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Uncertain Energy

The Caribbean's Gamble with Venezuela

David L. Goldwyn and Cory R. Gill

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Foreword

Venezuela's socioeconomic woes and political turbulence have continued to worsen in the first half of 2014. The domestic political economy has plummeted into indefinite turbulence. The ripples are being felt far and wide including the threat of energy insecurity throughout the Caribbean and Central America. As oil production slows, the future of the world's second-largest proven reserves hangs over a region heavily dependent on Venezuelan energy exports.

Amid the uncertainty, President Nicolás Maduro's influence on the region is being questioned. Can he maintain his predecessor's clout among his most immediate neighbors? And can events in Venezuela create upheaval in the region's energy landscape? Clearly, the political benefits of Venezuela's energy flows make the current arrangement worthwhile for the government in Caracas. But Caribbean countries must face the fact that dependence on Venezuela could soon extract a high cost.

One of the central *chavista* hallmarks of regional influence for nearly a decade has been Petrocaribe. Formed in 2005, the energy alliance offers Venezuelan oil and petroleum products at favorable financing terms to seventeen member states in the Caribbean and Central America. Preferential terms and medium- to long-term credit aim to foster development among nations with few to no energy resources.

Petrocaribe has served to bring member countries into Venezuela's corner on the international stage. The flow of hydrocarbons has garnered political capital from neighbors that might otherwise not defend Venezuela's increasingly shaky, autocratic regime. Venezuela's continued descent into economic chaos, however, raises questions about member countries' energy future without Petrocaribe's largesse.

The Atlantic Council's Adrienne Arsht Latin America Center believes that the time is ripe to explore opportunities for an energy paradigm shift in Central America and the Caribbean. Both economic and environmental security concerns—not least of which is Venezuela's tightening of the terms of Petrocaribe membership—make a reexamination of energy source possibilities a pressing matter.

The United States and international financial institutions can play a major role. Shale gas production in the United States and increasing climate imperatives provide an opening for those who share a shore on the Caribbean and beyond to retool their energy imports.

This report dissects Petrocaribe and its historic and future influence on the Caribbean region. Our nonresident senior energy fellow and former Department of State special envoy and coordinator for international energy affairs, David Goldwyn, argues that the moment is now to plan for the reality of reduced Petrocaribe influence. With experience as an industry expert, Goldwyn, with his associate Cory Gill, recommends new directions for the United States and international financial institutions.

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Executive Summary

It has been nearly ten years since the launch of Petrocaribe, a program designed to win the political loyalty of the Caribbean states through generous credit subsidies to help import Venezuelan crude oil and products. Recipient states have grown dependent on high-cost, high-carbon fuels for power generation and Venezuelan credit to balance their budgets.

A clear understanding of the program is useful for discerning not only its future prospects, but the options available to help transition Petrocaribe states to more sustainable energy mixes with economic, climate, and energy security benefits.

While Petrocaribe countries pay market-based Venezuelan benchmark prices for crude oil or products, Venezuela only requires payment of a fraction of the cost up front. The balance can be used by the receiving government for investment or, more often, spending. It is this easy credit that makes member-state governments dependent on Venezuelan crude oil and products to meet the energy demands of both their electricity and transportation sectors. Absent this credit, member states might have moved toward lower carbon fuels or more efficient and (for the consumer) less expensive feedstock for electricity.

The result is that Venezuela today exports 45,000 barrels per day (bpd) of crude to Petrocaribe countries, and an additional 76,000 bpd of refined products. Venezuela also exports 85,000 bpd of crude and 6,000 bpd of refined products to Cuba. These flows comprise a crucial supply source for many cash-strapped Caribbean nations that rely on Petrocaribe's generous credit financing terms to finance their budgets.

Venezuela's political turbulence and economic deterioration, however, make the program's future at least uncertain, and the recipient states' continued dependence certainly unwise.

Venezuela's political turbulence and economic deterioration make Petrocaribe's future uncertain.

Dependence on cheap credit for oil has sustained Caribbean dependence on fuel oil for power generation, burdening the region with steep, investment-deterring electricity costs and a high carbon fuel source. Venezuela's ability to sustain, much less expand, petroleum product exports (which include gasoline, fuel oil, and diesel, as opposed to unrefined crude oil) to Petrocaribe states on these terms may be increasingly circumscribed by growing domestic demand and increased debt service obligations to China.

The Inter-American Development Bank's recent analysis, "Pre-Feasibility Study of the Potential Market for Natural Gas as a Fuel for Power Generation in the Caribbean" (IDB Pre-Feasibility Study), shows that a combination of natural gas, energy efficiency, and renewable energy technologies can reduce the cost of electricity for

every surveyed Caribbean nation and substantially lower carbon emissions.[1]

The challenges to this lower carbon, more competitive pathway are serious. They require the creation of a policy environment that welcomes change and the United States and international financial institutions (IFIs) to demonstrate strong leadership. The Obama administration clearly understands the negative implications and risks of the Caribbean's dependence on Petrocaribe. Both its continued leadership role in the Energy and Climate Partnership of the Americas (ECPA) and the June 19, 2014, unveiling of the Caribbean Energy Security Initiative[2] (CESI) demonstrate the president's priorities. Indeed, Vice President Joe Biden's visit to Trinidad and Tobago in May 2014, which included discussions between the vice president and Caribbean Community (Caricom) members and the Dominican Republic on securing affordable energy supplies, is a tangible demonstration of the administration's commitment to addressing this issue.

The administration's plans, however, are effectively a long-term strategy for the region. CESI focuses on renewable energy, which is not yet scalable for base load power and, as this report details, faces serious cost and policy obstacles in many countries. For the short and medium term, a strategy focused on natural gas can deploy faster and at lower cost. Plans should also be put in place to help Caribbean countries finance fuel purchases on a transitional basis if Venezuela were to suddenly cut off financing.

An expanded US strategy built on natural gas as a bridge to the outcome CESI envisions—the adoption of renewables as a significantly increased share of the region's energy mix—can enable the United States to leverage the shale oil and gas boom to help supply much of the region's needed energy.

With some bold vision, the United States can supply much of the needed energy, and, together with IFIs, meet the region's capital needs, facilitating long-deferred Caribbean energy policy reform.

This report looks at the Petrocaribe program, its impact on member economies, its evolution and future outlook, and policy choices available to Caribbean and Central American member countries, the United States, and the IFIs.

Petrocaribe Overview

On June 29, 2005, Venezuela built on its history of providing credit financing for purchases of its energy exports to launch the Petrocaribe program with thirteen Caribbean countries. Today, although seventeen countries are technically Petrocaribe members, only thirteen nations—Antigua and Barbuda, Belize, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Haiti, Jamaica, Nicaragua, St. Kitts and Nevis, St. Vincent and the Grenadines, and Suriname—are active members.[3] Although Cuba is an official Petrocaribe member, the Convenio Integral de Cooperación Cuba-Venezuela (CIC), signed in 2000, serves as the primary legal instrument governing Venezuela's energy ties with Cuba. Because of this arrangement and the uniqueness and expansiveness of Venezuela-Cuba energy cooperation, this paper largely concentrates on Venezuela's other energy agreements.

Terms

At its core, Petrocaribe is a Venezuela-backed program that provides highly generous credit financing for recipient states to purchase Venezuelan crude oil and petroleum products. The credit terms offered by Caracas to participating countries are more generous than those offered under past Venezuelan programs, including the 1980 San José Accord.[4]

Countries can buy crude or product at official Venezuelan prices under preferential financing terms. The required up-front payment (typically due within thirty to ninety days after purchase) ranges from 5 percent to 70 percent of the official Venezuelan market price and is determined on a sliding scale relative to the total market price [**see figure 1, p6**]. The terms are structured to ensure that the higher the Venezuelan benchmark price, the smaller the percentage share of the total payment must be provided up-front.

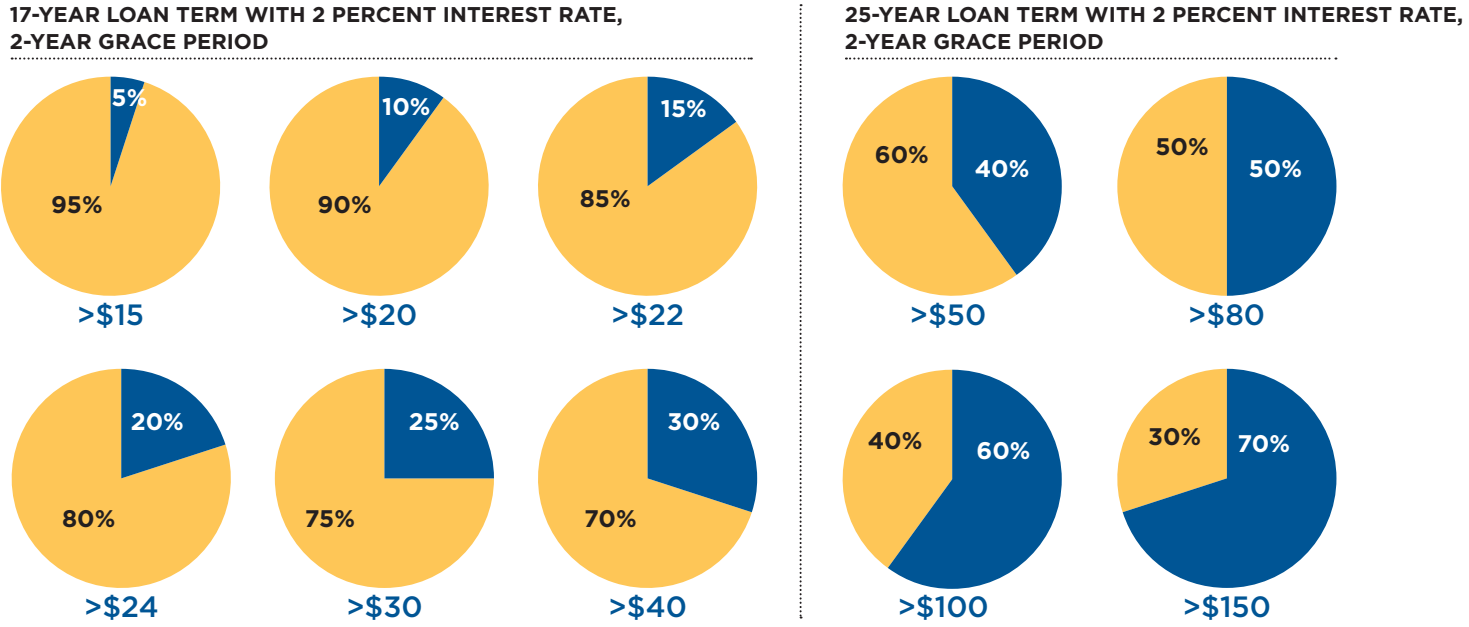
Although the terms of Venezuela's loans vary, they have historically included a one- to two-year grace period, and then extend over a period of twenty-five years with a 1–2 percent interest rate.[5] Recipient states' repayments move into national Petrocaribe "funds," which are intended for infrastructure or other national investment projects. In practice, some countries have spent these monies for budget support, while others have saved the funds.

Petrocaribe member states enjoy flexible terms to satisfy up-front payments and finance their loans, which vary in generosity to reflect domestic budgetary constraints. Almost one third of Venezuela's oil exports are reportedly not paid in cash. Barter arrangements are common, and member states are known to satisfy payments by exporting generally cheap and plentiful

Petrocaribe has proven to be a diplomatic success for Venezuela, earning it the political loyalty of many member countries.

FIGURE 1. Petrocaribe Payment Options

> PAYMENT TERMS WHEN VENEZUELA BENCHMARK OIL PRICE IS GREATER THAN DOLLAR FIGURE INDICATED
PETROCARIBE MEMBER DOWN PAYMENT I (IN PERCENT)
VENEZUELA FINANCED PORTION (IN PERCENT)



Source: Fifth Summit of the Heads of State of Petrocaribe, Resolution 04.03-05, July 13, 2008, www.hacienda.gov.do/petrocaribe/petrocaribe/documentos/resoluciones-04-03-05.pdf.

goods. The Dominican Republic, for example, has paid for Venezuelan crude by exporting beans to Venezuela.[6] Such arrangements are a net negative to the Venezuelan economy and ultimately deprive Venezuela of export revenues, given the scant transparency surrounding how barter goods are priced. But they offer a source of basic goods for Venezuela, which lacks requisite foreign currency to meet consumer import demand exclusively through conventional arrangements.

Benefits to Venezuela

Petrocaribe has proven to be a diplomatic success for Venezuela, earning it the political loyalty of many member countries in international and regional forums, including the Organization of American States (OAS). This loyalty was initially based on the favorable terms Petrocaribe offered, but over time it reflected these nations' growing indebtedness to Venezuela and their increasing dependence on Petrocaribe supplies.

Examples of this influence are not difficult to find. When Panama made dissident Venezuelan Congresswoman María Corina Machado a temporary member of its OAS delegation in March 2014, member states carried out a rare vote, which passed, to ban the public from viewing the session in which she participated.[7]

Many observers attributed near-total Caribbean support of the vote to the region's dependence on Petrocaribe and other Venezuelan assistance programs. Some noted Maduro's assertion earlier

that month that those who intervened in Venezuelan affairs would "go dry" and pay a high price. This was viewed as a not-so-subtle hint to Petrocaribe member states.[8] As well, in March 2014, the OAS passed a Caracas-supported declaration expressing support for the Maduro government's efforts to end the political crisis in Venezuela. Only the United States, Canada, and Panama opposed the resolution.

The royalty deductions made by PDVSA indicate that Venezuela's energy cooperation agreements cost the government in excess of $3 billion per year.

Venezuela has purchased this political support at a lesser economic cost than is sometimes assumed. The royalty deductions made by PDVSA, Venezuela's state-owned oil and natural gas company, indicate that all Venezuelan energy cooperation agreements, including Petrocaribe and arrangements under the Convenio Integral de Cooperación Cuba-Venezuela cost the Venezuelan government in excess of $3 billion per year ($3.2 billion in 2013, $2.7 billion in 2012, and $2.4 billion in 2011).[9] While this figure is not immaterial, it pales in comparison to the estimated $28 billion in annual costs for domestic Venezuelan energy subsidies.[10]

Petrocaribe would appear unwise for domestic politics as Venezuelans continue suffering from shortages of basic consumer goods including flour, cooking oil, butter, milk, toilet paper, and diapers.[11] But although the opposition has expressed strong reservations about continuing Petrocaribe, they have, thus far, not made the program a prominent target of their criticism.[12] These developments owe in part to Petrocaribe's small relative cost, but they also reflect decades of energy cooperation programs with Western Hemisphere neighbors. The inherent value of such programs remains apparent, at least to some extent, to major political stakeholders nationwide.

The Oil Alliance's Impact

Venezuela has proven capable of sustaining Petrocaribe through significant political, economic, and oil sector headwinds. The quantity of crude and petroleum products supplied by Venezuela to Petrocaribe recipient states increased from 86,000 (barrels of oil per day) bpd in 2008 to 121,000 bpd in 2012 [**see figure 2**].

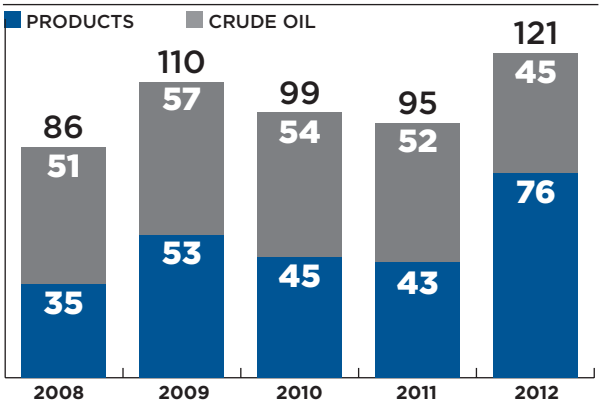
Additionally, although Venezuelan refined product exports to Cuba declined following reactivation of the Cienfuegos refinery in 2008, overall combined crude and product exports have remained quite steady, totaling 91,000 bpd in 2012 [**see figure 3**]. While reliable Petrocaribe export data disaggregated by product is difficult to attain, product exports largely include fuel oil and diesel for electricity generation, diesel and gasoline for transportation, and liquified petroleum gas for cooking fuel.

The benefits of Petrocaribe for recipient states are somewhat mixed. The program has historically provided recipients with short-term credit relief followed by high indebtedness. While years of easy credit allowed budget space for recipient state economies, debt to Venezuela now comprises large shares of their growing total debt burden.

The costs of Petrocaribe and other energy cooperation agreements are significant. While comprehensive publicly available data is scarce, the debt that these states owe Venezuela as a percentage of GDP is thought to range from 10 percent to 20 percent for several countries. Many other states hover just under 10 percent. Among the largest Petrocaribe recipients, the Dominican Republic's debt was $3.8 billion in March 2014, up from $3.6 billion at the end of 2013. Jamaica's debt was approximately $2.7 billion at the end of 2013.

FIGURE 2. Petrocaribe Crude/Products Deliveries 2008—2012

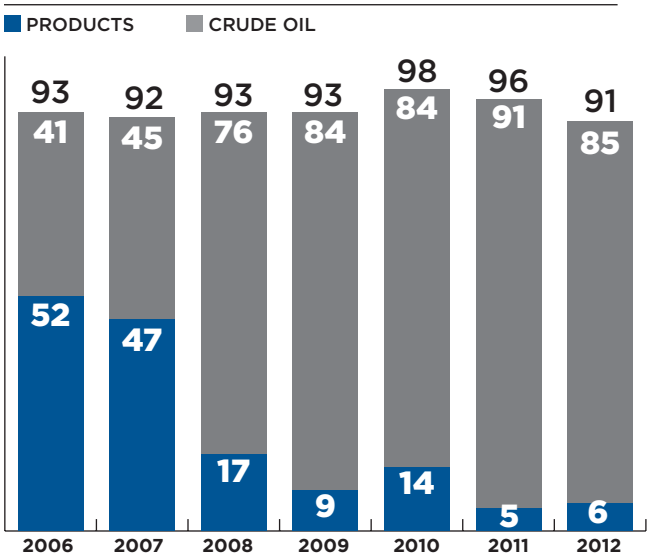
(IN THOUSANDS OF BARRELS OF OIL PER DAY—BPD)



Source: Jorge Piñon, Petrocaribe: A Supply-Demand Analysis, University of Texas — Austin Jackson School of Geosciences Latin America and Caribbean Program, Presented by Jorge Piñon in Doral, Florida, June 16, 2014, slide 6.

FIGURE 3. Cuba Petroleum Deliveries 2006—2012

(IN THOUSANDS OF BARRELS OF OIL PER DAY—BPD)



Source: Jorge Piñon, Petrocaribe: A Supply-Demand Analysis, University of Texas — Austin Jackson School of Geosciences Latin America and Caribbean Program, Presented by Jorge Piñon in Doral, Florida, June 16, 2014, slide 10.

This continued dependence on Petrocaribe has delayed recipient state migration away from high-carbon and high-cost fuel oil and diesel. Natural gas, renewables, or other forms of distributed generation cannot compete with credit-supported purchases of crude and product. Dependence also has impeded the region's long-term competitiveness, as high energy costs in real terms hamper both domestic and foreign investment. The IDB Pre-Feasibility Study showed the average retail tariff for ten major Caribbean utilities in 2012 at $0.33 per kilowatt-hour, an increase from $0.31 in 2011 and $0.27 in 2010.[13]

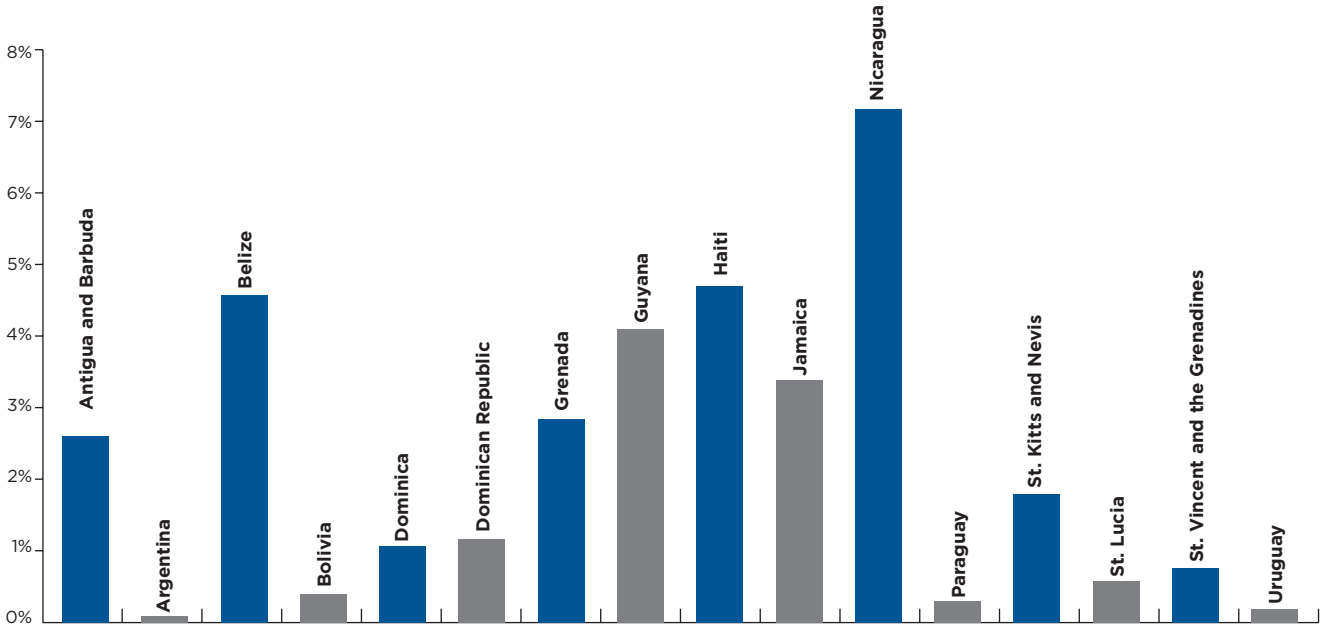
Petrocaribe financing is a critical part of Caribbean national income. According to the IMF's April 2014 Western Hemisphere economic outlook, Venezuelan financing accounts for nearly 7 percent of Nicaragua's GDP, and more than 4 percent of GDP for Haiti, Belize, Guyana, and Jamaica [**see figure 4**].

Product-Dependent Recipient States Are Turning to the United States

Recipient states that lack refineries and depend in part on Petrocaribe product exports (referring to all Petrocaribe member states with the exception of the Dominican Republic, Jamaica, and Nicaragua) are nonetheless meeting shares of domestic demand by increasing their purchases of market-priced US petroleum products. Purchases nearly doubled from 2008 to 2012, from 58,000 bpd to 104,000 bpd [**see figure 5, p10**].[14]

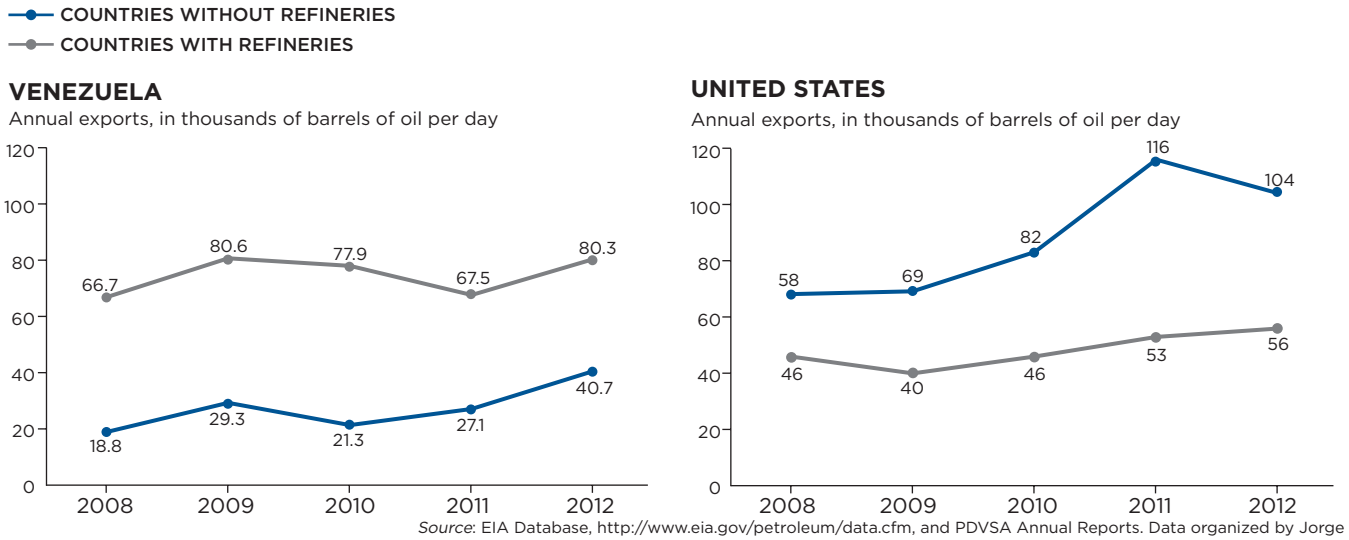
Venezuela's Petrocaribe product export levels are thought to be sufficiently small to survive additional pressures. Challenges could range from difficulties faced by Venezuela's refinery infrastructure[15] to the growing export obligations to China that provide Venezuela with much-needed capital

FIGURE 4. External Financing from Venezuela, 2012 (PERCENT OF GDP)



Source: National authorities, Petroleos de Venezuela S.A. (PDV SA), and IMF staff calculations.

FIGURE 5. Exports to Petrocaribe Countries (2008-2012)



Source: EIA Database, http://www.eia.gov/petroleum/data.cfm, and PDVSA Annual Reports. Data organized by Jorge Piñon, University of Texas, Austin Jackson School of Geosciences Latin America and Caribbean Program. Transmitted to Goldwyn Global Strategies on May 20, 2014.

and market-rate export revenues.[16] Countries are already meeting incremental demand by purchasing product on commercial terms. But they would face significant fiscal pressure if forced to move fully to commercial purchases.

It is also unclear how free member countries would be to switch suppliers. PDVSA has progressively acquired shares in regional logistics, fuel distribution, and refining infrastructure. The result is that the company has the ability to limit regional imports of non-Venezuelan crude oil and products even if PDVSA itself loses market share.[17]

Additionally, US product exports alleviate neither the high electricity costs associated with expensive fuel oil and diesel, nor the negative climate impacts stemming from these countries' dependence on crude and refined product. These states could meet their energy needs in a more comprehensive way by transitioning from fuel oil and diesel to natural gas. Such an initiative would require US leadership, local buy-in, and international support.

The Dominican Republic, Jamaica, and Nicaragua: Few Incentives to Change

Smaller Petrocaribe recipient states dependent on Venezuelan product exports are purchasing larger quantities of US product to meet incremental demand. The Dominican Republic, Jamaica, and Nicaragua, however, all possess refineries primarily capable of processing Venezuelan crude, and the unique nature of their energy cooperation with Venezuela indicates less potential to change fuel supply or suppliers.

Although the Dominican Republic, Jamaica, and Nicaragua comprise only three of Petrocaribe's thirteen active member states, in 2012 they accounted for just over 80,000 bpd of the 121,000 bpd that Petrocaribe exported.[18] After Esso decided to give up its stake in Jamaica's refinery and Shell did the same in the Dominican Republic, PDVSA established joint ventures with indigenous companies in both countries to operate the facilities. The indigenous companies have a 51 percent share in

both refineries, while PDVSA has a 49 percent share.[19]

Although PDVSA does not have a stake in Nicaragua's refinery, the operator, Puma Energy, maintains close ties with both Venezuela and Cuba. The refinery produces mostly fuel oil and diesel to meet electricity and transportation demand. In Jamaica, fuel oil is also used to power production of aluminum, the country's largest commodity export.

Partnerships with PDVSA have shielded Dominican and Jamaican state-owned companies from half of the potential operating losses.

These arrangements also provide tangible benefits to recipient countries, especially the Dominican Republic and Jamaica. The refineries serve as important sources of employment on both islands, where jobs and economic opportunity are often scarce.

Both countries' partnerships with PDVSA enable their refineries to continue operations despite internationally uncompetitive operating costs, which stem largely from their use of fuel oil rather than natural gas as a source fuel. These same economic challenges led Valero to close its Aruba refinery in 2011 and Hess and PDVSA to take the same action at their refinery in St. Croix. Partnerships with PDVSA, however, have shielded Dominican and Jamaican state-owned companies from half of the potential operating losses, allowing the refineries to continue functioning.

Looking ahead, Venezuelan cooperation with all three countries will persist as long as PDVSA continues to support loss-making investments. However, if Venezuela proved unable to sustain refinery support, the consequences would be far more complex than those facing smaller countries solely reliant on Venezuelan product. PDVSA's inability to shoulder half of the operating costs at the Dominican Republic and Jamaica refineries would likely lead to the shuttering of both, resulting in significant job losses.

While replacing refineries with terminals to import refined products would ultimately lower energy costs, terminals would not employ as many workers as the refineries. As with the smaller islands, imports of refined products from locations other than Venezuela would not alleviate the negative economic and climate effects of their dependence on fuel oil. The governments of all three countries would also lose access to cash from Petrocaribe's generous credit financing terms, with negative fiscal implications.

Moving Beyond Petrocaribe?

The United States has already become the dominant supplier of petroleum products to the Caribbean region, a consequence of the shale oil boom. US product exports to Petrocaribe states totaled 160,000 bpd in 2012, well above Venezuela's 121,000 bpd in combined crude and product exports. This marks a significant change from 2009, when US exports, which totaled approximately 109,000 bpd that year, were just below Venezuela's 110,000 bpd.[20] These exports provide Caribbean states with a stable source of petroleum products. (US law prohibits exports of crude oil at this time.)

The United States has security, climate, and economic interests in the stability and prosperity of the Caribbean. The Obama administration's climate agenda puts important emphasis on the fate of small island states.

As previously mentioned events at the OAS demonstrate, US influence in the region suffers as a result of Venezuela's alliance with Nicaragua, and ties with the Dominican Republic and Jamaica that are closer than they would be without the program.

If the Caribbean continues to rely on Venezuelan crude and product to meet demand for the electricity and transportation sectors, it will have significant impacts on the region's international competitiveness and energy future. The region would, as a result, remain vulnerable to a shock that a rapid turn to all purchases without credit support would inflict. This would deprive governments of significant cash flow to finance other initiatives.

Indications already exist that Venezuela is seeking to mitigate the costs of the program by tightening credit terms. Maturities have reportedly shortened to fifteen and seventeen years from the previous twenty-five years, while interest rates have reportedly risen from 1-2 percent to 3-4 percent.

These emerging trends and the potential that they may persist provide yet another incentive to the United States to lead international efforts to begin transitioning Petrocaribe member states away from dependence on the program.

Yet, the current Venezuelan regime is likely to sustain Petrocaribe and continue reaping its political benefits. The United States must decide whether it finds a sufficient foreign policy interest in changing this dynamic, considering its economic and security interests in helping expand the prosperity of the region.

Indications already exist that Venezuela is seeking to mitigate the costs of Petrocaribe by tightening credit terms.

The United States also must plan for the possibility that a different Venezuelan regime might quickly or substantially reduce the

The long-term solution for Petrocaribe economies is to shift from dependence on Venezuelan products to lower cost and lower carbon sources.

program altogether. The Obama administration's announcement of CESI on June 19, 2014, suggests there is strong interest in changing this dynamic. The initiative's stated intent is to help effect a more diverse Caribbean energy mix, primarily by using Overseas Private Investment Corporation (OPIC) loans, guarantees, and other credit enhancements to attract private capital for new renewable energy projects and offering to help any nation willing to consider serious policy reforms.

But renewable energy is not a viable short- or medium-term strategy for addressing the region's base load energy needs. Moreover, the checkered history of attempts to draw investment to geothermal energy in two countries signals serious challenges for its long-term prospects. While renewables should comprise a considerable share of the Caribbean's future energy mix, until the code is cracked on storage of renewable energy it will only hold a niche share of total supply.

The challenge is how to replace fuel oil and diesel as sources of fuel for power generation and how to wean the region's nations from Venezuela's unsustainable supply of cheap credit. As other countries and the IDB are demonstrating, natural gas is a more scalable and affordable short- and medium-term strategy.

The words, "natural gas," do not even appear in the new strategy. Without an explicit US commitment to work with the IFIs to bring about an eventual regional transition away from fuel oil and diesel to natural gas and, eventually, renewables, the private sector will lack a clear signal to help finance the initial, natural-gas-dominant phases of this transition.

A Path Forward?

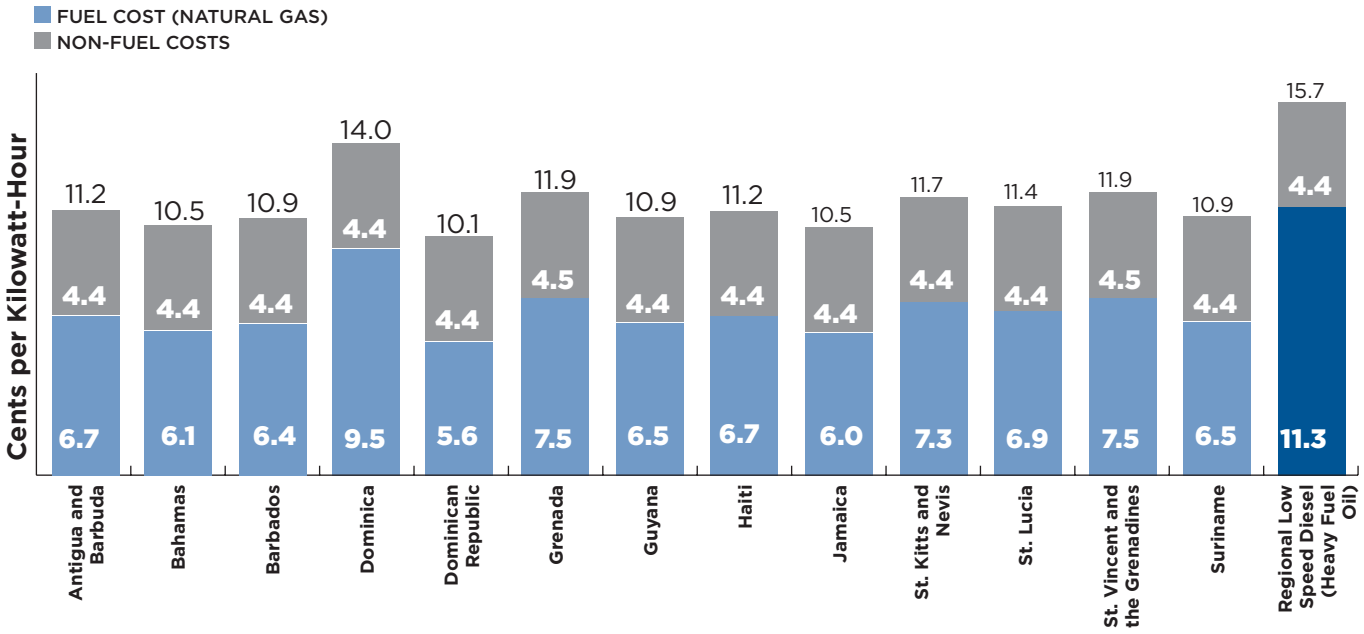
The salient question for the United States, its allies, and the regional and international financial institutions is whether this current state of play can serve as an opportunity to set the Caribbean on a new energy pathway. Such a course would also reduce dependence on artificially low Venezuelan credit support to finance national budgets. Instead, Petrocaribe members would enjoy access to lower cost natural gas and renewables from diverse sources of supply including, eventually, ample domestically produced renewable energy. Such efforts would put these nations on a lower cost, lower carbon, and more politically autonomous energy path than they face today.

Each Petrocaribe member has a different energy calculus and domestic situation. Yet they share a dependence on fuel oil or diesel for power generation, a need for fairly priced transportation fuel, and a stark choice of whether to move toward cheap coal, more high-carbon fuel oil, or lower carbon choices of natural gas mixed with increased shares of renewables.

The success of any program will rely largely on whether the United States and the IFIs can craft a financing package that proves enticing to the Dominican Republic and Jamaica, both of which reap short-term fiscal and employment benefits from their continued cooperation with Venezuela. The credit terms Venezuela offers are currently more generous than those they could receive from the IFIs, so the threshold is high. The United States has demonstrated the political will to consider

FIGURE 6. Long-Run Marginal Cost of Natural Gas Fired Power Generation

(IN CENTS PER KILOWATT-HOUR)*



Source: Jed Bailey, Nils Janson, and Ramon Espinasa, *Pre-Feasibility Study of the Potential Market for Natural Gas as a Fuel for Power Generation in the Caribbean,* Inter-American Development Bank, December 2013.

**Due to rounding total percentages cannot be calculated by adding values*

such an effort through its work to initiate and sustain the Energy and Climate Partnership of the Americas (ECPA), which President Obama announced at the Summit of the Americas in April 2009, and its more recent Caribbean Energy Security Initiative commitments. But the key steps for engaging the core Petrocaribe countries as well as securing near-term and financial transitions remain unclear. The United States has an opportunity to use the August 2014 ECPA planning session in Montevideo, Uruguay, to focus regional attention on this issue in the lead up to the 2015 ECPA Ministerial in Mexico.

If the United States stands by and lets these nations risk and potentially endure the fiscal shock, it will simply validate the perception that US policy is more anti-Venezuelan than pro-Caribbean. Therefore, the region needs a US-led multilateral response to set it on a new energy path. By providing assistance in conceiving, financing, and even supplying new energy infrastructure, the United States and IFIs can lay the groundwork for a more integrated Caribbean and Central America.

The largely Caribbean nations reliant on Petrocaribe all face difficult economic circumstances. Their economies tend to be small, isolated, and dependent on tourism revenues, while they face heavy debt burdens and high energy and labor costs. Their inherent economic fragility indicates they could all suffer a serious shock from more rapid declines in Petrocaribe fiscal support and higher real commodity prices.

The long-term solution for these economies is to shift from dependence on Venezuelan high-cost, medium grades of crude oil and refined products to lower cost (and lower carbon) sources.

The IDB Pre-Feasibility Study examined the feasibility of introducing natural gas into thirteen

Caribbean economies. It determined that replacing liquid fuels with natural gas, in combination with energy efficiency and renewable energy measures, produced net benefits to every country, lowering the cost of fuel and the price of power, as well as substantially reducing carbon emissions.[21] **Figure 6** (see previous page) shows IDB analysis of the long-run marginal cost of natural gas fired power generation relative to low-speed diesel.

The study determined that liquefied natural gas (LNG) was the cheapest form of delivery, as it was both more efficient than compressed natural gas (CNG) and more practical than a pipeline system. It also found that the lowest cost LNG would be sourced from the US Gulf Coast, and that small-scale regasification technology could provide every country with appropriate infrastructure at around $30 million for regasification and off-loading facilities.[22]

The Dominican Republic is already home to the AES Andes LNG import terminal, the first of its kind in the Caribbean, and could be a large enough consumer to support an expansion of this facility or even an additional, larger-scale terminal. Combined with Jamaica, the two nations would account for nearly three-quarters of the region's total annual gas consumption, which the IDB estimates will be 1 billion cubic feet per day (bcf/d) by 2020.

Both the United States and the IFIs have recognized the importance of facilitating the emergence of a more secure and sustainable Caribbean energy future.

There are additional advantages to a move to gas. These include the potential conversion of vehicles from gasoline to dual fuel/natural gas vehicles as well as the introduction of more hybrid vehicles to the system once electricity prices come down.

Domestic Challenges Remain

The internal policy reforms required to create an enabling environment for natural gas and renewables are significant. CESI recognizes this predicament, and it calls for the United States to cooperate with other donors to accelerate regional efforts to affect new regulatory models more conducive to diversificiation. Great variation exists among the energy systems of the region.

Some countries have monopolies on generation, transmission, and distribution. Many utilities have long-term contracts that they will be reluctant to wind down. A lack of policy support for renewables, and in some cases subsidies for electricity, disincentivizes energy efficiency technology. Some countries effectively prohibit self-generation, impeding the spread of distributed energy systems or the integration of solar energy. Energy subsidies have starved many grids of investment, limiting their ability to withstand new generation.

Yet the framework for change exists. The Caribbean Community (Caricom) has made great strides in promoting renewable energy through its Caribbean Renewable Energy Development Program (CREDP). Regional states have also undertaken national initiatives to experiment with introducing greater shares of wind and solar power into their energy mixes, rendering important successes and lessons that could be applied to larger-scale future efforts.[23]

While a regional approach to energy would provide aggregate cost savings,[24] the political challenges are serious and would be time-consuming to overcome without other assistance.

Caribbean Energy Future

Both the United States and the IFIs have recognized the importance of facilitating the emergence of a more secure and sustainable Caribbean energy future. The US-launched Energy and Climate Partnership of the Americas includes a Caribbean Initiative, which has attracted participation from both Petrocaribe and non-Petrocaribe member states. The Caribbean Initiative aims to leverage regional dialogue, technical assistance, university partnerships, and market assessments to help Caribbean governments promote and implement sustainable energy policies and programs.[25] Although it does not mention the need to utilitize natural gas as a bridge fuel, the more recently launched CESI further indicates the United States' understanding of the importance of these issues.

Challenges to Renewable Power

Beginning in 2011, the Caribbean Initiative studied the prospects for electrical interconnection between St. Kitts and Nevis and Puerto Rico. A pre-feasibility study focused on St. Kitts and Nevis' geothermal capabilities, suggesting that if geothermal power generation grows to accommodate economical, larger-scale production, interconnection with Puerto Rico may become a viable option.[26] The study indicates, however, that geothermal energy is not yet economically viable on a large scale.

Popular support for geothermal projects has plunged, tasking governments with boosting public support by demonstrating results. The United States has contributed to alleviating this situation by providing St. Kitts and Nevis with technical assistance to help it issue competitive project re-tenders. Moving forward, the United States should continue to help the Caribbean states develop geothermal and other renewable resources.

In addition to issues of scale, Caribbean states face several challenges to attracting private investment in renewables as either a source of additional domestic supply or a means to facilitate regional interconnection. National governments are either unwilling or unable to develop investment frameworks supporting resource diversity or independent power producer (IPP) market penetration. Countries also must grapple with a lack of government experience with renewable technologies, poorly managed grids suffering from above-average transmission losses, and the fiscal inability to offer incentives to offset high capital and development costs.[27]

Popular support for geothermal projects has plunged, tasking governments with boosting public support by demonstrating results.

Natural Gas as a Bridge

Although developments will vary by region, the International Energy Agency (IEA) projects that despite growing renewables market penetration, fossil fuels will still comprise 75 percent of the global energy mix in 2035. Meanwhile, as the global LNG trade accelerates, demand growth for natural gas is poised to outpace that of both oil and coal.[28]

Governments should leverage existing market trends and embrace gas as a near-term bridge fuel to promote energy security and facilitate investment in regional interconnection infrastructure.

Caribbean states should undertake these efforts while pursuing the long-term goal of accelerating development of renewables.

The greatest economic challenges to a regional conversion to natural gas will be securing supplies of LNG, guaranteeing credit worthy off-takers, and financing regasification and offloading infrastructure. Other potential challenges may include securing assistance to finance the conversion of existing diesel-fired facilities to gas-fired generation (both less costly than new facilities and more appealing to existing owners) and helping convert automobiles to natural gas utilization.

Yet, as the IDB Pre-Feasibility Study asserts, replacing liquid fuels with natural gas can contribute to lowering fuel and power costs throughout the Caribbean and Central America. Mexico's pending energy reforms offer perhaps the most recent example of a country seeking to substitute large quantities of fuel oil for natural gas in power generation to fulfill both fiscal and climate imperatives.[29] As Petrocaribe declines, the question for the United States and IFIs is whether to address these supply and financing issues and take a strategic step forward for regional energy and climate security and US-Caribbean relations.

Governments should leverage existing market trends and embrace gas as a near-term bridge fuel to promote energy security.

Policy Recommendations

The United States can help Caribbean countries move away from their dependence on Petrocaribe by pursuing six policy approaches.

1 **Treat the Caribbean's energy uncertainties as both a priority and an opportunity.** The region's energy security vulnerabilities present US foreign policymakers with a rare opportunity to proactively prevent a crisis. By launching an effort to transform Caribbean energy, the United States can forestall a potential fiscal crisis in the region and promote closer diplomatic relations at a relatively low cost. The desire of Caribbean nations for US support for energy transformation and the vice president's commitment to engagement in the hemisphere present a historic opportunity to restore regional ties and redirect Caribbean economies to a more competitive and lower carbon energy future. Leadership on this issue could enhance the region's development and reduce its debt, foster cleaner energy sources, reduce its electricity costs, help US exports, mitigate the risk of an out-of-control migration event and wean the Caribbean from Venezuela's political influence. The United States should show the Caribbean is a lasting foreign policy priority by creating a Caribbean Energy Transformation Task Force, headed by the vice president and integrated by the Departments of State, with participation from USAID, Commerce, Treasury, Energy, USTDA, OPIC, and the ExIm Bank.

2 **Declare exports of LNG and crude oil to be in the US national interest.** The United States could provide an alternative source of energy to Petrocaribe states by expediting approval of LNG infrastructure and finding all exports of LNG to Caribbean nations reliant on Petrocaribe (other than Cuba) to be in the national interest under the Natural Gas Act. Both of these measures would contribute to facilitating the marketing of supply to those nations. To further these efforts, the United States should also bring down the cost of existing crude oil supplies by determining crude or condensate exports to these states to be in the national interest and allowing free export of these fuels to Caribbean nations at West Texas Intermediate (WTI) or Louisiana Light Sweet (LLS) prices.

3 **Take a serious look at a natural gas strategy for the Caribbean.** The failure to mention natural gas in CESI leaves the Obama administration vulnerable to criticism that it is ideologically opposed to natural gas as a low-carbon strategy. It should counter this doubt by leading international efforts, in ECPA and other relevant forums, to explore the IDB Pre-Feasibility Study's viability in greater detail. The IDB has done an important service in preparing its pre-feasibility study to find a lower carbon pathway for the region. The United States may wish to consider a deeper review to advance this work through the USTDA. The Department of Energy could also lead a dialogue with LNG exporters and transporters to explore the most rapid and efficient ways to move natural gas to the Caribbean.

4 **Target the 2015 ECPA Summit to kickstart a Caribbean energy transition.** Planning meetings leading up to the 2015 ECPA Ministerial, including the August 2014 gathering in Montevideo, should turn attention toward engaging Caribbean nations in a collaborative effort to find ways to bring natural gas to the region. More broadly, the United States should ensure that ECPA has a commercial track that, with support from the Department of Commerce, matches natural gas, engineering, gas transport, and renewable companies with Caribbean nations.

5 Plan for a potential cutoff of Petrocaribe financing. The United States must plan now for a potential reduction of Petrocaribe credit support and show the Caribbean a credible, viable alternative. The Department of Treasury should be tasked to work with IFIs to devise credit support for Caribbean nations transitioning from fuel oil and credit supported crude oil to cleaner sources of energy.

The United States also has more tools at its disposal to help promote investor interest in the region's energy infrastructure. The Caribbean Energy Security Initiative rightly calls for OPIC to provide targeted loans, guarantees, and other credit enhancements to attract private sector capital for new projects. This undertaking can be further expanded by including the Export-Import Bank (with its ability to finance large projects) and USTDA (which helps identify viable projects) in such efforts. The administration should direct the focus of all three agencies to include not only renewables, but also financing conversion of fuel oil plants to natural gas and construction of small-scale regasification plants.

The Commerce Department's Commercial Law Development Program can also play an important role by devising model uniform independent power producer contracts for gas and renewables for Caribbean countries. In a manner consistent with the Caribbean Energy Security Initiative's existing commitments, the United States should coordinate with the IMF, World Bank, and IDB on a core set of policies that could enhance the policy environment in the Caribbean for the introduction of natural gas and renewables.

6 Coordinate with the IFIs to promote policy reform. Political and economic realities dictate that the United States alone cannot guide Petrocaribe states on the road to beneficial energy policy reform. As CESI rightly acknowledges, the IFIs are also an important player in this process. Both the IDB Pre-Feasibility Study and a separate IMF analysis discussing Petrocaribe demonstrate their concerns regarding the Caribbean's energy future.[30] The IFIs' role includes leveraging commitments to policy reform for credit guarantees for LNG purchases and financing energy-saving corporations, which could advance the cost of power plant conversion or even automobile fuel conversion and pay for themselves over time with the costs saved. IFIs should also establish or provide seed capital for energy savings companies or energy service companies to address efficiency improvements in government buildings, hotels, industry, and residential homes.

The New Reality for Petrocaribe

From an economic perspective, Petrocaribe appears unsustainable over the long run as Venezuela faces declining investment in oil production and exports, increased domestic hydrocarbons demand, decreased petroleum product production, and growing need for hard currency. Petrocaribe recipient states' dependence on unstable, below-market credit comprises a significant risk and their reliance on fuel oil for power generation is a continuing drag on the region's economies.

Yet the program may linger on, driven by Venezuela's need to maintain some level of political support in the hemisphere and the lack of a viable energy or economic alternative for Petrocaribe countries. But a different Venezuelan administration might consider it too costly to sustain. This moment, when the risk is high, but the crisis is not yet upon us, is the time for sound and sober policy planning. The United States can seize this opportunity to help its neighbors transition to an economically stable and environmentally sustainable model at a modest cost. The United States' energy bounty helps lower the cost of this transition by potentially providing low-cost natural gas to the region, as recommended by the IDB.

What is needed, in the United States and in the Caribbean, is the leadership to change course now. The United States must expand its commitment to help Caribbean states to overcome entrenched interests that may seek to derail work to diversify and reform their hydrocarbons and electricity sectors. The United States and its allies can leverage the Energy and Climate Partnership's 2015 Ministerial in Mexico as a forum for a new direction forward.

Endnotes

1 Jed Bailey, Nils Janson, and Ramon Espinasa, *Pre-Feasibility Study of the Potential Market for Natural Gas as a Fuel for Power Generation in the Caribbean*, Inter-American Development Bank, December 2013, http://publications.iadb.org/handle/11319/6015?scope=123456789/1&thumbnail=true&rpp=5&page=30&group_by=none&etal=0.

2 More information about the Caribbean Energy Security Initiative is available at http://www.whitehouse.gov/the-press-office/2014/06/19/fact-sheet-promoting-energy-security-caribbean.

3 Petrocaribe's initial thirteen signatories included Antigua and Barbuda, the Bahamas, Belize, Cuba, Dominica, Granada, Guyana, Jamaica, the Dominican Republic, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Surinam. Current members are Antigua & Barbuda, Belize, Dominica, Dominican Republic, El Salvador, Grenada, Guyana, Haiti, Jamaica, Nicaragua, St. Kitts and Nevis, St. Vincent and Grenadines, and Suriname. Some estimates show more members. The PDVSA website documents eighteen Petrocaribe member states, including Venezuela (http://www.petrocaribe.org/index.php?tpl=interface.en/design/union/readmenuprinc_acerca.tpl.html&newsid_temas=4). However, this figure includes countries that signed on to Petrocaribe but either never received contracted Petrocaribe exports or have not received them for several years. These include Honduras, Bahamas, Cuba, and St. Lucia. Outside observers estimate that there are currently as few as thirteen active Petrocaribe member states.

4 Among previous agreements are the San Jose Accord, which came into force in 1980 and comprised joint Mexican/Venezuelan efforts to provide oil to Caribbean states, and the Caracas Energy Agreement, a Venezuelan initiative for the same purpose that was initially proposed in October 2000. Under the Caracas Energy Agreement, only 10-25 percent of the required payment was rolled over into long-term loans, which generally lasted for fifteen years, with a one-year grace period and a 2 percent interest rate. See http://www.pcj.com/dnn/AlliancesandJointVentures/tabid/75/Default.aspx.

5 "Petrocaribe," Petróleos de Venezuela S.A., http://www.PDVSA.com/index.php?tpl=interface.sp/design/readmenuprinc.tpl.html&newsid_obj_id=174&newsid_temas=48. The original 2005 terms on the payment clause offered fifteen-year loans, with a one-year grace period and a 2 percent interest rate. After the 2008 price shock, at the Maracaibo Summit, Venezuela made the terms more generous, offering twenty-five-year loans, with a two-year grace period and a 1 percent interest rate. Additionally, short term payment terms were extended from thirty to ninety days. For more information see: http://jamaica-gleaner.com/extra/article.php?id=222 or http://www.pdvsa.com/index.php?tpl-interface.en/design/readmenuprinc.tpl.html&newsid_temas=48. Figure 1 demonstrates that the loan terms have subsequently tightened. Terms on offer are now seventeen- or twenty five-year loans (depending on the Venezuela benchmark price), with a two-year grace period and a 2 percent interest rate.

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14 EIA Database, http://www.eia.gov/petroleum/data.cfm. Data organized by Jorge Piñon, University of Texas, Austin Jackson School of Geosciences Latin America and Caribbean Program. Transmitted to Goldwyn Global Strategies on May 12, 2014.

15 Andrew Rosati, "Who Was Behind Venezuela's Deadly Oil Refinery Explosion?" *Christian Science Monitor,* September 16, 2013, http://www.csmonitor.com/World/Americas/2013/0916/What-was-behind-Venezuela-s-deadly-oil-refinery-explosion.

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