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July 2004

## Caribbean Fact Sheet

*The Caribbean Sea region plays an important role as a petroleum processing and transshipment area, with several major refineries and independent storage facilities. Furthermore, Trinidad and Tobago is becoming an increasingly significant supplier of liquefied natural gas (LNG) to regional markets and to the United States.*

*Note: information contained in this report is the best available as of July 2004 and can change.*



### GENERAL BACKGROUND

The islands of the Caribbean basin, with a total population of approximately 37 million in 2003, are predominantly net energy importers, with the exception of hydrocarbon rich 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 the larger economies, manufacturing is also important, such as oil and natural gas production in Trinidad; pharmaceuticals and cement in **Puerto Rico**; and textiles in the Dominican

Republic and Jamaica. Economic growth, however, varies across the region. While many of the islands' economies experienced positive economic growth in 2003, Dominica and the Dominican Republic's economies contracted, with real gross domestic product (GDP) growth of -2.2% and -0.4%, respectively. In previous years, the Dominican Republic had been one of the fastest growing economies in the region.

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 the South American states of Guyana and Suriname and the Central American State of Belize, and the Caribbean islands of 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. All other islands, with the exception of Cuba, have either associate or observer status. The Caribbean Community has three objectives: (I) economic cooperation through the Caribbean Single Market Economy; (II) coordination of foreign policy among the independent Member States; and (III) common services and cooperation in functional matters such as health, education and culture, communications, and industrial relations. CARICOM countries have steadily reduced tariffs among members. Besides CARICOM, the other main organizations of the region include the **Association of Caribbean States**, the Eastern Caribbean Currency Union and the associated Eastern Caribbean Central Bank.

### ENERGY OVERVIEW

In recent years, the Caribbean countries, with the exception of Trinidad and Tobago, 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 integrate oil and natural gas operations in order to reduce costs of energy, which is affecting their prospective economies. As one of the biggest suppliers to the Caribbean Islands, Venezuela has proposed creating “Petrocaribe,” a state oil company representing all the Caribbean nations which would centralize refining, procurement and marketing. The Free Trade Area of the Americas (FTAA) process has also begun developing an energy policy for all members. One focus of a proposed energy policy is to increase collaboration among members in order to ensure energy security and supply in the region. Other possibilities currently on the table include constructing a natural gas pipeline linking Trinidad’s natural gas reserves to many of the Caribbean islands, as well as encouraging the development of alternative energy sources, such as wind, solar and geothermal.

## OIL AND NATURAL GAS

In 2002, the islands of the Caribbean region consumed a combined total of 2.4 quadrillion Btu of energy, of which oil accounted for 93.1%. The islands, however, are hydrocarbon poor, making them dependent on imports to meet their energy needs. The only exception is Trinidad and Tobago, which is a net-exporter of natural gas and oil, and largest supplier of liquefied natural gas (LNG) to the United States. Under the San Jose Pact, Barbados, the Dominican Republic, Haiti, and Jamaica receive crude oil and refined products under favorable terms from Mexico and Venezuela. Cuba also receives oil from Venezuela under favorable terms. Natural gas is used most extensively in Trinidad and Tobago, where natural gas-intensive industries, such as steel, fertilizer, and petrochemicals, are important to the country's economy. Puerto Rico and the Dominican Republic import LNG from Trinidad and Tobago for power generation. Jamaica currently is considering plans to develop LNG import capacity in order to reduce its reliance on oil imports. In the same line, Jamaica is looking into producing ethanol from sugar cane to reduce oil imports and the high cost associated with it.

## Production

Only three Caribbean countries have oil and natural gas reserves -- Barbados, Cuba, and Trinidad and Tobago. Of these, Trinidad and Tobago is the only significant producer.

|              | Proven Reserves<br>as of 1/1/04   |  | Production  |  |
|--------------|-----------------------------------|--|---|--|
|              | Crude Oil<br>(Million<br>barrels) | Natural Gas<br>(billion cubic<br>feet) | Oil (crude,<br>liquids,<br>refinery gain)<br>(1,000 barrels<br>per day, 2003) | Natural Gas<br>(billion cubic<br>feet, 2002) |
| Barbados     | 2.5                               | 5                                      | 1.0   | 1.0  |
| Cuba         | 750.0                             | 2,500                                  | 55.6  | 12.4   |
| T&T          | 990.0                             | 25,887                                 | 156.7   | 611  |
| <b>Total</b> | <b>1,742.5</b>                    | <b>28,392</b>                          | <b>213.3</b>  | <b>624.4</b>                                 |

Sources: *Oil and Gas Journal* and *EIA*

## Trinidad and Tobago

Trinidad and Tobago (T&T) is the Caribbean's largest producer of oil and natural gas. In 2003, total oil production averaged approximately 156,700 barrels per day (bbl/d), of which 125,000 bbl/d was crude oil. Crude oil reserves, at an estimated 990 million barrels, are expected to last only another decade unless new reserves are found. In 2003, BP Trinidad and Tobago (BPTT) (BP 70% and Repsol-YPF 30%) was the country's largest oil producer, with an output of 74,000 bbl/d. Petroleum Company of Trinidad

and Tobago (Petrotrin), the state oil company, was the second largest oil producer, with an output of about 48,000 bbl/d. The country's crude oil production is expected to increase once BHP Billiton's Angostura field comes onstream in late 2004 or early 2005 (see [below](#)). Overall, the T&T government wants to increase crude oil output to 210,000 bbl/d by the end of 2004.

While crude oil production has increased slightly in the few past years, natural gas production in T&T has skyrocketed. In 2002, the country produced 611 billion cubic feet (Bcf) of natural gas, up 14% year-on-year. As of January 2004, proven natural gas reserves in T&T stood at 25.9 Tcf, up

10.2% year-on-year. The general perception, however, is that continental shelf surrounding the islands contain much more, with some estimates of potential reserves reaching as high as 90 trillion cubic feet (Tcf).

T&T's increased natural gas production has transformed the islands into one of the major natural gas development centers in the world. Besides LNG exports, Trinidad has a large petrochemical industry, with nine ammonia complexes, six methanol units, a urea plant, and an iron and steel complex. In late 2004 and early 2005, two of the world's largest methanol production plants, [Atlas](#) and [M5000](#), with planned production capacities of 1.70 and 1.97 million tonnes per year, respectively, are to be completed. Atlas shareholders include Methanex 63.1% and BP 39.1% while M5000 shareholders include Methanol Holdings Trinidad Limited comprising CL Financial, Ferrostaal AG, Helm AG and Methanol Holding Ltd -- share structure proprietary. The Atlas plant alone will require 160 million cubic feet per day (Mmcf/d) of natural gas. One potential caveat to the T&T's burgeoning natural gas operations is whether the country's natural gas reserves will be able to meet rising domestic and international demand, particularly from the United States where demand for natural gas is rising.

## **Exploration and Production**

### ***BPTT***

Both natural gas and oil exploration activities in T&T have continued at a fast pace over the last three years. During 2000-2001, BPTT alone added more than 6 Tcf to its own natural gas reserves, which total an estimated 17 Tcf. In July 2003, BPTT started production at its Kapok field from an unmanned satellite platform connecting to the company's new central processing hub known as Cassia B. Peak production from the field is expected to reach 1 billion cubic feet per day (Bcf/d), although the Cassia B has a nameplate natural gas processing capacity of 1.6 Bcf/d of natural gas and 50,000 bbl/d of liquids. The extra capacity will likely allow BPTT to develop surrounding fields. The 48-inch offshore Bombax pipeline, completed in March 2003, connects the Kapok field with the country's LNG facilities at Point Fortin.

BPTT intends to invest \$2.5 billion into T&T over the next three years, with most of it going toward increasing production to 550,000 barrels of oil equivalent per day (boe/d) by 2008, from the current 400,000 boe/d. Other funds will be allocated to exploration activities in Columbus Basin, off the eastern coast of T&T.

### ***Angostura***

In March 2003, the Trinidadian government granted approval to a consortium, comprising BHP Billiton (45%), TotalFinaElf (30%), and Talisman Energy (25%), to proceed with the \$726 million first phase development of the Greater Angostura integrated oil and natural gas project, located off the northeastern coast of Trinidad in Block 2(c). In the first phase, the group will focus on oil production, with associated natural gas being reinjected initially and later commercialized. According to BHP, gross recoverable oil reserves could be as high as 300 million barrels and natural gas 2.3 Tcf. Oil production at Angostura is expected to commence in late 2004 or early 2005, with oil production gauged at about 58,000 bbl/d.

### ***BG International***

BG's current operations are divided into two regional areas: East Coast Marine Area (ECMA) and North Coast Marine Area (NCMA). At ECMA, BG, in partnership with ChevronTexaco, has been producing natural gas from Dolphin field in Block 6(b). In 2002, the two companies received approval to explore the Dolphin Deep field in Block 5(a) and the Starfish field which straddles Block E and Block 5(a). As of now, the Dolphin Deep project is expected to begin commercial operations in July 2005, producing 80 Mmcf/d. Also in 2002, BG (30%), along with BHP (operator)

(30%), Talisman Energy (30%), and TotalFinaElf (10%), signed a Production Sharing Contract (PSC) with the Trinidadian government for Block 3(a), which is adjacent to the Angostura development, off the west coast of Trinidad.

In NCMA, BG is the operator of three natural gas fields: Hibiscus; Poinsettia, and Chaconia. In 2002, BG, with partners Petrotrin (19.5%), Eni (17.31%) and PetroCanada (17.31%), began commercial operations at the group's Hibiscus field, supplying 250 Mmcf/d to Train 2 (liquified natural gas export terminal) under a 20-year contract and 125 Mmcf/d to Train 3 for the first two years, reducing thereafter to 45 Mmcf/d.

BG continues to expand its presence in T&T, acquiring Aventura Energy Inc. in March 2004. With the takeover, BG acquired Aventura's 65% operating interest in the onshore Central Block, which contains an estimated 500 Bcf. Petrotrin holds the remaining 35% in the field ([map](#) of BG's operations in Trinidad and Tobago).

### ***New Licensing Round***

In May 2004, the government of T&T selected oil companies for nine offshore blocks in the country's latest bid round of PSAs. 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. Block 2(ab), not awarded, will be tendered again in the next round. The final contracts between the companies and Trinidad and Tobago's Ministry of Energy and Energy Industries are still being finalized. State-owned oil company, Petrotrin plans to offer up unexplored onshore blocks. Petrotrin will partner with ExxonMobil to shoot 3-D seismic and drill 2-3 wells in 2005, in an area along Trinidad's west coast.

The Trinidadian government reportedly was pleased with the success of the auction, guaranteeing continued exploration offshore for several more years. Nonetheless, some acreage that the government has auctioned off for exploration in recent years has not always borne positive results, namely deep-water acreage. In 1998, Shell, BP, Arco and ExxonMobil received licenses to drill off the eastern coast of Trinidad in depths ranging from 2,460 to 4,921 feet. All eight wells reportedly drilled in four deepwater Blocks - 25(a), 25(b), 26 and 27 - proved not to contain sufficient hydrocarbons to be commercially viable. In March 2003, Shell returned Block 25(a) to the Trinidad government, after a well proved to be non-commercial. But four blocks - 22, 23(a), 23(b) and 24 - from the last round are located in deep waters (1,650-4,950 feet), indicating that companies have not lost hope in discovering commercial oil and natural gas reserves in deep acreage ([Map](#) of blocks).

### ***Joint Field Development with Venezuela***

T&T has been in negotiations with Venezuela to develop and possibly combine the two countries' gas reserves in the Deltana region, located off the Paria Peninsula. As of June 2004, it appeared that the two governments were close to finalizing an agreement on cross-border offshore natural gas reserves. The negotiations have been focusing on two overlapping blocks: BPTT's Kapok, in Trinidad territorial waters; and Block 1, in Venezuela's Plataforma Deltana. A final agreement is expected to be reached by December 2004. This agreement is seen as a beginning to an important process of integration, with Venezuela potentially using Trinidad's existing LNG export infrastructure to bring its natural gas to regional markets.

### ***Pipelines***

Domestically, the National Gas Company is building a 56-inch pipeline, known as the Cross Island

Pipeline, to deliver natural gas from the east coast to Atlantic LNG at Point Fortin. The \$55 million pipeline will be able to transport 2.4 Bcf/d. On the international front, the Trinidadian government is contemplating the construction of an undersea natural gas pipeline, linking its reserves to eastern Caribbean states. The proposed 400-mile pipeline, with a capacity of 100 Mmcf/d would run north from Trinidad, connecting to other islands en route to its terminus on the French island of Guadeloupe. In February 2004, Trinidad's National Gas Company, in conjunction with the Caribbean Pipeline Company, Guardian Holdings, and AIC Financial Group, began conducting a feasibility study on the proposed pipeline - known as the Intra-Caribbean Natural Gas Pipeline. The Caribbean islands would likely benefit from the pipeline, which would allow them to displace some of their expensive petroleum imports with cheaper and more environmentally friendly natural gas. However, the price paid for Trinidad's natural gas will likely have to be competitive with regional prices, e.g. Henry Hub, as it seems unlikely that that Trinidad would forego higher margins that it could receive in the United States. As of June 2004, it remains unclear whether the project will move forward. A more ambitious pipeline has also been suggested, in which a 2 Bcf/d-pipeline would zigzag through the Caribbean islands, including Puerto Rico, the Dominican Republic and Cuba, with a terminus in Miami. This plan is unlikely to be implemented in the short to medium term.

### Liquefied Natural Gas (LNG)

T&T currently is the largest LNG exporter to the United States. The Atlantic LNG Company of Trinidad and Tobago operates the country's three LNG trains at Point Fortin. The Atlantic plant is considered the largest single-train plant ever built, and the first LNG producer in the Latin America and Caribbean region. Partners in the consortium are BP, BG International, Repsol-YPF, Tractebel, and National Gas Company of Trinidad and Tobago (NGC), with different interests in each train (see table).

Since beginning commercial operations in March 1999, the plant has undergone a \$1 billion expansion to triple its capacity from 3 million to 9 million tons of LNG per year by adding a second and third train. Train 2 began operation in August 2002, while Train 3 came online in April 2003. BP Trinidad and Tobago (BPTT) supplies Train 1, while both BPTT and BG provide Trains 2 and 3 with natural gas. Atlantic LNG supplies the U.S., Spain, Puerto Rico and Dominican Republic with LNG.

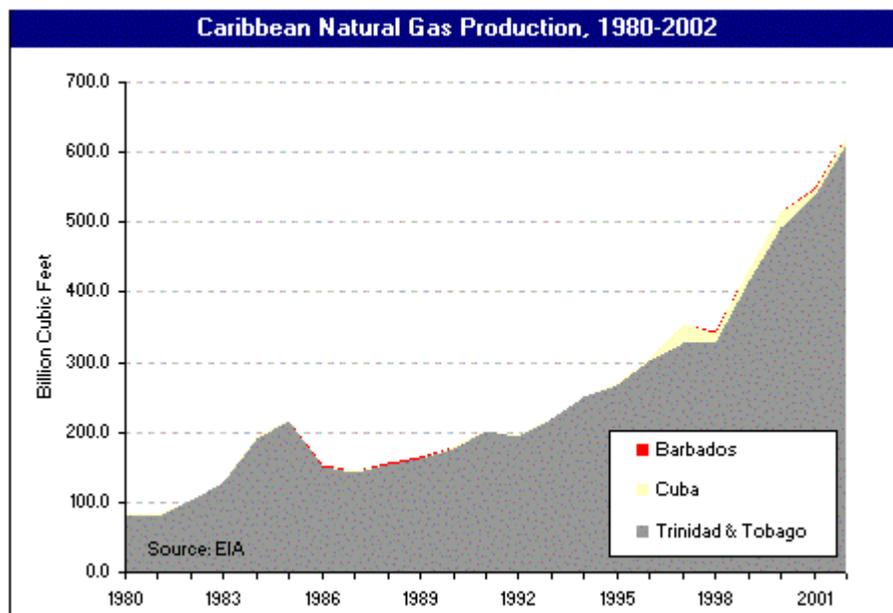
| <b>Atlantic LNG Consortium</b> |                |                |                |                |
|--------------------------------|----------------|----------------|----------------|----------------|
|                                | <b>Train 1</b> | <b>Train 2</b> | <b>Train 3</b> | <b>Train 4</b> |
| <b>BP</b>                      | 34%            | 42.5%          | 42.5%          | 37.78%         |
| <b>BG</b>                      | 26%            | 32.5%          | 32.5%          | 28.89%         |
| <b>Repsol-YPF</b>              | 20%            | 25%            | 25%            | 22.22%         |
| <b>Tractebel</b>               | 10%            | ---            | ---            | ---            |
| <b>NGC</b>                     | 10%            | ---            | ---            | 11.11%         |

### *Additional Trains*

In June 2003, the government of Trinidad and Tobago announced its approval of a fourth Atlantic LNG train at Point Fortin. According to design plans, the new train will raise country's LNG production capacity to 15 million tons per year. The project includes the construction of the Cross Island pipeline that will transport natural gas from the country's eastern offshore fields to the fourth train, mentioned above. A 10-week strike in early 2004 slowed construction on Train 4 but operations resumed in April 2004. It remains unclear whether completion of the pipeline will be delayed beyond its earlier scheduled August 2005 start-up date. Both BPTT and EOG Resources are expected to supply Train 4 with natural gas. In February 2004, EOG Resources signed a provisional agreement to supply 30 Mmcf/d (gross) over a 20-year period. The commercial agreements for the contract are expected to be completed in the second half of 2004. EOG Resources already holds two 15-year supply contracts with the Nitro Ammonia plant and the M5000 methanol plant.

The government is also pursuing the construction of a fifth and a sixth train, in 2008 and 2010,

respectively. Trinidad's Prime Minister Patrick Manning has already begun promoting the fifth train, inviting all international companies which have gas reserves in the twin island-state to approach his administration and to indicate which reserves they would have available. This move could open up the country's LNG business to other companies, such as EOG Resources, BHP Billiton, and Venezuela's PdVSA. The Prime Minister has already indicated that the sixth train could process natural gas from Venezuela.



### Cuba

Total Cuban oil production has more than tripled since 1991. In 2003, total oil production was 56,000 bbl/d, up 16.6% year-on-year, while oil consumption averaged an estimated 209,000 bbl/d. Most domestic crude oil production consists of a heavy, sulfur-laden oil. Refineries process imported crude oil, mainly from Venezuela. Under a financial agreement with Venezuela, Cuba

reportedly purchases 78,000 bbl/d of oil and petroleum products under preferential conditions. The contract (the Caracas Accord), which was signed in October 2000, is set to expire in 2005. Cuba also imports petroleum products from other countries. In percentage terms, Cuban natural gas production has increased significantly since the early 1990s, but at 12.4 Bcf in 2002, it remains relatively insignificant. As of January 2004, proven crude oil and natural gas reserves stood at 750 million barrels and 2.5 Tcf, respectively.

### Exploration and Production

In June 2004, Norwegian deep-water oil rig Eirik Raude, under contract with Repsol-YPF, began drilling two wildcat wells of Cuba's northwest coast. If oil in commercially viable volumes is found, Cuba could be transformed from an oil importer to an exporter, ending the country's chronic energy shortages and filling the government's coffers with much-needed revenue. Repsol-YPF has reported that it plans to spend more than \$40 million on the project, on the basis that up to 1.6 billion barrels could potentially lie under the seabed. Repsol-YPF holds exploration rights to six blocks offshore northwest Cuba.

Currently, two Canadian companies, Sherrit International and Pebercan, are producing oil in Cuba, under joint-venture production agreements with state-owned oil company Cubapetroleo (Cupet). Sherritt holds ten PSA contracts, with most of the company's production coming from oil fields located at Yumuri, Varadero, Canasi and Puerto Escondido. Four of Sherritt's blocks are located offshore, adjacent to the blocks belonging to Repsol-YPF. In 1993, Pebercan began its operations in Cuba, after the company signed a PSA with Cupet. The company holds PSA contracts for five onshore blocks -- Varadero Profundo, 7, 12, 13 and 15. Pebercan has thus far only exploited Block 7, in partnership with Sherritt. In 2003, the company collected 2D onshore seismic data on Blocks 12, 13 and 15. In 2004, the company, in conjunction with its partners, plans to invest \$50 to \$60 million in Block 7, as well as to interpret and process the seismic data collected on Blocks 12, 13

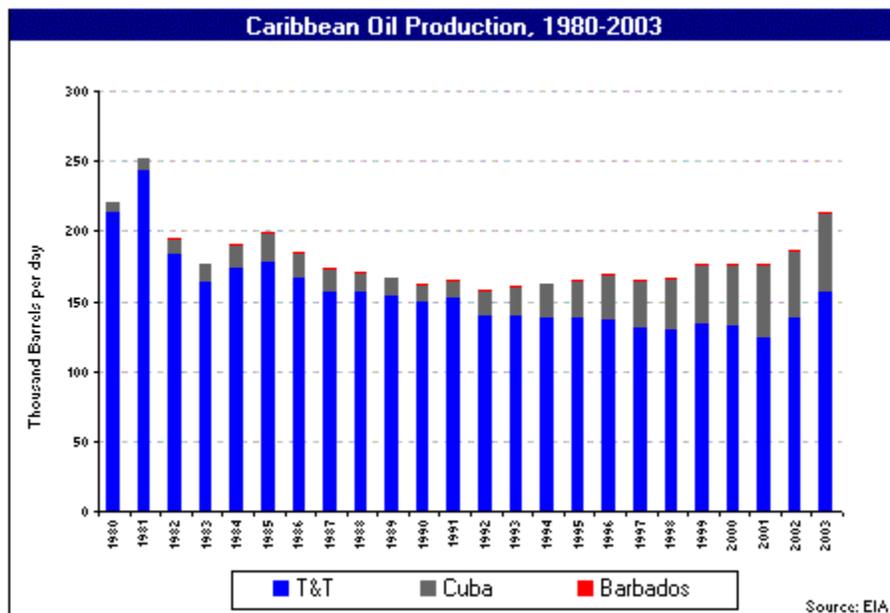
and 15, before Pebercan decides whether to begin drilling operations in the blocks. Pebercan's net oil production in Cuba was 6,238 bbl/d, according to the company's 2003 annual report.

Petrobras of Brazil reportedly is currently conducting a feasibility study to determine whether to resurrect exploration operations in Cuba. In 2001, Petrobras abandoned exploration efforts in Cuba following disappointing results.

### Barbados

Oil production for 2003 totaled 1,000 bbl/d. Oil production has declined slightly since 2001 despite efforts of Barbados National Oil Company (BNOC) to expand oil production. As Barbados has no refining capacity, its oil is refined in Trinidad, and then returned for domestic consumption. The island country produces limited amounts of natural gas, about 1.1 Bcf in 2002.

Despite small natural gas production volumes, Barbados currently meets domestic natural gas demand, but the island expects that it will be forced to import natural gas or find alternatives in order to meet future demand from power generation, households and the tourist industry.



### Other Regional Developments

In October 2003, Jamaica announced plans to seek over \$160 million in private financing to support its effort to build a regasification LNG terminal. The planned terminal is an effort to lower power costs, particularly for its electricity dependent aluminum and bauxite industries. Including natural gas in Jamaica's primary energy mix could reportedly reduce the country's energy costs by an estimated 30%. The plan, however, has stumbled, with the Jamaican government falling into disagreement with preferred supplier Trinidad and Tobago over price. Jamaica has argued that the island-country is entitled to same natural gas pricing that Trinidad's domestic industries, under terms of the Caribbean Single Market and Economy (CSME). Trinidad disagrees, stating that it is not obligated to provide favorable pricing. Jamaica reportedly has been in discussion with Algeria, Nigeria and Qatar as potential LNG suppliers. Oil and natural gas experts have suggested that LNG might not be the most cost-effective alternative for Jamaica, particularly with substantial upfront costs that an LNG terminal entails. Jamaica is also hoping to reopen exploration activities off its southern coast.

Grenada's government has also expressed interest in looking for oil and natural gas and is looking to Trinidad and Tobago as a potential partner in joint exploration operations. In the Bahamas, U.S.-based Kerr-McGee acquired in June 2003 100% interest in nine oil and natural gas offshore blocks. The blocks are located 100 miles north of Freeport, Grand Bahama Island, covering 6.5 million acres. In the first phase, Kerr-McGee plans to acquire and interpret seismic data for the area.

### Bahamas – LNG Regasification Terminals and Pipelines

Three proposed pipeline projects that would transport natural gas from LNG regasification terminals in the Bahamas to Florida have been vying for regulatory approval over the past two years. The three projects are Ocean Express (AES Corporation), Seafarer (El Paso Corporation), and Calypso (Tractebel - a subsidiary of France's Suez Lyonnaise Des Eaux).

### ***AES***

The Ocean Express project includes constructing of a regasification terminal at Ocean Cay (known as **AES Ocean LNG**) in the Bahamas and a pipeline connecting the terminal to a Florida Gas Transmission (FGT) interconnect in Broward County. The pipeline is expected to have a capacity of 842 Mmcf/d. Total length of the pipeline will be 94 miles, with a 54-mile section in U.S. jurisdiction and a 40-mile section in Bahamian jurisdiction. In January 2004, AES secured supply for 100% of its proposed terminal's capacity from Spain's Repsol-YPF (**project route**).

As of June 2004, AES secured regulatory approval from U.S. Federal Energy Regulatory Commission (FERC) a Certificate of Public Convenience and Necessity (CPCN) allowing for a construction, operation and maintenance of the pipeline (January 2004); from Broward County Department of Planning and Environment Protection (DPEP) an environmental resource license (February 2004); and from the Florida Department of Environmental Protection (FDEP) an environmental resource permit (May 2004). AES is still waiting for approval from the U.S. Minerals Management Service (MMS) and from the Bahamian government for pipeline and LNG terminal construction. The company submitted an environmental impact assessment to the Bahamian government in September 2002. AES still is seeking to secure an interconnection with FGT, allowing the company to delivery regasified LNG to the Florida pipeline system. AES and FGT reportedly remain at odds over a final agreement. This agreement with FGT is critical to AES' project as the company, under its agreement with FERC, must complete construction of the pipeline by January 2007, and this disagreement could force AES to miss the deadline.

### ***Tractebel***

Tractebel, which has received approval from FERC (CPCN) (March 2004) and the State of Florida (April 2004), is still waiting for approval from Bahamian authorities on its environmental impact assessment study, submitted December 2003. The project includes constructing a LNG regasification terminal in Freeport, on Grand Bahama Island, as well as a pipeline, known as Calypso, with a capacity of 832 Mmcf/d. The proposed pipeline would be 90 miles, with the U.S. section (36 miles) making landfall at Port Everglades, from where it will proceed onshore to a proposed interconnect with FGT. The Similar to AES, Tractebel has yet to an agreement with FGT on access to Florida's pipeline grid.

### ***El Paso***

As of June 2004, El Paso had yet to receive approval from FERC, the State of Florida or the Bahamian authorities for construction of the company's proposed pipeline-LNG project. In January 2004, FLP Group entered into an option agreement with subsidiaries of El Paso to participate in the ownership of the proposed LNG terminal (High Rock) Grand Bahama Island and an associated pipeline (Seafarer) that will transport natural gas from the terminal to Florida. In April 2004, FLP was awarded pipeline's full transport capacity, after bidding in the open season that was held from December 18, 2003 to January 19, 2004. The Seafarer system comprises 87-mile international section from the proposed High Rock terminal to the U.S.-Bahamas Exclusive Economic Zone (EEZ) boundary and a 41-mile U.S. segment from the EEZ to an onshore interconnect with FGT. The Seafarer will have a throughput-capacity of 750 Mmcf/d, with completion anticipated in 2008 (**project route**).

As of June 2004, it remained unclear which of the projects would eventually be realized, with

regulatory approvals holding them back. Outside analysts have suggested that only two projects are currently viable, given Florida's projected natural gas demand.

### **Refining**

Crude oil refining capacity in the Caribbean exceeds 1.8 million bbl/d. Smaller refineries are geared towards meeting local demand, while the larger refineries in Aruba, the Netherlands Antilles, Trinidad and Tobago, and the U.S. Virgin Islands serve both local and export markets. The Hovensa refinery of St. Croix, owned by Hess and the Venezuelan state oil company, PdVSA, is among the largest in the Western Hemisphere. PdVSA also operates the Curacao Isla refinery (the Netherlands Antilles), which the company is in process of expanding.

### **Recent Developments**

In March 2004, U.S.-based Valero Energy purchased the El Paso Corporation's 315,000-bbl/d Aruba refinery. Trinidad's Petrotrin plans to spend \$1 billion to upgrade its Point à Pierre refinery over the next 6 years in order to meet stricter environmental regulations and to produce higher quality products for export. In August 2002, the Trinidad and Tobago government granted Soreco Inc. approval for the construction of a 224,000-bbl/d refinery. The refinery, the Sabaneta Refinery Project, is expected to be completed in 2005. However, it remains unclear whether the project will move forward due to difficulties of securing \$2 billion in loans for the project.

### **Storage**

The Caribbean region has a number of independent petroleum storage facilities, with estimates of the capacity to store approximately 100 million barrels of crude oil and petroleum products. In addition to long-term storage arrangements, these facilities offer logistical options for petroleum shipments. Islands with storage facilities include: Bahamas, Trinidad, Puerto Rico, Saint Lucia, Aruba, and St. Eustatius, Curacao, and Bonaire of the Netherlands Antilles.

### **Exports to the United States**

In 2003, the continental United States imported about 487,000 bbl/d of petroleum from the Caribbean, of which about 86% were petroleum products. The U.S. Virgin Islands was the largest single regional exporter to the United States (about 288,000 bbl/d of petroleum products), followed by Trinidad and Tobago (98,000 bbl/d of total crude and petroleum products), The Netherlands Antilles (about 72,000 bbl/d of petroleum products), and the Bahamas (29,000 bbl/d of total crude and petroleum products). Trinidad and Tobago was the only exporter of crude oil (67,000 bbl/d) from the region to the United States.

### **ELECTRICITY**

As of December 2002, the installed electric generating capacity of the Caribbean Islands was 17 gigawatts (GW), of which the majority was thermal (mostly fuel oil). The islands' high reliance on fuel oil-generated capacity makes them highly vulnerable to international oil prices, although a majority of them import oil from Mexico and Venezuela at preferential prices. For example, Jamaica's imported oil bill reportedly was \$294 million in 1998 and \$813 million in 2003. The government has been considering plans, namely LNG and increased cogeneration from sugarcane processing waste, to diversify its power sources. Puerto Rico and Dominican Republic have already taken to diversify their power supply, with LNG imports beginning in 2000 and 2003, respectively. Overall, many of the Caribbean islands are too small to make LNG feasible, but, as mentioned above, efforts to build a natural gas pipeline, connecting the islands to Trinidad and Tobago, remains a viable option. In other areas, St. Lucia plans to begin exploring for geothermal energy, and, if found in commercial viable amounts, the investment in production capacity would follow. In general, the region needs additional capacity. Several countries experience power outages on a regular basis, with Haiti and the Dominican Republic's current power situation being described as

grim, according to reports.

### **The Dominican Republic**

The Dominican Republic has a long history of energy related problems. In the early 1990s, the Balaguer government invited independent power producers (IPPs) to build power plants on the island, selling their electricity under long-term contracts to state-owned electricity company Corporación Dominicana de Empresas Eléctricas Estatales (CDEEE). In 1999, the Fernandez administration privatized 50% stakes in generation and distribution operations, while retaining control over the island's transmission assets and hydropower plants. Companies such as Enron, Seaboard, Coastal (now El Paso) and Gener of Chile originally acquired stakes in generation operations, while Spain's Union Fenosa bought 50% stakes in regional distributors Edenorte and Edesur; U.S.-based AES bought the same percentage of Edeeste.

These measures, however, have reportedly yet to assure power supply to the general public, with the electricity sector continuing to be plagued by frequent blackouts, under-investment, and unpaid debt. Although many factors have contributed to the Dominican Republic's power problems in recent years, one of the most significant factors has been the substantial arrears that the country's government and the general public owe to power companies. The government amassed much of its arrears by providing a general electricity subsidy. Despite the government's plans in September 2002 to scrap the subsidy, as well as to establish task force to enforce power bill payments, there has reportedly been little change, namely, the government continues to subsidize all consumption up to a reported 300 kilowatthours per month and to accumulate debt.

In July 2003, a combination of rising fuel costs, consumer non-payment, and a rapidly depreciating peso due to a banking crisis made the situation unsustainable. Union Fenosa and AES reportedly faced solvency problems and accumulated large arrears to power generating companies. Power generators, in turn, were unable to purchase fuel and began periodically shutting down operations, with power shortages beginning in August 2003. In September 2003, the government decided to intervene and repurchased Union Fenosa's stakes in the two Edenorte and Edesur. There has been mixed reactions to the government's decision to renationalize the companies, as many remain skeptical that it will resolve country's problem: a reliable supply of electricity. Since September 2003, the situation has worsened, with power companies, lacking funds for fuel, shutting in power generation capacity. On June 22, 2004, AES reportedly suspended some of its generation operations stating that company could not purchase any more fuel until the government cleared its debt. Moreover, since December 2003, AES has been trying to sell its 50% stake in Estee.

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. 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 particularly, continues to hurt the solvency of private companies, which receive payments in pesos but pay debts and other services in dollars. AES, for example, reported in its 2003 annual report that the peso-devaluation resulted in foreign currency exchange losses of \$48 million from its power distributor Estee.

### **Jamaica**

In March 2001, the U.S.-based utility, Mirant Corporation, completed an 80% acquisition of formerly government-owned Jamaica Public Service Company (JPSC), a fully integrated company which generates, transmits, distributes and sells power on the island. JPSC is the main generator of powering on Jamaica, but also purchases power from three independent power producers under long-term contracts. 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, and is already conducting a feasibility study under a \$750,000 grant from the Japanese Trust Fund. The government is also considering wind and solar power as sources of power.

### Renewable Energy

In 2002, only Jamaica, Cuba, Trinidad and Tobago, and Dominican Republic generated power from non-hydro renewables (geothermal, solar, wind, wood and waste) electric sources. Overall, non-hydro renewables contribution to these countries' energy mix is significant. Cuba, for example, generated 0.91 Bkwh of electricity from non-hydro renewables in 2002, the most in the Caribbean region, but only 6.3% of the country's total energy produced. In 2002, the Dominican Republic was the largest producer of hydroelectricity in the Caribbean, with 0.5 Bkwh, but, on a percentage basis, hydropower's contribution was the largest in Dominica, accounting for 46% of total electricity generated and for 17% of the country's total primary energy consumption in 2002.

In Puerto Rico, Caribe Waste Technologies, in conjunction with Thermoselect, HDR Engineering, Zachry Construction Company, and Montenay Power, is moving forward with the development of the first **non-incineration waste-to-energy** power plant. The proposed plant will use a gasification process that will break down approximately 3,300 tons of waste per day into basic elements and electricity. The plant was initially proposed in 2000. A similar plant has been proposed for the U.S. Virgin Islands.

| Electricity in the Caribbean, 2002 |  |                                      |
|------------------------------------|--|--------------------------------------|
|                                    | 2002E<br>Installed<br>Capacity<br>(Gigawatt) | 2002E<br>Net<br>Generation<br>(Bkwh) |
| Antigua and Barbuda                | 0.03   | 0.11                                 |
| Aruba (NETH)                       | 0.15   | 0.81                                 |
| Bahamas, The                       | 0.40   | 1.72                                 |
| Barbados                           | 0.17   | 0.80                                 |
| Cayman Islands (U.K.)              | 0.12   | 0.41                                 |
| Cuba                               | 4.41   | 14.41                                |
| Dominica                           | 0.02   | 0.07                                 |
| Dominican Republic                 | 2.95   | 9.58                                 |
| Grenada                            | 0.04   | 0.15                                 |
| Guadeloupe (FR)                    | 0.42   | 1.16                                 |
| Haiti                              | 0.24   | 0.62                                 |
| Jamaica                            | 1.40   | 6.29                                 |
| Martinique (FR)                    | 0.12   | 1.18                                 |
| Montserrat (U.K.)                  | 0.001  | 0.002                                |
| Netherlands Antilles (NETH)        | 0.21   | 1.00                                 |
| Puerto Rico                        | 4.90   | 22.09                                |
| Saint Kitts and Nevis              | 0.02   | 0.11                                 |
| Saint Lucia                        | 0.07   | 0.27                                 |
| Saint Vincent/Grenadines           | 0.02   | 0.09                                 |

|                                |              |              |
|--------------------------------|--------------|--------------|
| Trinidad and Tobago            | 1.42         | 5.74         |
| Virgin Islands, U.S.           | 0.32         | 1.04         |
| Virgin Islands, British (U.K.) | 0.01         | 0.04         |
| <b>Total</b>                   | <b>17.44</b> | <b>67.69</b> |

| Primary Energy Consumption in the Caribbean, 2002 |                            |              |             |             |             |             |
|---|----------------------------|--------------|-------------|-------------|-------------|-------------|
| Country/Territory                                 | Total<br>(quadrillion Btu) | Petroleum    | Natural Gas | Coal        | Hydro       | Other       |
| Antigua and Barbuda                               | 0.007                      | 100%         | ---         | ---         | ---         | ---         |
| Aruba (NETH)                                      | 0.013                      | 100%         | ---         | ---         | ---         | ---         |
| Bahamas, The                                      | 0.047                      | 100%         | ---         | ---         | ---         | ---         |
| Barbados  | 0.023                      | 95%          | 5%          | ---         | ---         | ---         |
| Cayman Islands (U.K.)                             | 0.005                      | 100%         | ---         | ---         | ---         | ---         |
| Cuba  | 0.474                      | 94.9%        | 2.7%        | 0.1%        | 0.3%        | 1.9%        |
| Dominica  | 0.002                      | 83%          | ---         | ---         | 17%         | ---         |
| Dominican Republic                                | 0.265                      | 96%          | ---         | 2%          | 2%          | ---         |
| Grenada   | 0.003                      | 100%         | ---         | ---         | ---         | ---         |
| Guadeloupe (FR)                                   | 0.027                      | 100%         | ---         | ---         | ---         | ---         |
| Haiti   | 0.026                      | 90%          | ---         | ---         | 10%         | ---         |
| Jamaica   | 0.150                      | 97%          | ---         | 1.5%        | 0.8%        | 0.7%        |
| Martinique (FR)                                   | 0.028                      | 100%         | ---         | ---         | ---         | ---         |
| Montserrat (UK)                                   | 0.001                      | 100%         | ---         | ---         | ---         | ---         |
| Netherlands Antilles (NETH)                       | 0.157                      | 100%         | ---         | ---         | ---         | ---         |
| Puerto Rico (US)                                  | 0.482                      | 93.9%        | 4.8%        | 0.9%        | 0.5%        | ---         |
| Saint Kitts and Nevis                             | 0.001                      | 100%         | ---         | ---         | ---         | ---         |
| Saint Lucia                                       | 0.005                      | 100%         | ---         | ---         | ---         | ---         |
| Saint Vincent/Grenadines                          | 0.003                      | 91%          | ---         | ---         | 9%          | ---         |
| Trinidad and Tobago                               | 0.502                      | 11.8%        | 88.1%       | ---         | ---         | 0.1%        |
| Virgin Islands, U.S.                              | 0.199                      | 97%          | ---         | 3%          | ---         | ---         |
| Virgin Islands, British (U.K.)                    | 0.001                      | 100%         | ---         | ---         | ---         | ---         |
| <b>Total/Average</b>                              | <b>2.421</b>               | <b>93.1%</b> | <b>4.6%</b> | <b>0.4%</b> | <b>1.8%</b> | <b>0.1%</b> |

### Crude Oil Refining Capacity (January 1, 2004)

| Country/Territory    | Company/Location                               | Capacity<br>(barrels/day) |
|----------------------|--|---------------------------|
| <i>Aruba (NETH)*</i> | (Valero Energy) Aruba Refining Co./San Nicolas | 315,000                   |
|                      | Cienfuegos                                     | 76,000                    |
| <i>Cuba</i>          | Ermonos Dias/Santiago                          | 101,500                   |
|                      | Niko Lopes/Habana                              | 121,800                   |
|                      | Serhio Soto/Cabaiguan                          | 2,100                     |
|                      | <i>Subtotal, Cuba</i>                          | <i>301,400</i>            |

|                                    |  |                  |
|------------------------------------|--|------------------|
|                                    | Falconbridge Dominicana/Bonao                                | 16,000           |
| <i>Dominican Republic</i>          | Refinería Dominicana de Petróleo/Haina                       | 36,000           |
|                                    | <i>Subtotal, Dominican Republic</i>                          | <i>52,000</i>    |
| <i>Jamaica</i>                     | Petrojam/Kingston  | 34,200           |
| <i>Martinique (FR)</i>             | Societe Anonyme de la Raffinerie des Antilles/Fort-de-France | 17,000           |
| <i>Netherlands Antilles (NETH)</i> | Refineria Isla Curacao/Emmestad                              | 320,000          |
|                                    | Caribbean Petroleum Refining/ Bayamon                        | 42,000           |
| <i>Puerto Rico (US)*</i>           | Shell Chemical/Yabucoa                                       | 69,500           |
|                                    | <i>Subtotal, Puerto Rico</i>                                 | <i>111,500</i>   |
| <i>Trinidad &amp; Tobago</i>       | Petroleum Co. of Trinidad & Tobago/Pointe-à-Pierre           | 165,000          |
| <i>U.S. Virgin Islands</i>         | Hovensa/St. Croix  | 525,000          |
| <b>TOTAL</b>                       | <b>14 Plants</b>   | <b>1,841,100</b> |

Source: *Oil and Gas Journal, January 2004 and company sources.*

\* Source: *EIA Petroleum Supply Annual 2002.*

*Sources for this report include: Business News Americas; CIA World Factbook; Dow Jones News wire service; Global Insight; Economist Intelligence Unit ViewsWire; Energy Day; Financial Times; Latin America Monitor; Latin American Newsletters; Lloyd's List; Oil and Gas Journal; Oil Daily; Petroleum Economist; International Market Insight Reports; U.S. Energy Information Administration; Wall Street Journal; World Gas Intelligence; World Markets Analysis.*

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### Associations and Organizations

[CARICOM - The Caribbean Community](#)

[CARILEC - The Association of Electric Utilities in the Caribbean area](#)

[Official Home Page of the Free Trade Area of the Americas](#)

[The Organization of American States](#)

[The Organization of Eastern Caribbean States](#)

### Electricity

[AES Corporation](#) (power plants in Dominican Republic and Puerto Rico)

[Anguilla Electricity Company Ltd](#)

[Bahamas Electricity Corporation](#)

[Barbados Light and Power Company](#)

[Bermuda Electric Light Company Ltd](#)  
[Caribbean Utilities Company Ltd](#) (Cayman Islands)  
[Cogentrix Dominican Republic](#)  
[Corporación Dominicana de Empresas Eléctricas Estatales](#)  
[Electricité de France International](#) (Guadeloupe)  
[El Paso Corporation](#) (power plant equity stake in Dominican Republic)  
[Globeleq](#) (power plant equity stakes in Dominican Republic, St. Lucia and Jamaica)  
[Grenada Electricity Services Ltd \(GRNELEC\)](#)  
[Jamaica Public Service Company Ltd](#)  
[Kompania di Produkshon di Awa i Elektrisidat di Korsou, N.V.](#) (Curaçao)  
[Organismo Coordinador del Sistema Eléctrico Interconectado de la República Dominicana](#)  
[Puerto Rico Electrical Power Authority \(PREPA\)](#)  
[St. Lucia Electricity Services Ltd](#)  
[Trinidad & Tobago Electricity Commission](#)  
[Water en Energiebedrijf N.V.](#) (Aruba)  
[WRB Enterprises](#) (owns and operates GRENELEC)

### **Government**

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

### **Oil and Natural Gas**

[Perbercan](#)  
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### ***Bahamas Pipeline/LNG Projects***

[AES Ocean Express LCC](#)  
[AES Ocean LNG, Ltd](#)  
[Calypso Tractebel](#)  
[Seafarer Pipeline](#)

### ***Trinidad and Tobago***

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[BP Trinidad and Tobago \(BPTT\)](#)  
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File last modified: July 2, 2004

Contact: Charles Esser  
[charles.esser@eia.doe.gov](mailto:charles.esser@eia.doe.gov)  
Phone: (202) 586-6120  
Fax: (202) 586-9753

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