THE MINERAL INDUSTRY OF

TRINIDAD AND TOBAGO

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Trinidad and Tobago's gross domestic product (GDP) grew in real terms by 2.8% in 1996 (Central Bank of Trinidad and Tobago, 1997, p. 3). Its economy continued to depend heavily on crude oil and natural gas, but the growth in GDP in the nonenergy sector outpaced the growth in the energy sector. Increases in agriculture, communication, construction, storage, and transport contributed significantly to the increase of GDP.

The growth of the energy sector was modest (1.8%), but the petrochemicals subsector increased by 12.3%. The growth in construction was directly related to the construction of ammonia, iron carbide, and methanol plants, which use natural gas as feed or as a source of inexpensive energy.

In 1996, the energy sector contributed to 27% of Trinidad and Tobago's GDP, 31.4% of total Government revenue, and 52% of total exports.

In general, the energy sector has changed significantly in the last 20 years as output of crude petroleum and petroleum refinery products has decreased while that of natural gas has increased significantly. In 1996, production of crude petroleum and refinery products was only about 68% and 40% of the levels produced in 1977, respectively (Central Bank of Trinidad and Tobago, 1997 p. 35; Hyde, 1982). However, production of marketed natural gas in 1996 was three-times the level produced in 1977. The transformation of the energy sector is the result of reduced reserves of crude petroleum and large discoveries of natural gas. Trinidad and Tobago has effectively developed an industrial sector based on the availability of inexpensive natural gas for energy and feed material. A number of international companies are expanding existing facilities or constructing new facilities, and other companies searching for low energy costs are evaluating Trinidad and Tobago for their new facilities. Because of the abundant natural gas reserves, Trinidad and Tobago has become an important producer and the world's second leading exporter of ammonia, after Russia. The country also produces asphalt, cement, iron and steel, limestone, and byproduct sulfur. (*See table 1.)*

In 1996, the Government of Trinidad and Tobago continued to produce a significant portion of the country's crude petroleum through the Government-owned Petroleum Company of Trinidad and Tobago Ltd. (Petrotrin) and through Petrotrin's 66 2/3% share of Trinmar Ltd., a joint venture with Texaco Trinidad Inc. Amoco Trinidad Oil Co. Ltd. was also a significant producer *(See table 2.)* Production of crude petroleum decreased slightly in 1996 from that of 1995. Proven reserves of crude petroleum were 551 million barrels at yearend 1995 (U.S. Embassy, Port of Spain, Trinidad and Tobago, 1997, p. 1). These reserves would support the present production level of about 47 million barrels per year for less than 12 years. However, exploration interest in Trinidad and Tobago has increased in recent years. In 1995, Trinidad and Tobago began a phase of exploration by awarding new exploration sharing contracts to international petroleum companies. Phase II of the exploration began in August 1996 with competitive bidding of nine unexplored offshore blocks. The bidding, in deeper waters than previously explored in Trinidad and Tobago, was scheduled to close at the beginning of 1997 (U.S. Embassy, Port of Spain, Trinidad and Tobago, 1996).

Petrotrin is the sole producer of petroleum refinery products in Trinidad and Tobago. It owns two refineries with a total capacity of about 300,000 barrels per day. In 1996, production of petroleum refinery products was 47 million barrels (about 42% of capacity). All of the production was from Petrotrin's refinery in Point-a-Pierre. The other refinery in Point Fortin has been closed since 1993, but a U.S. firm is evaluating bringing the refinery on-stream by 1999 (U.S. Embassy, Port of Spain, Trinidad and Tobago, 1997, p. 2).

In 1996, Trinidad and Tobago's ammonia production capacity was almost 2.6 million tons (Mann, 1997). The major producer was Arcadian Trinidad Ltd., the owner of three ammonia plants, with a capacity of about 1.3 million tons per year. Norsk Hydro A/S, of Norway, is also an important producer of ammonia in Trinidad and Tobago. It owns a 250,000-ton-per-year ammonia plant (Federation Chemicals) and it has a 49% interest in a two-plant joint venture with the Government (Tringen I and Tringen II) with a capacity of 1 million tons per year. Trinidad and Tobago's ammonia capacity continued to be expanding in 1996. Arcadian was constructing a 700,000-ton capacity plant scheduled for completion in mid-1998. Another new plant, with a 675,000-ton capacity, owned by a joint venture between Farmland Industries (50%) and Mississippi Chemical (50%) is also scheduled for completion in 1998. In addition, Norsk Hydro plans to expand its existing capacity of Federation Chemical to 300,000 tons per year and upgrade and expand the capacity of its join-venture plants with the Government. By 2000, Trinidad and Tobago's ammonia capacity should exceed 3.6 million tons, a significant increase that should solidify the country's position as a significant producer and a leading exporter of ammonia. Unlike all other world leading producers of ammonia (the United States, India, Russia, Canada, Indonesia, Ukraine, and Mexico, in descending order of output) most of Trinidad and Tobago's output is exported. The main destination for Trinidad and Tobago's ammonia exports is the United States.

One of the major projects being developed based on the

natural gas resources in Trinidad and Tobago is a $1 billion, 3-million-ton Liquefied Natural Gas (LNG) plant. The plant, being built by Atlantic LNG was being considered for expansion to 6-million-ton capacity even before completion (James, 1996). The plant, a joint venture of Amoco Trinidad, British Gas Trinidad, Repsol, Cabot Trinidad, and the National Gas Company of Trinidad and Tobago (NGC), is scheduled for completion by 1999.

Caribbean Ispat Ltd., a subsidiary of Ispat International of India, owns the only steel producer in Trinidad and Tobago. The company purchased the plant in 1994, after leasing it from the Government for 5 years (James, 1997a). The direct-reduced iron based plant produced 695,000 of crude steel in 1996, a 5% decrease from that of 1995. The company's output of wire rod was 575,400 tons, 96% of which was exported. Ispat America, another subsidiary of Ispat International, announced plans to build another direct-reduced iron plant in Trinidad (Metal Bulletin, 1997). The 1.36-million-ton, $250 million Midrex plant to be located next to Caribbean Ispat's steel plant in the Point Lisas industrial park, is scheduled to begin operating in late 1998, and will supply direct-reduced iron to Ispat International's steel plants.

Cleveland Cliffs and LTV Steel of the United States, and Lurgi Metallurgie GmbH of Germany, signed a letter of intent to build a hot-briquette direct-reduced iron plant in Trinidad (Mining Journal, 1996a). The companies formed a joint venture, Cliffs and Associates, with Cleveland Cliffs and LTV Steel owning 46.5% each and Lurgi owning the remaining 7% (Metal Bulletin, 1996). In September, Cliffs and Associates secured a gas supply contract with NGC. Construction of the $150 million plant was scheduled to begin in mid-1998. The plant will use Lurgi's Cicored process to produce 500,000 tons of hot-briquette direct-reduced iron from ore fines (New Steel, 1996). Companhia Vale do Rio Doce of Brazil will provide the iron ore feedstock under a long-term contract (James, 1997b).

In 1996, Norsk Hydro was conducting a feasibility study for a 200,000-ton aluminum smelter in Trinidad and Tobago (Mining Journal, 1996b). The country was one of the places being considered by the company in an effort to develop production capacity outside of Europe. Securing a gas supply from NGC was one of the aspects being evaluated by Norsk Hydro.

Trinidad and Tobago's economic future will continue to be dependent on the energy sector. The diversification of its industry with the development of the petrochemical and iron and steel sectors has been possible only because of its natural gas resources. Because Trinidad and Tobago's domestic demand for these products is very small, the country will continue to rely on the needs of their major trading partners for their production.

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Major Sources of Information

Ministry of Energy
Port of Spain, Trinidad, W.I.
Telephone: (809) 623-6708
Central Bank of Trinidad and Tobago
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Port of Spain, Trinidad, W.I.

TABLE 1
TRINIDAD AND TOBAGO: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity		1992	1993	1994	1995	1996
Asphalt, natural 2/		23,400 r/	21,500 r/	21,000 r/	21,000 r/ e/	21,000 e/
Cement, hydraulic 2/		482,000	527,200 r/	582,900 r/	558,500 r/	617,100
Gas, natural 2/						
Gross	million cubic meters	7,462 r/	7,070 r/	7,690 r/	7,996 r/	9,033
Marketed	do.	5,292 r/	5,230 r/	5,943 r/	6,119	7,049
Iron and steel:						
Direct-reduced iron 2/		647,700 r/	714,500 r/	946,600 r/	1,039,900 r/	954,500
Steel, crude		553,000	519,000 r/	631,000	735,000 r/	695,000
Semimanufactures (billets) 2/		552,800 r/	492,100 r/	630,200 r/	676,100 r/	575,400
Lead, refined (secondary) e/		1,800	1,700	1,600	1,600	1,600
Natural gas liquids 2/	thousand 42-gallon barrels	3,430 r/	3,257 r/	3,485 r/	3,747 r/	4,460
Nitrogen, N content of ammonia	thousand tons	1,570	1,462	1,649 r/	1,696	1,801
Petroleum:						
Crude 2/	thousand 42-gallon barrels	49,549 r/	45,480 r/	48,009	48,111 r/	47,171
Refinery products 2/	do.	41,056 r/	37,269 r/	36,227 r/	34,391 r/	41,067
Stone, limestone e/	thousand tons	1,420 3/	1,580 3/	1,600	1,600	1,600
Sulfur, byproduct of petroleum e/ 4/		5,000	5,000	4,500	4,500	4,500

e/ Estimated. r/ Revised.
1/ Table includes data available through July 1997.
2/ Source: Central Bank of Trinidad and Tobago Annual Economic Survey 1996.
3/ Reported figure.
4/ Sulfur as a byproduct of natural gas may be produced, but information is inadequate for reliable output estimates.

TABLE 2
TRINIDAD AND TOBAGO: STRUCTURE OF THE MINERAL INDUSTRY FOR 1996

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity holders	Location of main facilities	Annual capacity
Anhydrous ammonia	Trinidad Nitrogen Co. Ltd. (Norsk Hydro AS, 49%; Government , 51%)		
	Tringen I	Point Lisas, Caroni Co.	450.
	Tringen II	do.	550.
Do.	Arcadian Trinidad Ltd., (Arcadian Corp. , U.S., 100%)	do. (three plants)	1,325.
Do.	Federation Chemicals (Norsk Hydro A/S, 100%)	do.	250.
Asphalt	Lake Asphalt of Trinidad and Tobago (1978) Ltd. (Government, 100%)	Brighton, St. Patrick Co.	60.
Cement	Trinidad Cement Ltd. (Cemex of Mexico, 20%; Government, 80%)	Claxton Bay, Caroni Co.	540 cement. 600 clinker.
Iron and Steel	Iron and Steel Co. of Trinidad and Tobago (Caribbean Ispat Ltd.)	Point Lisas, Caroni Co.	900 DRI. 700 steel. 600 wire rod.
Do.	Nucor Iron Carbide Inc. (Nucor, U.S, 80%; Samitri, Brazil, 20%)	do.	320 iron carbide.
Petroleum:			
Crude	Amoco Trinidad Oil Co. Ltd. (Amoco International Oil Co. Ltd., 100%)	Banyan, Cassia, Flambouyant, Immortelle, Poui, Samaan, and Teak	60,000. 1/
Do.	Petroleum Company of Trinidad and Tobago Ltd. (Petrotrin) (Government, 100%)	Various	30,000. 1/
Do.	Trinmar Ltd. (Texaco Trinidad Inc, 33 1/3%, Petrotrin, 66 2/3%)	Soldado fields, offshore in Gulf of Paria	40,000. 1/
Products	(Petrotrin) (Government, 100%)	Point Fortin, St. Patrick Co.	145,000. 1/ 2/
Do.	do.	Point-a-Pierre, Victoria Co.	160,000. 1/

1/ Barrels per day
2/ Closed in 1993.