Natural Gas as a Driver of Sustainable Economic Development in the Americas

ABD ECPA Public-Private Dialogue Series

November 16, 2020

American Petroleum Institute

Natural Gas and Sustainability

Natural gas can help meet power demand in the Americas efficiently, flexibly, and sustainably, pairing well with variable renewable energy sources and hydropower.

½ Carbon emissions produced by natural gas than coal

30% Fewer emissions produced by natural gas than diesel and other heavy fuels

However, **18** countries in the region do not have access to natural gas.

Despite this, natural gas demand grew **79%** in Central and South America between 2000-2016 due to proximity to regional sources, well-supplied market, development of small-/medium-scale options.

Natural Gas and Economic Development

Increased access to natural gas supports economic development via multiple channels

Natural Gas Producers

Examples: Argentina, Bolivia, Colombia, Peru, Trinidad and Tobago, United States

Economic growth factors:

- Exploration & Production
- Delivery/Export Infrastructure Construction
- Industry

Natural Gas Net Importers

Examples: Brazil, Mexico, Chile, Dominican Republic, Panama

Economic growth factors:

- Import/Delivery Infrastructure Construction
- Industry

Example: United States

NAM and IHS Economics estimated that increased access to shale gas in 2015 supported

- 1.9 million additional manufacturing jobs in industries using natural gas
- Nearly 350,000 additional jobs from pipeline construction
- Additional $50 billion in GDP from operation & maintenance of pipelines

Actions to Boost Access to Natural Gas

2018 ABD Recommendations

25 Facilitate improvements in the efficiency, cost, reliability and emissions of electricity production through the physical and regulatory integration of regional markets; enabling the efficient purchase and sale of electricity; and utilizing market-friendly regulations that improve access to renewable energy and natural gas.

27 Establish a transparent institutional framework process, incorporating private sector expertise, to facilitate long-term energy planning and the sustainable development of natural gas to improve the diversification and resilience of energy production.

2020 ECPA White Paper
Recommended Actions

- Enable bidding processes under international standards
- Encourage use of globally recognized technical standards
- Deepen the environmental agenda
- **Adapt LNG projects to existing conditions in each country**
- **Stimulate the conversion of existing assets**
- **Strengthen institutional commitment to accelerating access to natural gas**

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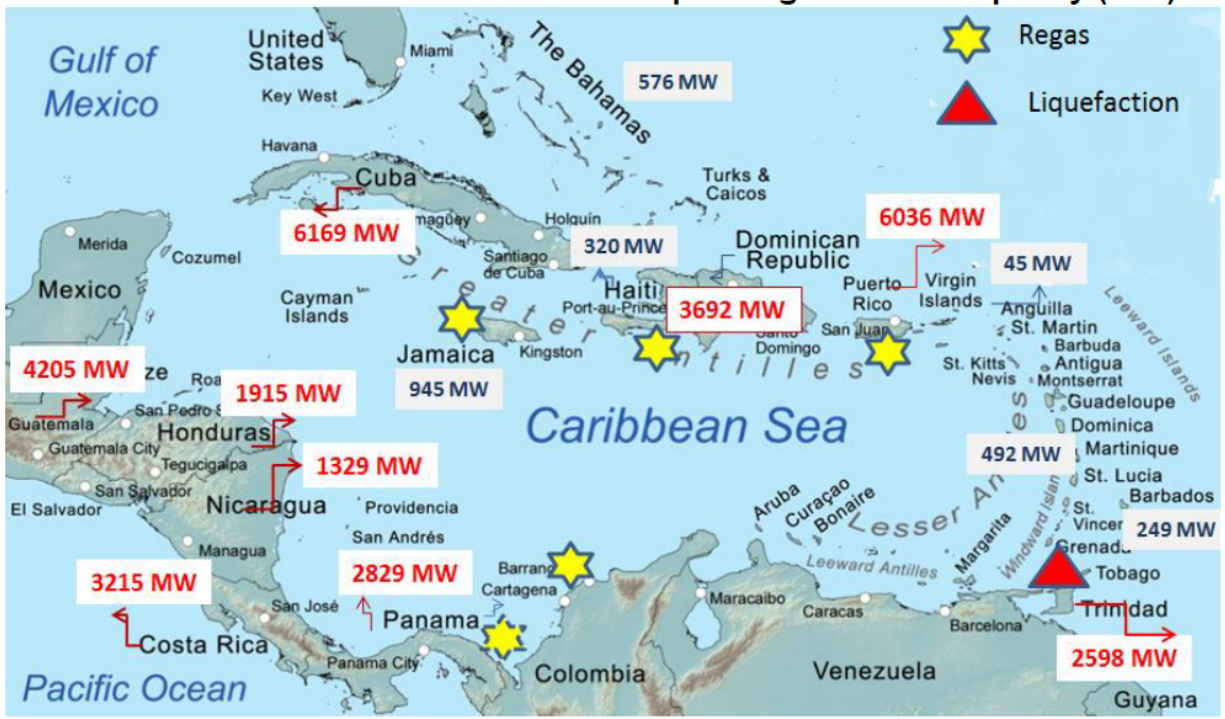
Adapt LNG Projects to Existing Country Conditions

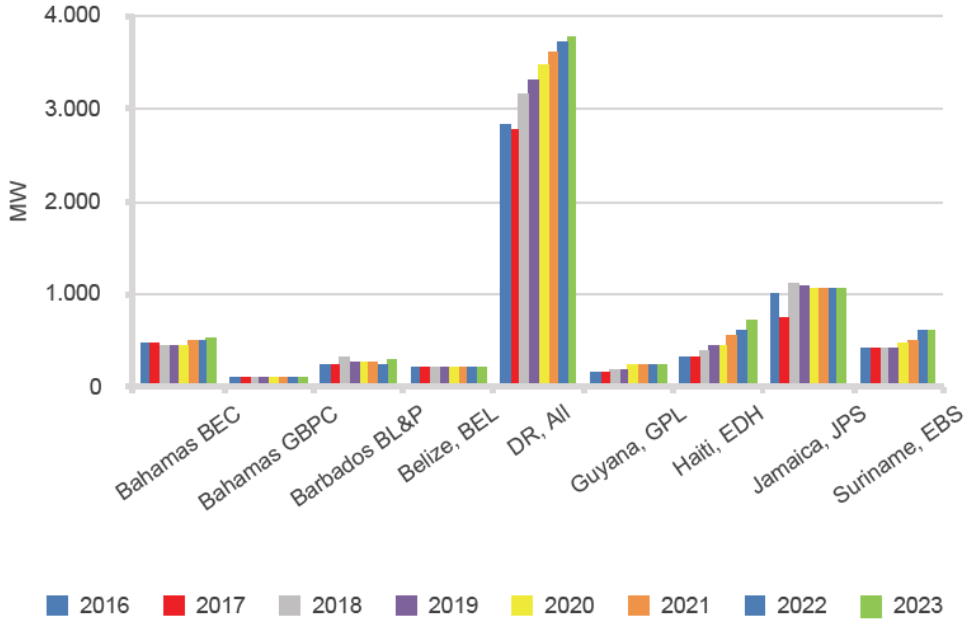
Large-scale LNG terminals make economic sense for some markets, but not others.

Figure 1: Central America and Caribbean: installed power generation capacity (MW)



Source: (United Nations, 2014), (Ministerio de Energia y Minas - Guatemala, 2017)

FIGURE 7 - Expected Installed Generation Capacity in MW, 2016-2023.



Adapt LNG Projects to Existing Country Conditions

For small-sized electricity, industrial markets, technologies for small- and medium-scale LNG imports make more sense.

Potential limitations facing LNG importing countries:

- Restrictions from maritime conditions
- Scarcity of land and protected areas
- Insufficient demand to merit investment in infrastructure

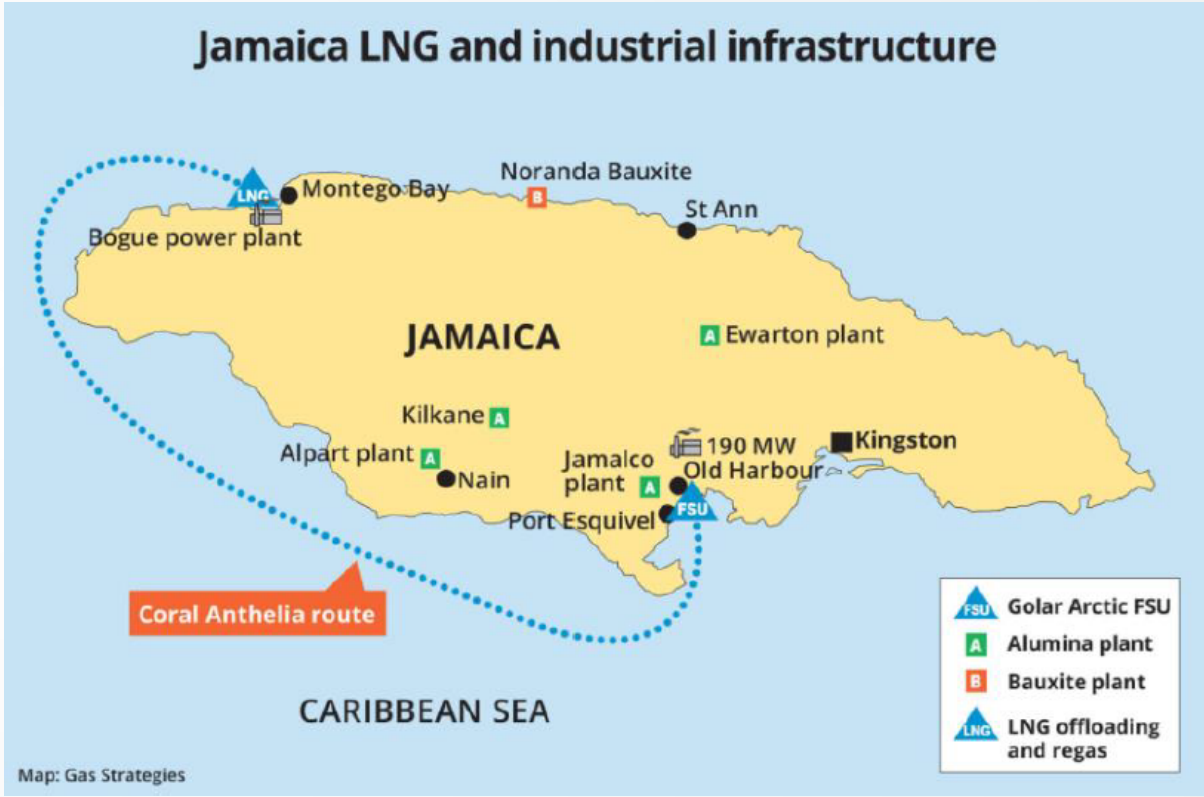
Potential adaptations:

- Floating Storage and Regasification Units (FSRUs)
- Modular plant solutions
- Small-scale ships (1,100-31,000 m^3 capacity) that can serve 50-400 MW plants/markets
- Small- and medium-scale LNG terminals

Adapt LNG Projects to Existing Country Conditions

Case Study: Jamaica

- Jamaica sought to convert the 120 MW Bogue power plant to gas, but relatively small demand and the location of power plant made constructing a large terminal difficult.
- Instead, Jamaica built a small-scale terminal with 7,000 m^3 bullet-type storage tanks in 18 months.
- A chartered LNG vessel serves as an FSU. A smaller tanker lifts cargo from the FSU and delivers it to the terminal at Montego Bay
- With the help of this technology and novel delivery methods, Jamaica went from 89% petroleum derivative-based energy mix in 2015 to 19% gas-based energy mix in 2017.



Stimulate Conversion of Existing Assets

Conversion of existing plants and energy assets to gas is cheaper and more efficient than constructing plants from scratch.

In 2017, diesel and fuel oil powered 5,634 MW of installed thermal generation in Central America, with an electricity sector bill of $1.2 billion USD.

There is significant room for these diesel- and fuel oil- based assets to be converted into gas plants.

If governments provide incentives and assurance to plant owners to convert existing assets to gas, they can encourage an efficient transition from fuel-based power to gas-based power.

Stimulate Conversion of Existing Assets

Case Study: Dominican Republic

GOVERNMENT EFFORTS

In 2000, the passage of Fuels Law 112-00 exempted natural gas from import duties. 2004 saw the signing of CAFTA-DR. In 2007, the government of the Dominican Republic issued Decree 264, declaring the use of natural gas a priority and matter of national interest. Since then, the government has:

- Encouraged private investment to convert fuel plants into gas plants
- Offered 7-10 year PPAs to companies that convert assets to gas
- Power regulator issued resolution to "duly remunerate" firm capacity for conversions
- Converted 20,000 public transport vehicles to use for natural gas transport

RESULT

- Conversions of power plants to gas are on the rise, including at the major Quisqueya I and II plants, with accompanying investments in pipeline infrastructure.
- Dominican Republic has saved more than $200 million annually in energy bills and reduced emissions by 1,100,000 tons of CO2.
- There are currently more than 70 industries and more than 15,000 private vehicles using natural gas
- **By 2021, officials have estimated that Dominican Republic will no longer require petroleum-derived fuels for power generation.**

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Commitment to the Introduction of Natural Gas

LNG projects, even small- and medium-sized projects, are complex and require coordination across governmental agencies in response to novel regulatory issues. This requires political commitment.

Examples of Ministries/Agencies that must coordinate:

- Ministry of Energy (or equivalent)
- Ministry of Environment (or equivalent)
- Ministry of Commerce/Industry (or equivalent)
- Provincial and local governments

High-level political leadership is needed to bring all stakeholders together

Who can help build capacity for coordination in the sector?

- Multilateral organizations (e.g., IDB)
- Foreign development organizations (e.g., U.S. Trade and Development Agency)
- Private sector (e.g., API)

Commitment to the Introduction of Natural Gas

Case Study: Panama

In 2018, Panama inaugurated its first LNG terminal at Costa Norte, together with a 381 MW power plant. The development of the facility involved a dozen government agencies including:

- **Energy Secretariat**: Responsible for overall energy policies in Panama
- **National Authority of Public Services**: Oversees licenses and concessions for power generation
- **Empresa de Transmisión Eléctrica (ETESA)**: State owned company responsible for transmission of electrical power
- **Ministry of Economy and Finance**: Responsible tax incentives for investment in power generation and distribution
- **Ministry of the Environment**: Approved development based on assessment of environmental impact

For the project, the Panamanian government received support from:

IDB Inter-American Development Bank

IFC

AES Panamá (investor)

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