

COUNTRY ANALYSIS BRIEFS

Caribbean

Last Updated: July 2006

Background

Most Caribbean islands are net energy importers.

The islands of the Caribbean basin are predominantly net energy importers, with the exception of Trinidad and Tobago. Agriculture and natural resource extraction activities continue to constitute the basis of the islands' economies, though the tourism and service sectors are growing. In recent years, the Caribbean countries have been worried that higher global oil prices will impair their efforts to expand economically. In response, the island nations have been discussing ways to better integrate their energy sectors, especially in regards to increased natural gas exports from Trinidad and Tobago to other islands. These efforts have also focused on the major external energy suppliers to the region, such as Mexico and Venezuela.



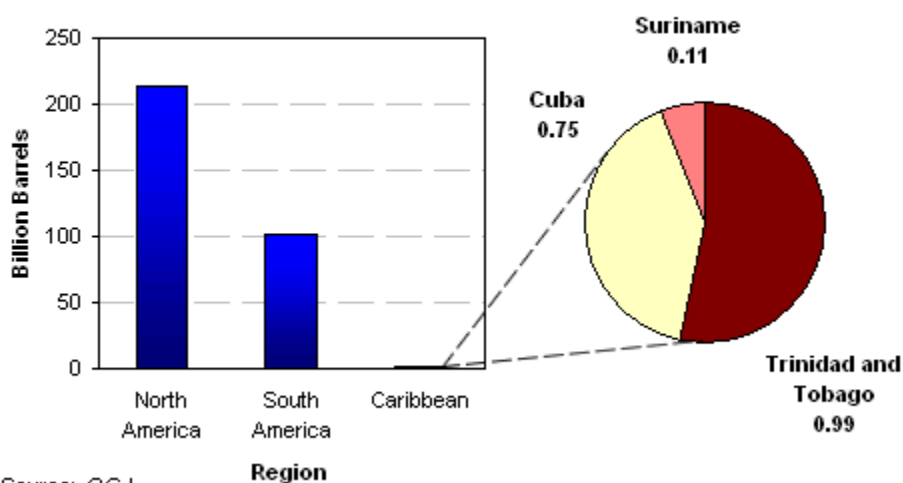
Over the past decade, the Caribbean states have made efforts to integrate their economies. The major regional organization is the Caribbean Community and Common Market (CARICOM), whose members include Antigua and Barbuda, The Bahamas, Barbados, Dominica, Grenada, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago; non-Caribbean countries Belize, Guyana, Suriname are also members, and the remaining islands, except Cuba, have either associate or observer status. Besides CARICOM, the other main economic organizations in the region include the Association of Caribbean States, the Eastern Caribbean Currency Union and the associated Eastern Caribbean Central Bank.

Oil and Natural Gas

Trinidad and Tobago contains the bulk of the Caribbean's hydrocarbon reserves and production.

Only three countries in the Caribbean region have significant oil and gas reserves: Trinidad and Tobago, Cuba, and Suriname. According to *Oil and Gas Journal (OGJ)*, the three had a combined 1.85 billion barrels of proven crude oil reserves and 29.9 trillion cubic feet (Tcf) of proven natural gas reserves in 2006. Trinidad and Tobago contains the large bulk of these resources, with 54 percent of proven crude oil reserves and 87 percent of proven natural gas reserves. Of the three countries, Trinidad and Tobago is the only significant hydrocarbon exporter. Despite the lack of sizable oil reserves, the Caribbean countries are heavily dependent upon petroleum as their primary energy source. In 2004, the islands in the Caribbean region consumed a total of 2.6 quadrillion British thermal units (Btus) of total energy, of with petroleum accounted for 77 percent.

Proven Oil Reserves of Selected Regions, 2006



Source: OGI

Most Caribbean countries signed onto the Petrocaribe initiative in 2005.

Many of the Caribbean countries import oil from Mexico and Venezuela under favorable terms. Under the San Jose Pact, Barbados, the Dominican Republic, Haiti, and Jamaica receive oil and refined products from those two countries. Cuba also receives crude oil and petroleum products from Venezuela at a discounted rate. In 2005, nearly all Caribbean countries (except Barbados, Haiti, and Trinidad and Tobago) signed the Venezuela-backed Petrocaribe initiative. Under the program, Venezuela will sell crude oil and refined products to these countries under favorable financing terms. The agreement also stipulates that Venezuela's state-owned oil company, PdVSA, will enter into partnerships to improve oil infrastructure in the region.

Exploration and Production

Trinidad and Tobago

Trinidad and Tobago contains the large majority of the Caribbean's oil and natural gas production. During the first half of 2006, Trinidad and Tobago produced an estimated 181,000 barrels per day (bbl/d) of total oil production, of which 145,000 bbl/d was crude oil. Oil production has risen in the past several years, but the country's oil reserves could be exhausted in less than a decade, unless significant new reserves are discovered. The largest oil producer in Trinidad and Tobago is BP Trinidad and Tobago (BPTT), owned by BP (70 percent) and Repsol-YPF (30 percent). BPTT controls some 50 percent of Trinidad and Tobago's total crude oil production, but BP has begun to slightly scale-back its involvement in Trinidad and Tobago's oil sector; in 2005, BP sold its shares in the Teak, Samman, and Poui oil fields to Perenco and Neal & Massy Energy. State-owned Petroleum Company of Trinidad and Tobago (Petrotrin) controls most of the remaining oil production in the country.

In January 2005, production began at the Greater Angostura field in Block 2(c). Operated by a consortium led by BHP Billiton, the Angostura field contains an estimated 310 million barrels of recoverable reserves. Initial production levels averaged 60,000 bbl/d, and with production levels to increase in subsequent stages to 100,000 bbl/d, BHP Billiton is expected to surpass BPTT as Trinidad and Tobago's largest oil producer in the near future.

Natural gas production in Trinidad and Tobago has skyrocketed in recent years. In 2004, the country produced 990 billion cubic feet (Bcf) of natural gas, up 14 percent year-on-year. The country has benefited from a large amount of foreign investment into the sector, with BPTT leading these efforts. Other important players in the natural gas sector include BG and Chevron.

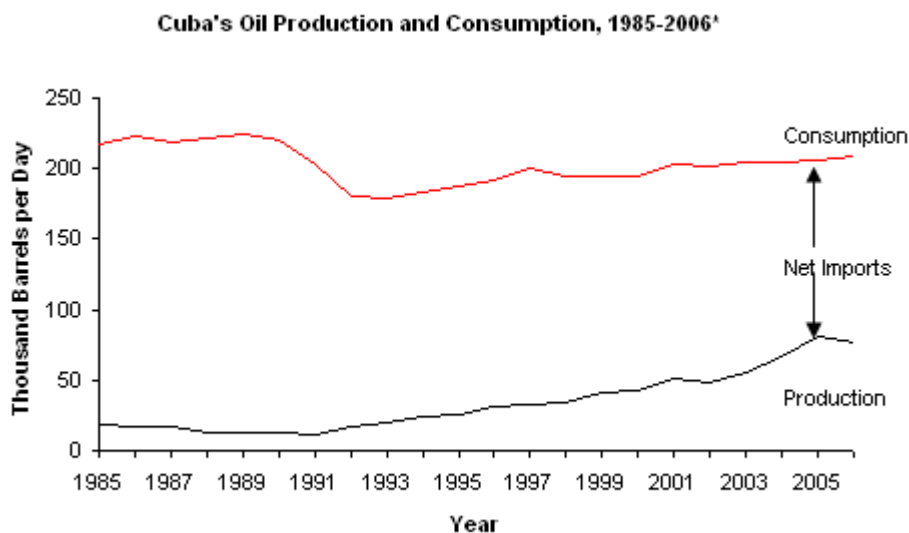
In July 2003, BPTT started production at its Kapok field from an unmanned satellite platform connecting to the company's central processing hub known as Cassia B. Peak production from the field is expected to reach 1 Bcf per day (Bcf/d). Because Cassia B has a nameplate natural gas processing capacity of 1.6 Bcf/d of natural gas and 50,000 bbl/d of liquids, it is likely that BPTT will continue to develop natural gas resources in surrounding fields. In 2004, BP announced that it had discovered, in cooperation with Repsol-YPF, an estimated 2 Tcf of natural gas reserves in the Chachalaca field off the east coast of Trinidad and Tobago.

BG currently produces from two offshore zones, the East Coast Marine Area (ECMA) and the North Coast Marine Area (NCMA). In the ECMA, the company jointly owns with Chevron the Dolphin field. BG controls four fields in the NCMA, including Hibiscus, Poinsettia, Chaconia and Ixora. Most of BG's production flows directly to the Atlantic LNG project (see below), though it also supplies a small amount of natural gas to domestic consumers. BG has additional plans to expand its natural gas operations in Trinidad and Tobago, including the development of the Dolphin Deep and Starfish fields in the ECMA and Block 3(a), which is adjacent to the Angostura development.

In May 2004, the government of Trinidad and Tobago selected oil companies for nine offshore blocks in a PSA licensing round. The contractors included: PetroCanada for Blocks 1(a) and 1(b); Canadian Superior Energy for Block 5(c), and a joint-venture with Kerr-McGee and Primera Oil & Gas for Block 4(a); BHP Billiton and Total for Blocks 23(a) and 23(b); BHP Billiton and Talisman Energy for Block 24; and Norsk Hydro and PetroCanada for Block 22. However, the exploration area that had attracted the most attention, Block 2(ab), was not awarded. The block had attracted particularly high interest due to its proximity to the Angostura field, and four companies placed bids on the area. However, the government announced that it would re-offer the block in the next licensing round.

Cuba

Cuba produced 76,000 bbl/d of oil during the first half of 2006, while the country consumed 209,000 bbl/d. Cuba's oil production has increased significantly in the past two decades, with the country only producing 16,000 bbl/d in 1984. Most of Cuba's oil production occurs in the northern Matanzas province, resulting in a heavy, sour crude that requires special processing at the country's refineries. Currently, two Canadian companies, Sherritt International and Pebercan, are producing oil in Cuba, under joint-venture production agreements with state-owned oil company Cubapetroleo (Cupet). Sherritt produces from the Yumuri, Varadero, Canasi and Puerto Escondido fields, and the company also controls four offshore exploration blocks. Pebercan holds contracts for five onshore blocks, though it only has current production from one, Block 7. In January 2005, the two companies announced that they had discovered an estimated 100 million barrels of additional recoverable reserves in the Matanzas region, including varieties of crude that are somewhat lighter than current production.



There has been considerable excitement over exploration activities in Cuba's offshore basins in the Gulf of Mexico. Industry analysts have reported that there could be at least 1.6 billion barrels of crude oil reserves in these basins. However, exploration activities have, so far, been disappointing. In 2001, Brazil's Petrobras abandoned exploration activities in Cuba's offshore basins following disappointing results, though the company stated in January 2005 that it would re-start offshore exploration. In July 2004, Repsol-YPF announced that its exploratory well in the Gulf of Mexico had discovered high-quality crude oil, however the company noted that it had not discovered commercially-viable quantities of that crude oil. Nevertheless, Repsol-YPF announced in June 2005 that it would drill a second exploratory well in the area.

Barbados

While Barbados does not have significant crude oil reserves, it does maintain a small amount of domestic production. Oil production in Barbados during the first half of 2006 totaled 1,000 bbl/d, while the country consumed 10,000 bbl/d. As Barbados has no refining capacity, its oil is refined in Trinidad and Tobago, and then returned for domestic consumption. Barbados plans to hold a new exploration licensing round by the end of 2006 that will focus on offshore acreage. The island country also produces limited amounts of natural gas, 1.0 Bcf in 2004. Domestic natural gas production meets local demand, but the island expects that it will be forced to import natural gas or find alternatives in order to meet future consumption growth from power generation, households and the tourist industry.

Suriname

Suriname produced 10,000 bbl/d of crude oil during the first half of 2006. The country has sought foreign investors to help develop its oil reserves. In late 2005, state-owned Staatsolie signed a production sharing agreement with Occidental Petroleum for the offshore Block 32. Occidental also has activities in Block 30. In January 2006, Staatsolie launched an exploration licensing round for Blocks 15, 36, and 37.

Other Regional E&P Developments

In January 2005, the Jamaican government launched a licensing round for four onshore and 22 offshore exploratory blocks. The round came about due to a re-evaluation of existing geological data about the country that indicated it could contain commercially-viable oil and gas reserves. Grenada's government has also expressed interest in looking for oil and natural gas and is holding discussions with Trinidad and Tobago as a potential partner in joint exploration operations. In the Bahamas, U.S.-based Kerr-McGee acquired 100 percent interest in nine oil and natural gas offshore blocks in June 2003. The blocks are located 100 miles north of Freeport, Grand Bahamas Island, covering 6.5 million acres. In the first phase, Kerr-McGee plans to acquire and interpret seismic data for the area. Canada's CGX Energy conducted an unsuccessful drilling program in 2005 in the Berbice Block in Guyana.

Pipelines

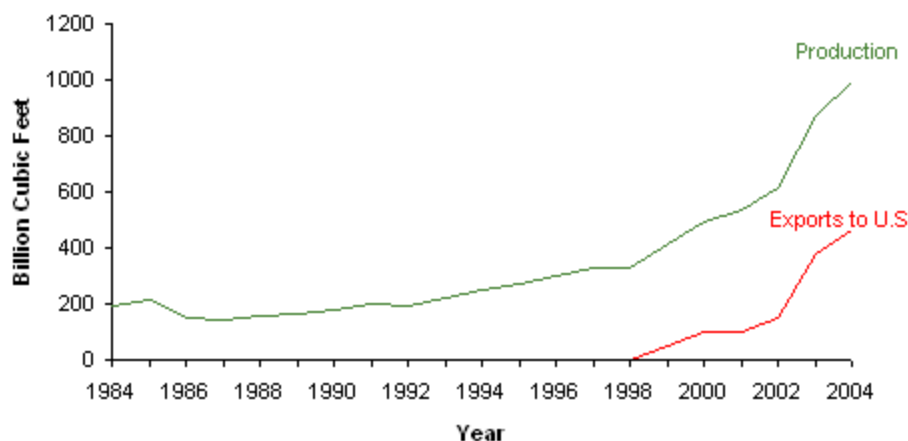
Trinidad and Tobago has an extensive pipeline network linking offshore oil and gas fields to onshore landing points. Many of the natural gas pipelines directly connect production to the Atlantic LNG export facility (see below). Trinidad and Tobago is currently building the Cross Island pipeline (CIP), a 52-inch, 47-mile pipeline linking the east coast of Trinidad with Atlantic LNG. CIP will be the first 52-inch natural gas pipeline in the Western Hemisphere, and it will have an initial capacity of 2.4 Bcf/d. Trinidad and Tobago has also proposed the construction of intra-region pipelines that would directly link its production to other Caribbean islands; none of these proposals, however, have moved beyond the planning stages.

Trinidad and Tobago is the largest supplier of LNG to the United States.

Liquefied Natural Gas (LNG)

Trinidad and Tobago is the largest supplier of LNG to the United States and one of the largest LNG exporters in the world. The Atlantic LNG Company, a consortium led by BP, BG, and Repsol-YPF, operates four LNG trains at Point Fortin, on the south-western coast of Trinidad. The first LNG train was completed in March 1999, with subsequent trains completed in August 2002, April 2003, and April 2006. The four trains produce a combined 14.8 million metric tons (Mmt) of LNG per year. There has been discussions between Atlantic LNG and the government of Trinidad and Tobago over the construction of a fifth and sixth train, though there are no firm plans as of yet to pursue these projects.

Trinidad and Tobago's Natural Gas Production and Exports to the U.S., 1984-2004



Source: EIA International Energy Annual; DOE Office of Fossil Energy

Some Caribbean islands have begun to look towards LNG as a way to diversify their energy consumption away from imported oil. In December 2004, Jamaica announced that it had reached an agreement with Trinidad and Tobago to import 1.1 Mmt of LNG per year from Trinidad and Tobago. The agreement necessitates the construction of a \$250 million LNG regasification terminal in Jamaica; in November 2005, Mustang Engineering won a front-end engineering contract for that facility. AES operates the Andres facility in the Dominican Republic, an LNG regasification terminal with an integrated 310-MW, gas-fired power plant. In August 2000, Puerto Rico began importing LNG to supply the EcoEléctrica facility, a 540-MW natural gas-fired power plant.

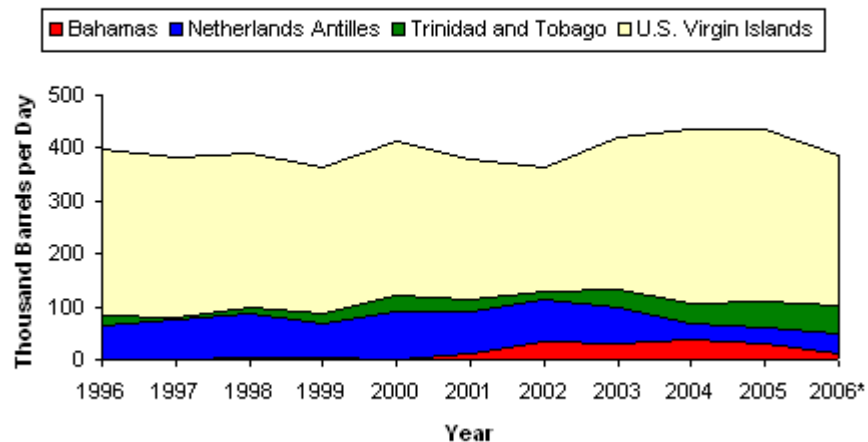
The Bahamas has become a proposed gateway for LNG to enter the United States via Florida. Currently, there are three projects in various stages of development, each integrating an LNG regasification facility in the Bahamas with a subsea pipeline connecting that facility to Florida: Ocean Express, sponsored by AES; Seafarer, proposed by a consortium of El Paso, Tractebel, and FPL Group, the unregulated upstream component of Florida Power and Light (FPL), Florida's regulated electricity utility; and Calypso, also proposed by the aforementioned consortium. All of these projects have run into some sort of regulatory difficulty from either U.S. or Bahamian officials. Furthermore, all of the proposed Bahamas-Florida LNG projects were brought into serious doubt in June 2005, when FPL announced that it would not sign a long-term LNG supply contract with any of the project sponsors. Since FPL is the largest consumer of natural gas in Florida, the surprise announcement brings into question the financial viability of the projects.

The Caribbean is an important refining center for crude oil produced elsewhere, especially Venezuela.

Refining

According to OGJ, the Caribbean region has a combined 1.7 million bbl/d of refining capacity. Smaller refineries produce petroleum products for local demand, whereas the larger facilities are geared towards exports to the United States and other regional markets. The largest refining capacity in the region is in the U.S. Virgin Islands; a single refinery, jointly owned by Venezuelan state oil company PdVSA and Amerada Hess, Hovensa, has a crude oil capacity of 495,000 bbl/d. Other large facilities in the region include the 320,000-bbl/d Emmastad in the Netherlands Antilles, operated by PdVSA; the 230,000-bbl/d San Nicolas in Aruba, operated by Valero; and the 165,000-bbl/d Pointe-a-Pierre in Trinidad and Tobago, operated by Petrotrin.

**U.S. Petroleum Product Imports from the Caribbean
1996-2006***



Source: EIA Office of Oil and Gas

*January-April only

During the four months of 2006, the United States imported 385,000 bbl/d of petroleum products from the Caribbean. The U.S. Virgin Islands represents the bulk of the region's exports to the United States (283,000 bbl/d). There are numerous proposals in various stages of development to significantly increase refining capacity in the Caribbean, mostly for eventual export to the United States. Proximity to crude oil produced in Mexico and Venezuela and a perceived shortfall in U.S. domestic refining capacity are driving these efforts. Valero has discussed expanding the capacity of its San Nicolas refinery to 500,000 bbl/d. In August 2002, the government of Trinidad and Tobago granted Soreco Inc. approval for the construction of the 224,000-bbl/d Sanemeta refinery; however, it remains unclear whether the project will move forward due to difficulties in securing \$2 billion in loans for the project.

Jamaica's state-owned Petrojam operates a 36,000-bbl/d refinery near Kingston. In 2006, Petrojam began the front-end engineering work to increase the capacity of the facility to 50,000 bbl/d and improve the plant's ability to produce cleaner products. A proposed \$2 billion refinery near St. Elizabeth, Jamaica has entered advanced planning stages. The Jamaican government has tentatively approved the facility, pending an environmental impact statement. Project sponsor Petroleum Corporation of Jamaica (PCJ) has stated that the facility will have an initial crude refining capacity of 250,000 bbl/d.

To supplement its LNG exports, Trinidad and Tobago has sought gas-to-liquids (GTL) technology as a means to monetize its natural gas reserves. In late 2005, Petrotrin announced plans to build a GTL plant at its Pointe-a-Pierre refinery, which would produce high-quality diesel fuel. Petrotrin expected initial production from the facility in early 2007, with a capacity of 2,250 bbl/d.

Electricity

Oil-fired power plants supply most of the Caribbean's electricity needs.

In 2004, the Caribbean region had a total installed, electricity-generating capacity of 21.3 gigawatts (GW); in that year, the region consumed 74.2 billion kilowatthours (Bkwh) while producing 79.8 Bkwh. The single-largest producer and consumer of electricity in the region is Puerto Rico, followed by Cuba and the Dominican Republic. Most electricity produced in the region comes from conventional thermal sources, chiefly oil-fired power plants. The islands' reliance on fuel oil makes them highly vulnerable to international oil prices. As a result, many islands have begun to look to alternatives, such as LNG and renewables, as a way to reduce their dependence upon foreign oil. While the region runs an electricity surplus, there are specific parts of the Caribbean that need additional capacity. Several countries, such as Haiti and the Dominican Republic, experience power outages and blackouts on a regular basis. In June 2005, Bermuda suffered an island-wide blackout due to a failure in the country's electric grid.

Country-Specific Issues

The Dominican Republic

The Dominican Republic's frequent blackouts, lasting at times up to 20 hours per day, have sparked public demonstrations, some of which have been violent. The current situation arises

from a lack of investment in generating capacity. The government has opened the sector to foreign companies, but many have liquidated their investments there due to chronic payment arrears from the government-owned electricity distribution company. As a result, the government has begun to re-nationalize generation assets. It remains unclear whether the situation will improve in the near-term, particularly when the government reportedly owes power companies over \$400 million. The devalued peso, in particular, continues to hurt the solvency of private companies, which receive payments in pesos, but pay debts and other services in U.S. dollars.

Jamaica

In March 2001, the U.S.-based utility, Mirant Corporation, completed an 80 percent acquisition of formerly government-owned Jamaica Public Service Company (JPSC), a fully integrated company which generates, transmits, distributes and sells power on the island. Following the Mirant acquisition, the reliability of the island's electricity system improved, and the completion of the 120-megawatt (MW) Bogue power plant added crucial surplus generation capacity. Currently the Jamaican government is formulating a new national energy policy, which is considering alternative fuels to lessen its dependence on fuel oil. As mentioned previously, the government hopes to import LNG for new gas-fired power plants.

Puerto Rico

In 2004, Puerto Rico consumed 22.5 Bkwh and produced 24.1 Bkwh of electric power. Most of Puerto Rico's power generation comes from five, oil-fired power plants, with the 1,090-MW Costa Sur plant being the largest. Puerto Rico has attempted to diversify its power generation away from oil with projects such as the above-mentioned EcoElectrica gas-fired plant and the 450-MW Aurora coal-fired plant. The island has also invested into renewable energy sources, such as a non-incineration waste-to-energy plant in Caguas developed by Caribe Waste Technologies.

Trinidad and Tobago

Powergen, a consortium of Mirant, BP, and the Trinidad and Tobago Electricity Commission, operate the 630-MW Point Lisa natural gas power plant. In 2006, the company announced that it would expand the capacity of the facility by 200 MW.

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[Ministry of Energy and Energy Industries \(Trinidad and Tobago\)](#)

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