THE CARIBBEAN CASE FOR LNG

Estimated read time: 4 min

ON THE GREEN AGENDA

KEY TAKEAWAYS

LNG is a good fit for the Caribbean region because of clean energy and sustainability challenges associated with high-carbon fossil fuels and scaling renewable energy technologies.

Trinidad and Tobago is uniquely poised by virtue of its location and infrastructure to supply this market.

There is a pragmatic and realistic case for incorporating LNG as part of the energy transition in the Caribbean. While moving to sustainable energy has well-defined financial, social, environmental, and economic benefits, most governments in CARICOM face challenges with making a transition to renewables. Not all energy transitions look the same — one size does not fit all and this is true even in the Caribbean. Small Caribbean islands cannot adopt wholesale a standardised transition to renewables as they are all different in their physical characteristics and circumstances.

CARIBBEAN CHALLENGES

Most Caribbean economies — at least the net importers of energy — are characterised by high-debt levels and consequently have limited room for fiscal manoeuvring. Counter-intuitively, their relatively high incomes mean they cannot borrow at concessional interest rates or qualify for some categories of grant financing.

Apart from Trinidad and Tobago, Suriname and Guyana, Caribbean countries do not possess significant proven hydrocarbon resources. The remaining countries are net energy importers, with heavy fuel oil and diesel accounting for a significant percentage of the total needed for primary consumption in most of the islands.

Fuel prices can easily exceed 10% of government revenue for a Caribbean Small Island Developing State (SIDS) in a normal year, which is significant.

Above-ground electricity infrastructure is also vulnerable to hurricanes and other disasters. Moreover, electricity systems tend to run at low efficiency and equipment is often out of date. With limited fiscal wiggle room, most owners of Caribbean energy infrastructure are from outside the Caribbean.

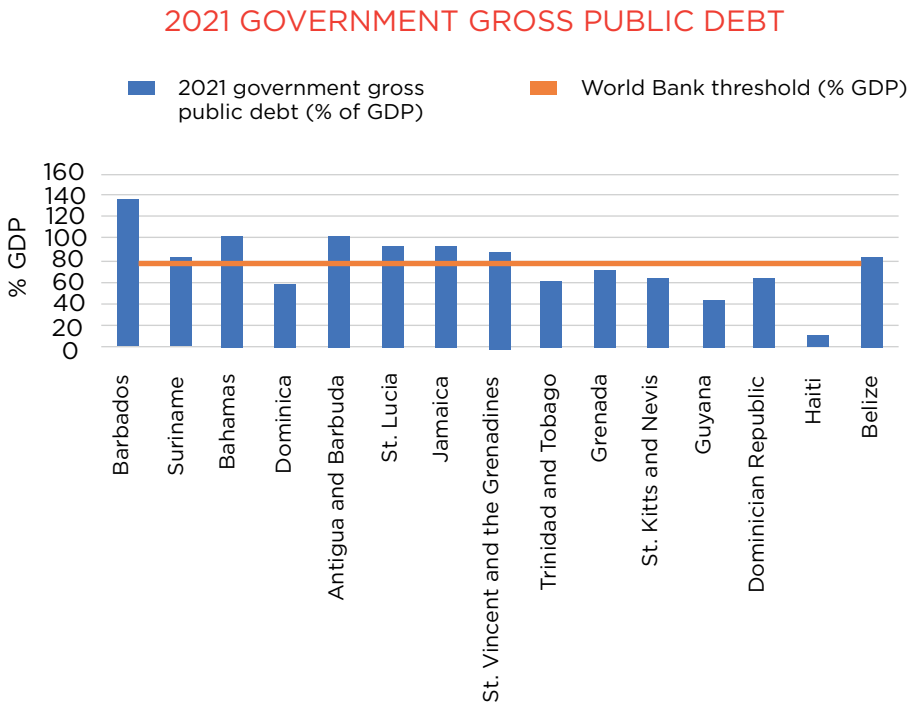

Figure 1: Caribbean external public debt, 2021 (% GDP)
Source: CEPAL, regional central banks.

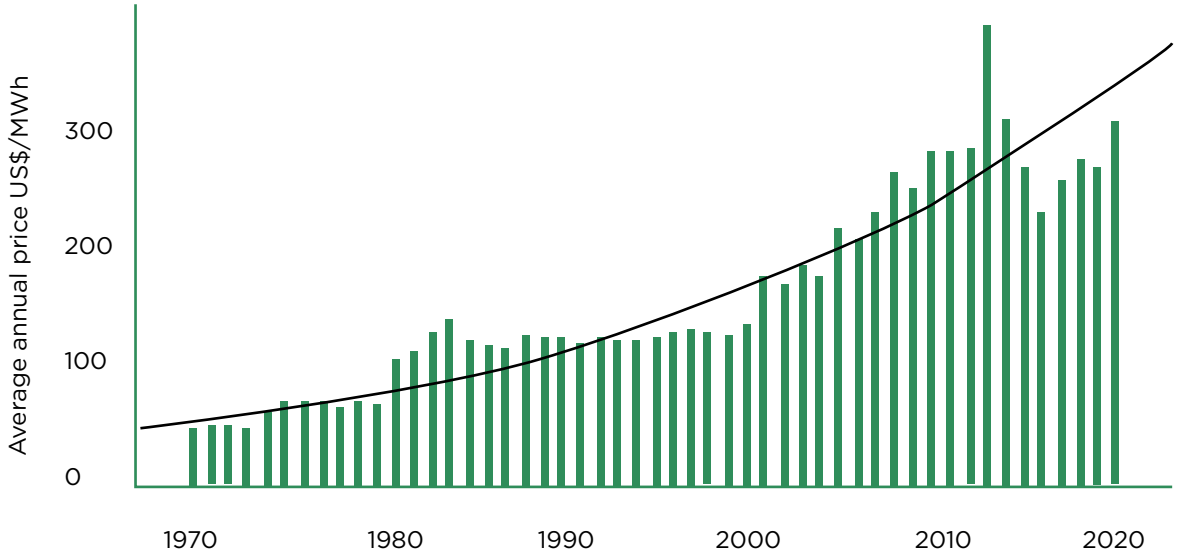

Figure 2: Caribbean electricity prices: 1970 - 2020
Source: Hubenergia

Other challenges, such as weak regulations and tariffs, limited infrastructure maintenance and persisting monopolies in transmission and distribution, contribute to the Caribbean having some of the highest electricity prices worldwide.

While new renewable installations may be less costly than fossil fuel options, when energy storage is added to the calculation, the value proposition vanishes. While rechargeable batteries have great future potential, costs have not yet fallen to the level that would make batteries viable for power supply throughout the night. Countries need dispatchable power sources that are controllable (generation source can operate to its maximum capacity or anywhere in between, depending on the needs of the system), firm (high confidence that the generation capacity is available as needed) and that have the required flexibility (power generation can ramp capacity up and down as needed to fulfill supply requirements).

Newer fossil fuel generation capacity in most of the smaller islands have been based around reciprocating engines for which the market has been rapidly expanding because of flexibility and performance benefits, including scalability and right-sized solutions, especially for applications in the 20-300 MW range (ideal for small island populations). Given the high cost of battery storage, even with an eventual transition to renewables, reciprocating engine power generation is likely to be retained for spinning reserve and supplementing other energy sources. However, natural gas as LNG will still be needed for these engines.

While some countries can potentially utilise continuous renewables such as geothermal (Dominica) or hydropower, not all countries have that advantage because their renewable energy source is non-continuous. This is where LNG comes in.

ON THE GREEN AGENDA

ENTER **LNG**

CARICOM countries that want to eliminate the use of heavy fuel oil (HFO) and diesel but lack options such as geothermal and hydropower can choose natural gas as LNG to achieve lower emissions and cleaner power. Using LNG can extend the life of existing infrastructure at affordable and predictable costs (through long-term commercial contracts and the occasional spot sale), while LNG does not incur the storage issues of non-dispatchable energy sources.

Simply put, the need for dispatchable power and consistently supplied and stable night energy, along with the cost of new infrastructure and technical capability/capacity issues, limits the economically viable uptake of renewable energy technologies.

Trinidad and Tobago is uniquely poised by virtue of its location and infrastructure to continue to export LNG to both large markets, and eventually, to small-scale markets.

Even for Caribbean countries with geothermal and hydro resources, where 100% renewable power generation may be eventually feasible, natural gas can still play a role in the transition. For other net fuel importers, natural gas in the form of LNG can be a cheaper, cleaner substitute than the diesel and HFO currently used, at least until battery storage becomes competitive for sustained night-time supply. For these countries, that time is still far away. ■