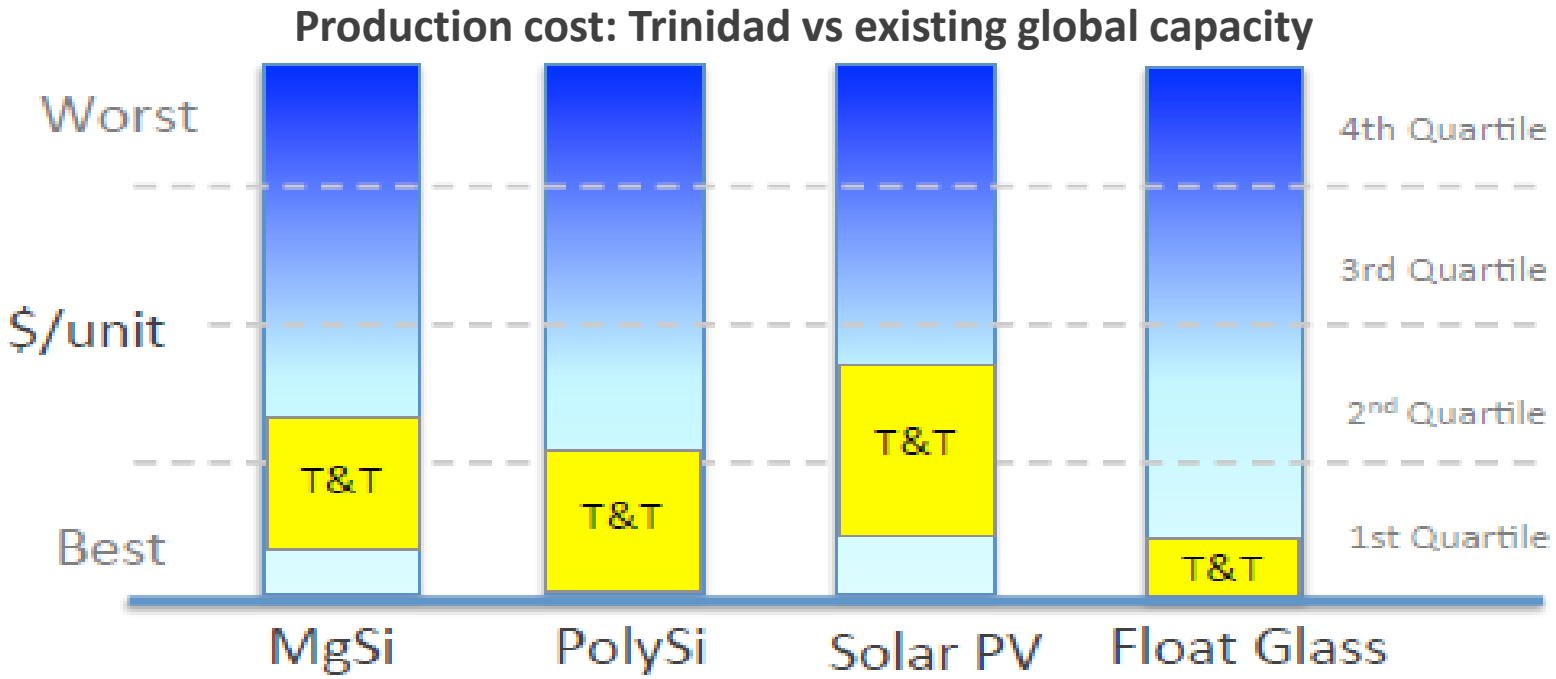
Solar Park Estate Proposed Locations Trinidad & Tobago



The Trinidad & Tobago Advantage: Low Cost of Production



- Across all four plants, Trinidad and Tobago offers cost of production between the first and the second quartile

The Trinidad & Tobago Advantage: Market

- Close proximity to attractive end-markets with positive outlooks
- Diversified growth profile in all market segments anticipated in Mexico
- Utility and commercial scale segments expected to thrive in Caribbean Nations

Promising mid- to long-term outlook:

- Mexico: Potential of 30-40GW by 2040 acc. to IEA
- NREL estimates technical potential for building PV to 1,118GW in USA
- Argentina mandated RE generation to increase by 9GW by 2025
- Brazil: 2024 PV power plant targets of 7GW utility scale and 1.3GW DG
- Chile: 10GW plus pipeline with add. 4GW of projects under review
- Caribbean: 12GW plus diesel power gen. replacement

Source: SiTek and Viridis.iQ GmbH 2016

The Trinidad and Tobago Advantage: Labour

Labour Advantages

Substantial volume of engineering and technical graduates from a diverse source of skills development institutions e.g.

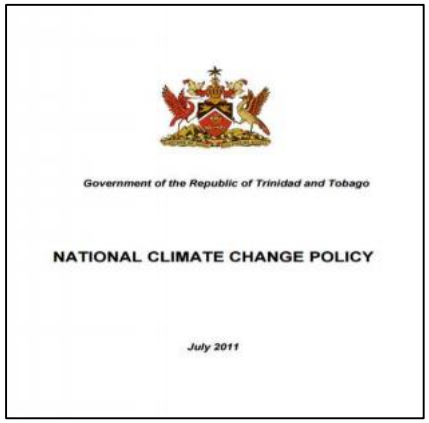
- University of Trinidad and Tobago (UTT)
- University of the West Indies (UWI)
- National Energy Skills Centre (NESC)

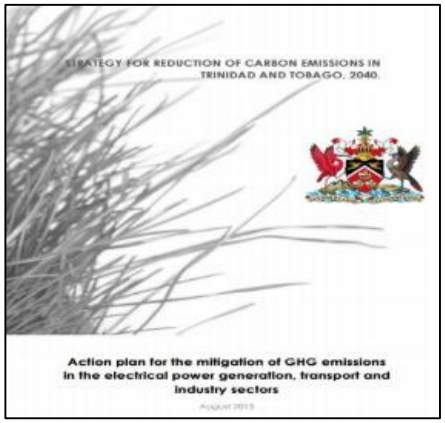
Leveraging engineering and technical expertise from experience in the petrochemical industry and > 100 years in the oil industry.

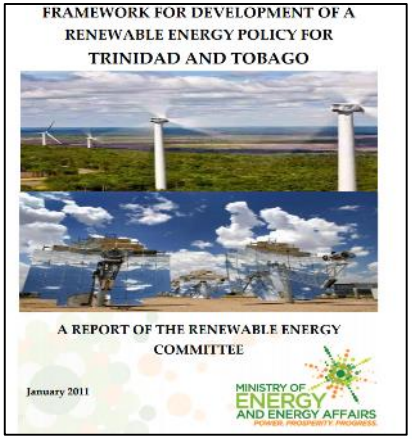
Current supply of local technical labour will meet the expected demand.

The Trinidad & Tobago Advantage: Internal Solar PV Generation Demand

- Opportunity for local PV manufacturer to spur local demand for renewable energy applications
- 195 MW renewable energy to be provided based on COP 21 Country Commitments







Our Value Drivers

Land Availability

Ready access to Ports

Low Electricity Rates

Skilled Labour Force

Low Cost Producer

The bottom-line is that Trinidad & Tobago's mission to support the renewable energy market can be achieved with the right player seeking to lower production costs and access emerging markets

Benefits & Success Factors

Create Employment Opportunities

Enhance technical capabilities and knowledge-based / skilled workforce

Improve national and social infrastructure

Improve standard of living

Increase GDP

Success Factors

State-initiated industrial development
- Investment
- Infrastructure

Partnerships with foreign MNCs

Joint venture arrangements between local and foreign organizations

Attractive investment climate
- Government stability
- Incentives for investment

Education and training of locals
- University
- Technical institutions

Questions?

Thank You

Marcia Maynard
Manager, Energy Industry Development (Ag.)
m.maynard@nationalenergy.tt

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