

COUNTRY ANALYSIS BRIEFS

Bangladesh

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General Background

With its large potential natural gas reserves, Bangladesh is becoming increasingly important to world energy markets.

In 2005, Bangladesh's real gross domestic product (GDP) grew at 5.4 percent, down somewhat from the 2004 growth rate of 6.3 percent. Economic forecasts are at 5.8 percent for 2006. Economic performance has been steady since 1990, with annual GDP growth averaging 5 percent. However, Bangladesh remains one of the world's poorest and most densely populated countries, and faces a number of obstacles to further growth and development.



Despite recent growth, Bangladesh faces numerous challenges. According to the International Monetary Fund (IMF), the country is hampered by weak institutions and inadequate infrastructure. Bangladesh remains dependent on foreign aid and worker remittances for a large percent of its economic activity. In 2004, the government of Bangladesh estimated that remittances from expatriates totaled \$3.3 billion, or 6 percent of nominal GDP. The country also remains vulnerable to natural disasters such as cyclones, floods, and droughts. This is especially true in the agriculture sector, which employs about two-thirds of the labor force and accounts for 22 percent of GDP.

Bangladesh is a member of the [South Asian](#) Association for Regional Cooperation (SAARC), along with Bhutan, [India](#), Maldives, Nepal, [Pakistan](#) and Sri Lanka. SAARC aims to promote regional economic cooperation as well as economic and social development in South Asia. In 2004, the seven SAARC members agreed to create a South Asian Free Trade Area (SAFTA), which came into force on 1 January 2006. SAFTA aims to reduce tariffs and other trade barriers between the seven member countries.

Oil

Bangladesh has small oil reserves and imports almost all of its crude oil and petroleum products.

According to *Oil & Gas Journal* (OGJ), Bangladesh has 28 million barrels of proven oil reserves as of January 2006, down from 56 million barrels in 2005. The country produced an estimated 4,000 barrels per day (bbl/d) of oil in 2005, flat from the previous year. Bangladesh's relatively low level of domestic reserves and production capacity make it a net oil importer, as the country

consumed an estimated 91,000 bbl/d of oil in 2005.

Exploration and Production

To date oil exploration has been rather unsuccessful in Bangladesh, with most companies choosing to focus instead on the country's plentiful natural gas reserves. Exploration and production activities are primarily carried out by the Bangladesh Petroleum Exploration and Production Company (BAPEX), a subsidiary of the state-owned Bangladesh Oil, Gas & Mineral Corporation (Petrobangla). However, the country has also initiated several Production Sharing Contracts (PSCs) with foreign oil companies and has employed tax incentives to attract foreign company involvement.

In 1993, after the formation of a new National Energy policy, the government of Bangladesh divided its territory and offshore sites into 23 blocks and opened them to foreign bidding for oil and gas exploration. During the First Bidding Round in 1993, eight blocks were awarded to four companies through PSCs. In 1997 during the Second Bidding Round, three PSCs were awarded covering four additional blocks. The government planned to hold a third round of bidding focusing on the offshore Bay of Bengal region in 2006, but it has so far been delayed. Before new bidding is opened, the government will complete a geological and seismic survey to identify potential exploration sites. Bangladesh must also accurately mark its deep sea territory and settle ongoing maritime border disputes with India and Myanmar.

Refining/Downstream

According to *OGJ*, Bangladesh has 33,000-bbl/d of crude oil refining capacity at Eastern Refinery Ltd.'s (ERL) facility at Chittagong. The ERL complex is a subsidiary of the state-owned Bangladesh Petroleum Corporation (BPC).

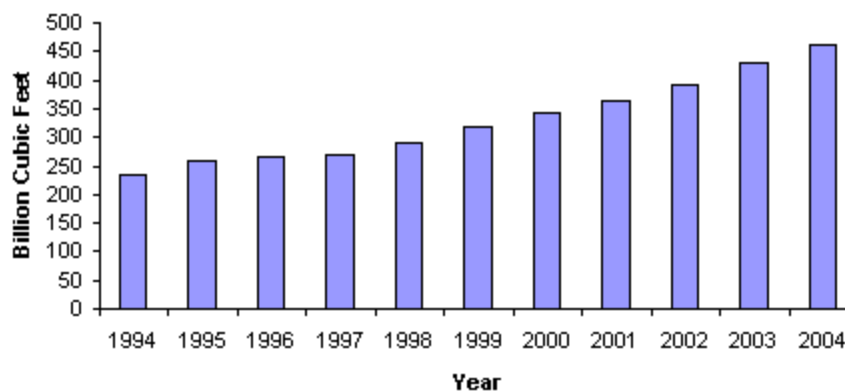
Natural Gas

Natural gas production in Bangladesh has more than doubled from a decade earlier.

Natural gas reserve estimates vary widely for Bangladesh. *Oil & Gas Journal (OGJ)* reported that Bangladesh had 5 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2006, down significantly from *OGJ*'s January 2005 estimate of 10.6 Tcf. It is not clear why the large downgrade of Bangladesh's natural gas reserves occurred. In mid-2004, estimates from state-owned Petrobangla put net proven reserves at 15.3 Tcf. Bangladesh's Ministry of Finance estimated in 2004 that the country holds 28.4 Tcf of total gas reserves, of which 20.5 Tcf is recoverable. In June 2001, the U.S. Geological Survey estimated that Bangladesh contains 32.1 Tcf of additional "undiscovered reserves."

While estimates of the country's reserves vary, natural gas is Bangladesh's only significant source of commercial energy. The government of Bangladesh estimates that natural gas accounts for 80 percent of the country's commercial energy consumption. In 2004, Bangladesh produced 463 billion cubic feet (Bcf) of natural gas, up from 429 Bcf in 2003 and more than doubling the 1994 level. Despite increasing production levels, Bangladesh has never been a net exporter of natural gas. Given the uncertain size of the country's natural gas reserves, the government has been reluctant to export natural gas and has instead focused on meeting current and future domestic energy needs.

Natural Gas Production in Bangladesh, 1994-2004



Source: EIA International Energy Annual

Exploration and Production

Natural gas exploration and production is dominated by three state-owned companies, all of which are subsidiaries of Petrobangla. Bangladesh's largest gas production company, Bangladesh Gas Fields Company Ltd. (BGFCL), operates the Sylhet, Kailashtila MSTE, Kailashtia, Rashidpur, and Beanibazar gas fields. From these five fields, BGFCL produces 810 million cubic feet per day (Mmcf/d), or roughly half of the country's total natural gas production. The Sylhet Gas Field Company Ltd. (SGFCL) is Bangladesh's second largest production company, producing 162 Mmcf/d of natural gas. SGFCL operates the Sylhet, Kailashtila MSTE, Kailashtia, Rashidpur, and Beanibazar gas fields. The third state-owned company involved in natural gas production and exploration is BAPEX, which produces about 58 Mmcf/d of natural gas from the Salda and Fenchuganj fields.

To encourage natural gas exploration, the government opened the natural gas sector to foreign investment in 1993, after initiating the First Bidding Round of Production Sharing Contracts. Foreign companies today produce 501 Mmcf/d of natural gas from four gas fields. The leading foreign producer is Chevron, which produces 331 Mmcf/d from the Jalalabad and Moulavibazar fields. Chevron also expects to begin producing an estimated 300 Mmcf/d of natural gas from the Bibiana field in October 2006. The UK's Cairn Energy is the second largest foreign natural gas production company, producing 146 Mmcf/d of natural gas from Bangladesh's lone offshore gas field at Sangu. Canada's Niko Resources has been involved in disputes with the government after two blowouts that occurred in 2005 at the company's Chattak (formerly known as Tengratila) gas field.

There are several other fields that may prove to hold additional natural gas resources. Petrobangla estimates that the Bibiana field, currently operated by Chevron, may contain as much as 2.4 Tcf in recoverable natural gas reserves. Offshore natural gas fields also present large possible reserves, although minimal offshore exploration has occurred to date due to lingering border disputes with India and Myanmar.

Pipelines

Domestic

Bangladesh's domestic natural gas pipeline network is operated by the Gas Transmission Company Ltd. (GTCL), a subsidiary of Petrobangla. The company began with the 120-mile pipeline connecting the Kailashtila gas field to Ashuganj. Later GTCL implemented the 40-mile Ashuganj-Bakhrabad pipeline, which completed the interconnection of the national gas grid. GTCL currently operates 480 miles of pipelines and is the sole natural gas transmission company in Bangladesh.

Most of Bangladesh's pipeline network is concentrated in the more populated and developed eastern zone of the country. In 2000, Bangladesh completed a 20-mile pipeline across the Jamuna River, which separates the eastern and western parts of the country. In 2001, this pipeline was extended to the Baghabari natural gas-fired power plant, and a network of pipelines in the west is now starting to take shape. In June 2006, the government of Bangladesh and the Asian Development Bank (ADB) signed a \$230 million loan package to improve Bangladesh's

natural gas infrastructure, specifically designed to aid economic development in the western part of the country. According to the ADB, the project includes four gas transmission pipelines, measuring 220 miles, which will transport about 360 Mmcf/d of natural gas to the 15 million people living in west Bangladesh.

International

Since 1997, Bangladesh has been working to reach an agreement with its neighbors for the establishment of a 560-mile pipeline to transport natural gas from Myanmar to India through its territory. In January 2005, the Bengali government approved the project, contingent upon India and Myanmar accepting trade concessions and other stipulations. So far, India has not accepted the demands of Bangladesh, and GAIL, India's state-owned pipeline operator, completed a feasibility study in June 2006 of an 870-mile pipeline from Myanmar that would circumvent Bangladesh altogether. However, this option would significantly increase transport costs of natural gas from Myanmar, and the pipeline would have to travel through unstable areas in northeastern India.

Coal

The government of Bangladesh is hoping to exploit its mostly untapped coal reserves to relieve pressures on the country's depleting natural gas reserves.

Bangladesh has small coal reserves, and has consumed little coal in the past. Bangladesh began commercial coal production in April 2003 with the opening of the Barapukuria Coal Mine, which is expected to produce one million short tons of coal per year (Mmst/y), principally for electricity generation. This mine is being used to fuel the 250-MW Barapukuria Coal-Fired Power Plant in Parbotipur, which began commercial operation in January 2006. Another possible coal mining project at Khalashpir is under consideration as well.

Despite Bangladesh's small reserves, the government has recently promoted the development of coal to ease its reliance on natural gas for power generation. Bangladesh's coal reserves have so far not been developed, mainly owing to a lack of domestic financing. To attract investment, the government has opened the coal sector to foreign bidding. Although estimates vary, Bangladesh's Energy Ministry judges that the country has up to 2.7 billion short tons of high-quality coal reserves. According to the latest EIA figures, in 2004 Bangladesh has no domestic coal reserves or production. The government is currently crafting a new national coal policy that will govern foreign involvement in Bangladesh's coal sector. Some analysts anticipate the new coal policy will hike the royalty rate on coal projects from 6 percent to 16 percent and place limits on coal exports from the country, among other guidelines.

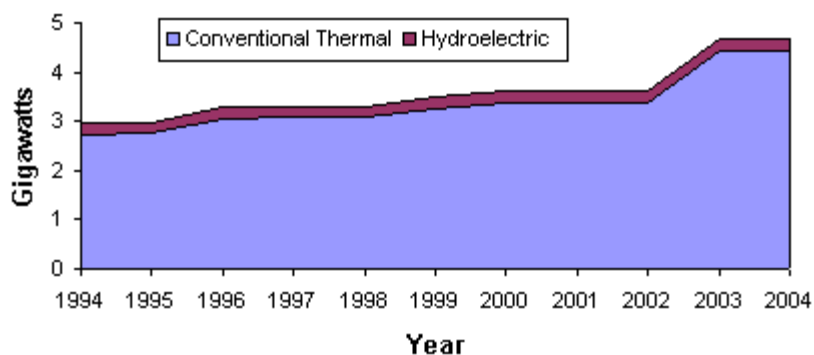
In July 2005, UK-based Asia Energy Corp. (AEC) submitted a proposal to develop a coal mine in Bangladesh's Phulbari region. According to a Scheme of Development and Feasibility Study submitted to the government, AEC declares that the Phulbari site contains an estimated 572 million short tons of recoverable coal reserves. The initial investment in the project would be \$1.4 billion, and the open-pit mine is expected to produce 15 Mmst/y of coal to fuel a planned 500-megawatt power station. AEC is awaiting formal approval from the government, which has declared that it will not approve any new coal development projects until its new coal policy is enacted. AEC also faces a number of other obstacles in gaining approval for the project. According to the Feasibility Study submitted by Asia Energy, up to 40,000 people would gradually be relocated away from the Phulbari area that currently live on or near the planned mining locations.

Electricity

Almost all of Bangladesh's commercial electricity supply comes from natural gas-fired plants.

In 2004, Bangladesh had 4.7 gigawatts (GW) of installed generation capacity, up from 3.6 GW in 2002. 95 percent of this capacity was conventional thermal power (primarily natural gas) and the remaining 5 percent hydroelectric power. Electricity generation per capita is one of the lowest in the world, at about 155 kilowatt-hours (kwh) in 2005. According to the World Bank, only 32 percent of the population has access to electricity, primarily in the more developed eastern zone of the country. Since much of the country is disconnected from the national electricity grid, noncommercial sources of energy such as biomass are estimated to represent more than half of Bangladesh's energy consumption.

Installed Electricity Generation Capacity by Type, 1994-2004



Source: EIA International Energy Annual

Sector Organization

Bangladesh's Ministry of Power, Energy, and Mineral Resources (MPEMR) controls the power sector in Bangladesh. This is done primarily through the Power Division and Power Cell, which were created in 1998 with a mandate of managing, regulating, and leading reforms in the power sector. Generation and distribution activities have been opened to foreign and private sector involvement, although both sectors remain dominated by state-owned entities. According to Power Cell, in 2004 the Bangladesh Power Development Board (BPDB) generated 3,630 MW of the country's 4,920 MW of total commercial electricity, or about 74 percent of the total installed capacity. All grid-connected electricity transmission is carried out by state-owned Power Grid Company of Bangladesh (PGCB).

Given the poor state-run electricity infrastructure, in 1996 the government issued the "Private Sector Power Generation Policy of Bangladesh" and began to solicit proposals from independent power producers (IPPs) in hopes of easing the country's electricity supply shortage. Several IPPs broke ground on new power stations after 1996, and more recently Bangladesh has attracted large investment proposals. In May 2005, U.S.-based Vulcan Energy signed a memorandum of understanding (MOU) with the government of Bangladesh for the construction of \$1.6 billion in gas, coal, and fertilizer projects that would bring an additional 1,800 MW in generating capacity online. The Tata group of companies in India is also mulling \$3 billion in energy sector projects in Bangladesh, including a 500-MW coal-fired power station and a 1000-MW gas-fired generator. However, in July 2006 company representatives announced that Tata would not proceed with the investment plans.

In addition to large IPP projects, in April 1998, Bangladesh adopted a "Small Power Generation Policy," which encourages development of small local generation projects of up to 10-MW in capacity in underserved areas. The country has an active rural electrification program, which is supported by the \$280 million loan package from the ADB's Power Sector Development Program (PSDP) initiated in 2003. Aside from improving electricity infrastructure in rural areas, the PSDP aims to build long-term institutional capacity, improve efficiency, and promote private sector participation in Bangladesh's power sector.

Conventional Thermal

Bangladesh generated 16.9 billion kilowatthours of electricity from conventional thermal sources in 2004, representing 94 percent of its total generation for the year. The government of Bangladesh estimates that about 80 percent of its commercial electricity consumption comes from roughly 30 natural gas-fired plants. In January 2006, Bangladesh's first coal-fired power plant began commercial production at the 250-MW Barapukuria facility in Parbotipur. In July 2005, AEC proposed the development of a coal mine and 500-MW power station in Bangladesh's Phulbari region and awaits government approval. Vulcan Energy's possible investment plans would bring two 450-MW coal-fired plants to Bangladesh, and the Tata group suspended plans for a proposed a 1000-MW coal-fired facility in July 2006.

Other Sources

Bangladesh generated 1.1 billion kilowatthours of electricity from hydroelectric sources in 2004, or roughly 6 percent of its total. News reports suggest that the government is looking to develop additional hydroelectric plants, possibly in neighboring Bhutan.

Biomass (primarily wood, crop residues, and animal waste) is a significant noncommercial energy source in Bangladesh, estimated to account for over half of the country's energy consumption. Biomass is especially prevalent in rural areas for household energy purposes such as cooking.

Profile

Country Overview

Head of Government	Prime Minister Khaleda Zia (since 10 October 2001)
Location	Southern Asia, bordering the Bay of Bengal, between Burma and India
Independence	16 December 1971 (from West Pakistan); note - 26 March 1971 is the date of independence from West Pakistan, 16 December 1971 is known as Victory Day and commemorates the official creation of the state of Bangladesh
Population (2005E)	144,319,628
Languages	Bangla (official, also known as Bengali), English
Religion	Muslim 83%, Hindu 16%, other 1% (1998)
Ethnic Group(s)	Bengali 98%, tribal groups, non-Bengali Muslims (1998)

Economic Overview

Minister of Finance and Planning	M. Saifur Rahman
Currency/Exchange Rate (July 10, 2006)	1 Bangladesh Taka (BDT) = 0.015 USD
Inflation Rate (2005E, 2006F, 2007F)	7.0%, 6.2%, 5.5%
Gross Domestic Product (2005E)	\$57.3 billion
Real GDP Growth Rate (2005E, 2006F, 2007F)	5.4%, 5.8%, 5.3%
Unemployment Rate (2005E)	2.5%
External Debt (2005E)	\$21.25 billion
Exports (2005E)	\$8.8 billion
Exports - Commodities	garments, jute and jute goods, leather, frozen fish and seafood (2001)
Exports - Partners (2004E)	US 22.7%, Germany 14.5%, UK 10.8%, France 6.7%
Imports (2005E)	\$12.9 billion
Imports - Commodities	machinery and equipment, chemicals, iron and steel, textiles, foodstuffs, petroleum products, cement (2000)
Imports - Partners (2004E)	India 14.6%, China 11.7%, Singapore 7.8%, Japan 5.8%, Hong Kong 4.8%
Current Account Balance (2005E)	-\$4.1 billion

Energy Overview

Minister of Power, Energy & Mineral Resources	Khaleda Zia (also the Prime Minister)
Proven Oil Reserves (January 1, 2006E)	28 million barrels
Oil Production (2006E)	6.7 thousand barrels per day, of which 89% was crude oil.
Oil Consumption (2005E)	91.4 thousand barrels per day
Crude Oil Distillation Capacity (2006E)	33 thousand barrels per day

Proven Natural Gas Reserves (January 1, 2006E)	5 trillion cubic feet
Natural Gas Production (2004E)	462.6 billion cubic feet
Natural Gas Consumption (2004E)	462.6 billion cubic feet
Recoverable Coal Reserves (2003E)	None
Coal Production (2003E)	None
Coal Consumption (2003E)	0.8 million short tons
Electricity Installed Capacity (2003E)	3.6 gigawatts
Electricity Production (2003E)	17.4 billion kilowatt hours
Electricity Consumption (2003E)	16.2 billion kilowatt hours
Total Energy Consumption (2003E)	0.6 quadrillion Btus*, of which Natural Gas (68%), Oil (29%), Coal (2%), Hydroelectricity (2%), Nuclear (0%), Other Renewables (0%)
Total Per Capita Energy Consumption (2003E)	4.2 million Btus
Energy Intensity (2003E)	2,663.1 Btu per \$2000-PPP**

Environmental Overview

Energy-Related Carbon Dioxide Emissions (2003E)	35.7 million metric tons, of which Natural Gas (61%), Oil (35%), Coal (4%)
Per-Capita, Energy-Related Carbon Dioxide Emissions (2003E)	0.2 metric tons
Carbon Dioxide Intensity (2003E)	0.2 Metric tons per thousand \$2000-PPP**
Environmental Issues	many people are landless and forced to live on and cultivate flood-prone land; water-borne diseases prevalent in surface water; water pollution, especially of fishing areas, results from the use of commercial pesticides; ground water contaminated by naturally occurring arsenic; intermittent water shortages because of falling water tables in the northern and central parts of the country; soil degradation and erosion; deforestation; severe overpopulation
Major Environmental Agreements	party to: Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Wetlands signed, but not ratified: none of the selected agreements

Oil and Gas Industry

Organization	Bangladesh Oil, Gas & Minerals Corp. (also known as Petrobangla), is the state-owned company responsible for oil and gas exploration, production, and distribution. Petrobangla has 11 operating companies.
Major Oil/Gas Ports	Chittagong
Foreign Company Involvement	Asia Energy, Cairn, Chevron, Niko Resources, Royal Dutch Shell, Tullow Oil & Gas Exploration Co.
Major Natural Gas Fields	Titas, Habiganj, Sangu, Jalalabad
Major Pipelines (capacity, Mmcf/d)	Bakhrabad to Chittagong (350), Kailashtila to Ashunganj (350), Elenga to Nalka across Jamuna River (280)
Major Refineries (capacity, bbl/d)	Eastern Refinery Ltd. Chittagong (33,000)

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar, wind, wood and waste electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA)

data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.

**GDP figures from OECD estimates based on purchasing power parity (PPP) exchange rates.

Links

EIA Links

[EIA - Country Information on Bangladesh](#)

U.S. Government

[CIA World Factbook - Bangladesh](#)

[U.S. Agency for International Development \(USAID\) - South Asia Regional Initiative/Energy \(SARI/E\)](#)

[U.S. Geological Survey - Bangladesh Cooperative Gas Resources Assessment](#)

[US Department of State Country Background Notes - Bangladesh](#)

Foreign Government Agencies

[Government of the People's Republic of Bangladesh](#)

[Power Division – Ministry of Power, Energy & Mineral Resources \(MPEMR\)](#)

[Power Cell – MPEMR](#)

Non-Governmental Organizations

[Permanent Mission of Bangladesh to the United Nations](#)

[Asian Development Bank \(ADB\) – Bangladesh Country Page](#)

[International Monetary Fund – Bangladesh Country Page](#)

[World Bank – Bangladesh Country Page](#)

Oil and Natural Gas

[Bangladesh Oil, Gas & Mineral Corporation \(Petrobangla\)](#)

[Chevron – Asia-Pacific Operations](#)

[Cairn Energy PLC – Bangladesh Page](#)

[Asia Energy PLC – Phulbari Coal Mine Project](#)

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U.S. Trade and Development Agency -- Bangladesh Strategic Gas Utilization Study World Markets Analysis

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