



2010 Minerals Yearbook

BANGLADESH

THE MINERAL INDUSTRY OF BANGLADESH

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In 2010, the mineral industry of Bangladesh produced mainly coal, granite, natural gas, and petroleum. The country lacks reserves of metallic minerals but has a large potential for the occurrence of natural gas. In 2009 (the most recent year for which data were available), mining accounted for 1.2% of the country's gross domestic product (GDP), and the construction sector accounted for 8.2%. The Bangladesh Oil, Gas and Mineral Corp. (Petrobangla) is the Government entity that is responsible for the exploration for, production of, and transmission and distribution of natural gas in Bangladesh. Between 2009 and 2010, Petrobangla continued its campaign for the discovery of new gasfields to increase the country's natural gas reserves by performing exploratory drillings and conducting seismic surveys. Petrobangla was also in charge of the development of the country's mineral deposits that had been determined to be economically feasible whereas exploring for minerals was the responsibility of the Geological Survey of Bangladesh (Bangladesh Oil, Gas and Mineral Corp., 2009, p. 8, 15; Asian Development Bank, 2010, p. 1).

In June 2010, the Ministry of Finance submitted the National Budget Proposal to the Bangladeshi Parliament for fiscal year 2011. The proposal stated that the Government had identified the power sector as a priority and was committed to solving the country's energy crisis as a measure to achieve GDP growth. The Government also proposed to support imports of liquefied natural gas, the use of renewable energy, and the mining of coal using open pit mining methods, and to increase exploration for oil onshore and offshore to ease the demand for raw materials to produce energy. The Government's vision was to increase the country's electricity-generating capacity to generate approximately 9,500 megawatts (MW) by 2015 (Saleque, 2010).

In July, the Parliament passed the Bangladesh Economic Zone Bill 2010, which proposed the creation of foreign trade zones, free ports, free trade zones, and technology parks, among other projects. The proposed bill allowed for four types of economic zones—economic zones for local and foreign nationals; private economic zones for locals, expatriates, and foreigners; government-owned economic zones, and economic zones for specialized industries engaged in private or public-private partnerships or involved in a Government initiative. Under the bill, the World Bank would lend approximately \$120 million to the Government for the development of these economic zones, for which feasibility and capacity studies would be required prior to development. The economic zones were expected to create jobs as industrialization and the production and export of goods increases in the country. The bill would also authorize the creation of the Bangladesh Economic Zone Authority, which would oversee the planning and development of infrastructure in the economic zones and ensure the proper utilization and occupancy of the land allocated to investors (Daily Star, The, 2010a; Daily-Sun.com, 2010; World Bank, The, 2010, p. 7).

In October, the Parliament passed the Speedy Supply of Power and Energy Bill 2010. The law was to be in effect for a period of 2 years, and its purpose was to enable the Government to take quick and effective actions to increase energy generation as well as improve the distribution, import, marketing, supply, transmission, and transportation of mineral fuels. The bill also applies to initiatives for exploration in the energy sector and the extraction of mineral resources. Under the bill, an evaluation committee that includes experts in the energy and mineral sectors would be created to evaluate proposals and would send its recommendations to the respective Cabinet committee for final decision. After the Cabinet's approval, the Ministry or Department under which the proposal falls would take action to implement it. If the proposal is denied, it would be eligible for reevaluation by the Cabinet committee after all recommendations and requirements are met (Financial Express, The, 2010b; World Bank, The, 2010, p. 8).

The Government of Bangladesh planned to implement a coal power project to meet the country's demand for electricity as gas reserves are drawn down. According to the Government's Power System Master Plan, which outlines the coal power project, the Government was expected to have eight coal powerplants with an estimated capacity of 4,000 MW (combined) in place by 2015. According to the plan, 30 coal powerplants with a combined capacity of up to 20,000 MW would be in place by 2025 (EnergyBangla.com, 2010b).

By the last quarter of 2010, the Government announced that it had finalized the draft of the National Coal Policy, which would provide guidance for the development of the coal industry and seek to establish coal as a primary fuel for power generation to ensure a reliable source of energy for the country. To promote the development, exploration, marketing, and mining of coal, the new policy proposed a waiver of corporate taxes for contractors and licensees. Other incentives included a rebate for duties and taxes applied to the import of machinery to be used for coal mining. The policy recommends competitive bidding in order for the Government to grant permits and licenses to contractors and encourages private and public joint-venture investments as well as foreign direct investment (EnergyBangla.com, 2010d).

Bangladesh and neighboring countries Burma (to the east) and India (to the west) were involved in a maritime boundary dispute concerning their respective sovereignty in the Bay of Bengal. In October 2009, Bangladesh claimed its maritime boundary before the United Nations court under the arbitration of the United Nations Convention on the Law of the Sea (UNCLOS) of 1982. The dispute amongst the three countries was preventing Bangladesh from exploring further for resources offshore. Bangladesh, Burma, and India have offshore exploration block interests in the Bay of Bengal that are focused mainly on the exploration for oil and gas. Because of the maritime boundary dispute, most of the exploration work in the

bay had been suspended by all three parties pending resolution of the dispute (Choudhury, 2009).

In October 2009, after many failed negotiations regarding the maritime boundary delimitation with neighboring India, Bangladesh called for binding arbitration under the auspices of the UNCLOS. Officials from the two countries met in January 2010 but failed to agree on the terms to end the dispute. Since then, Bangladesh had committed to continue bilateral negotiations alongside arbitration. In May 2010, the International Tribunal for the Law of the Sea (ITLOS) created an arbitration tribunal and nominated three judges to resolve the dispute. (ITLOS is an independent judicial body established by the UNCLOS to arbitrate disputes arising out of the interpretation and application of the Law of the Sea.) In October 2010, Burma and India reached an informal understanding to cooperate with each other on the settlement of their maritime dispute with Bangladesh. Bangladesh was required to submit a memorandum before the United Nations by May 2011 to claim the country's legitimate authority over its territorial waters in the Bay of Bengal adjacent to India. India was required to submit its memorandum by May 2012 (Durham University, 2010; Priyo.com, 2010).

In November 2009, Burma expressed its acceptance of the jurisdiction of the ITLOS for the settlement of the maritime dispute with Bangladesh over their boundary delimitation in the Bay of Bengal. By December, Bangladesh had released a statement agreeing with ITLOS jurisdiction as well. Although accepting ITLOS jurisdiction, neither of the two countries had agreed on a bilateral solution, and negotiations between them were continuing. In meetings held in January 2010, Burma agreed to delimit the maritime boundary by combining equidistance and equity demarcation principles. Back in 1986, Burma and India had proposed a line of demarcation based on the principal of equidistant boundary. Bangladesh had demanded that demarcation be based on the equity principle, which results in overlapping maritime areas (Choudhury, 2009; Asiantribune.com, 2010; International Tribunal for the Law of the Sea, 2010).

Production

Bangladesh produced small amounts of industrial minerals and processed products, which included cement, clay, limestone, nitrogen fertilizer, and salt. The Eastern Refinery Ltd. (ERL), which was a subsidiary of Bangladesh Petroleum Corp. (BPC), was Bangladesh's sole petroleum refining company. The refinery, which was located in Chittagong, produced petroleum products from imported crude oil. Output from the refinery met about 40% of the country's demand for petroleum products (Eastern Refinery Ltd., 2011a).

Structure of the Mineral Industry

In addition to exploring for, producing, and distributing oil and gas, Petrobangla also explored for and produced coal and granite through its subsidiaries Barapukuria Coal Mining Company Ltd., and Maddhapara Granite Mining Company Ltd., respectively. Table 2 is a list of major mineral industry facilities.

Commodity Review

Industrial Minerals

Cement.—In 2010, Bangladesh had approximately 34 operational cement companies in commercial production that had a combined annual production capacity of about 18.5 million metric tons (Mt) of cement. In 2009 (the most recent year for which data were available), cement consumption in Bangladesh was 13 million metric tons per year (Mt/yr), and in 2008, it was about 10 Mt/yr. Estimates for cement consumption in 2010 were about 14.5 Mt/yr. The increase in cement usage during the past few years could be attributed to the Government's engagement in programs to improve the country's infrastructure, such as the construction of airports, bridges, and a monorail. The Government expected the increase in cement consumption to continue in the near future, and as a result, many cement manufacturers were expanding their production capacity to meet the demand (Ahmed, 2010; Choudhury, 2011).

The export of cement to neighboring countries had started to boom, especially as new infrastructure projects were being developed close to Burma's and India's border with Bangladesh, respectively. The Bangladesh cement manufacturer Premier Cement Mills Ltd. reported in January that the company had started exporting cement to Burma to help meet the increased demand. Reports indicate that about one-third of the local cement manufacturing companies operating in Bangladesh exported their products to India. According to the Bangladesh Cement Manufacturers Association, in 2010, the country exported up to 14,000 metric tons per month of cement to India (Haroon, 2010; UNBConnect.com, 2010).

Many cement manufacturers in Bangladesh imported clinker, fly ash, and other materials to produce cement. Bangladesh imported about 15 Mt/yr of clinker from China, Indonesia, Thailand, and other countries. In 2010, Bangladesh started negotiations with Vietnamese companies to import clinker, and by the end of the year, Vietnam had shipped about 1.2 Mt of clinker to Bangladesh (Haroon, 2010; UNBConnect.com, 2010; Vietnam Business & Economy News, 2010).

Lafarge Surma Cement Ltd., which was a joint venture of Cementos Molins S.A. of Spain and Lafarge Group of France, operated a plant located at Chhatak in the district of Sunamganj in northeastern Bangladesh. The Lafarge Surma Cement plant was the only integrated (clinker and cement) producer in Bangladesh. The company mined the raw material that fed the plant from its affiliate quarry at East Khasi Hills in Meghalaya State, India. Materials from the quarry were transported 17 kilometers (km) across the border from India to Bangladesh. In February, the Supreme Court of India suspended the mining operations in the quarry because the area had been catalogued by the Indian Government as eco-sensitive forest land with indigenous ownership. The Indian Constitution prohibits the transfer of tribal lands to nontribal owners. The Indian authorities ordered Lafarge to perform additional studies of the area and to provide a more detailed environmental impact assessment. In addition, Lafarge was required to file the necessary documentation to obtain a new mining permit, which would be dependent on the final decision for the land

use classification of the area. By yearend, the limestone mine remained closed pending a decision by the Supreme Court of India (Guardian.co.uk, 2010; Gurumia.com, 2010; Lafarge S.A., 2010, p. 66).

HeidelbergCement Bangladesh Ltd., which was a subsidiary of HeidelbergCement Group of Germany, operated two plants in Bangladesh. The plants were located in the Patenga area of Chittagong and the Kanchpur area of Narayanganj. During 2010, the company was building an additional cement mill at their Chittagong grinding plant, which would have the capacity to produce 0.8 Mt/yr of cement and was expected to be commissioned by the end of 2011 (HeidelbergCement Group, 2010, p. 60).

In March, the Bashundhara Group (an industrial and business conglomerate in Bangladesh) announced its plans to launch two cement manufacturing plants by late 2011 or early 2012. The plants would be located in Narayanganj near Dhaka and at the Mongla Port Industrial area in Khulna. The conglomerate group's new plants, which would have a projected combined production capacity of about 12,000 metric tons per day were expected to address the domestic demand for cement. The company expected the plants to start a trial run in mid-2011. The Bashundhara Group established its first manufacturing enterprise in the country, called the Meghna Cement Mills Ltd., in the early 1990s; currently, the plant had a cement production capacity of 1 Mt/yr (Bangladesh Economic News, 2010; Meghna Cement Mills Ltd., 2011).

Stone, Crushed.—Maddhapara Granite, which was a subsidiary of Petrobangla, was responsible for the production of granite at Petrobangla's underground mine in the District of Dinajpur. The facility had the capacity to produce about 1.65 Mt/yr of hard rock. For fiscal year 2009 (which ran from July 1, 2008, through June 30, 2009) (the most recent year for which data were available), the Maddhapara Mine produced 267,434 metric tons (t) (revised) of stone, of which the majority was sold domestically for use as construction material, such as aggregates (Bangladesh Oil, Gas and Mineral Corp., 2009, p. 29).

Mineral Fuels

Coal.—In July 2010, the Ministry of Commerce extended the lifting of the ban implemented in July 2009 for the importation of coal that has sulfur content greater than 1%. The coal was transported through the Sylhet border of Bangladesh from Meghalaya State in neighboring India. This type of coal was used mainly in the fabrication of bricks (among other uses) and was favored for its low ash content, but its use was considered detrimental to the environment. The lifting of the ban was expected to last until June 2011. The Ministry's decision was in part based on the demand for coal and its contribution to the country's development by helping to ease the energy crisis. The estimated amount of coal imported through the Sylhet border was 800,000 metric tons per year (bdnews24.com, 2010).

The Barapukuria coal mine, which was managed by Barapukuria Coal Mining Co. Ltd. (BCMCL) (a subsidiary of Petrobangla) was the first and only operating coal mine in Bangladesh. The mine reported total production of 857,000 t (revised) of coal in fiscal year 2009 (the most recent year for

which data were available). According to Barapukuria, the increase in coal production reported for the fiscal year was mainly owing to the processing of stockpiled coal available on site. Coal produced from the mine was being used for power generation in the 250-MW-capacity coal-fired thermal powerplant located near the mine in the District of Dinajpur (table 1; Bangladesh Oil, Gas and Mineral Corp., 2009, p. 28–29).

In 2010, the London-based company Global Coal Management Resources (GCM) through its subsidiary Asia Energy was still awaiting approval from the Government to develop the Phulbari coal project, which is located in the northwestern region of Phulbari. In February, Asia Energy offered the Government a 10% stake in the Phulbari coal project. GCM had held a 30-year term mining lease and exploration license in the Phulbari area since 2004. In October 2005, GCM submitted a feasibility study and a development scheme to the Government for evaluation and approval. Since then, political instability in Bangladesh and an ongoing Government review of the country's coal policy had delayed the evaluation process. If the project is approved, a mine would be developed using an open cut mining method to extract the coal, and production could start within 3 years. The Phulbari coal project could potentially address the country's electricity shortages by increasing the country's electricity generating capacity by up to 4,000 MW. The coal produced from the Phulbari project was to feed the Government's proposed coal power projects, which were expected to be online by 2015 (Global Coal Management Resources, 2010, p. 7–9, 27; London Mining Network, 2010).

In 2010, Bangladesh and India were in discussions to build a coal-fired powerplant at a cost of \$1.7 billion under equal terms for both parties—25% of the investment to be financed jointly and the remaining 75% to be financed through loans. The plant, which would have a capacity of 1,320 MW, was planned to be built in Khulna, which is located in southeastern Bangladesh close to Mongla Port. In August, the respective national power companies (the Power Development Board of Bangladesh and the National Thermal Power Corporation of India), signed a memorandum of understanding to build the plant, which would be run with imported coal. In addition, the agreement called for an increase of bilateral cooperation between both parties in regard to the energy sector. The energy ministries of both countries announced that the proposed powerplant would be completed by 2012, including all the necessary work to interconnect both countries' electricity grids. The project would require the installation of about 133 km of electricity transmission lines, 88 km of which would be located in India, and 45 km of which would be located in Bangladesh (Daily Star, The, 2010b; Financial Express, The, 2010a; Khan, 2010).

The Government's long-term energy plans included building another 1,320-MW-capacity coal plant in the city of Chittagong through a partnership between the public and the private sectors. For this project, the Power Development Board planned to hold 30% of the shares and to sell the remaining shares to private investors. Another coal-based powerplant was expected to be installed in Patuakhali. Both projects were expected to start after the successful commissioning of the Khulna plant (Khan, 2010; Daily-Sun.com, 2011).

Natural Gas.—In 2010, Bangladesh's electricity generation capacity was insufficient to meet the country's increased demand for energy, and power shortages continued to affect the country. Gas supplies were also scarce, which forced authorities to ration the supply and to prioritize between businesses, households, and industries. Petrobangla started to carry out extensive exploration and drilling activities to increase gas reserves. By June 2009 (the most recent year for which data were available), the estimated proven recoverable reserves were about 188.6 billion cubic meters (reported as 6.661 trillion cubic feet) (Bangladesh Oil, Gas and Mineral Corp., 2009, p. 8; Global Coal Management Resources, 2010).

In fiscal year 2010, five companies under Petrobangla carried out gas transmission and distribution in Bangladesh. One of these companies, Titas Gas Transmission and Distribution Co. Ltd. (TGTDCL), built 541 km of new distribution pipeline, which increased the length of the country's total pipeline network to 12,037 km. TGTDCL provided gas to 11 power stations of the Bangladesh Power Development Board, 23 private power stations, and 4 fertilizer factories (Titas Gas Transmission and Distribution Co. Ltd., 2010).

In February 2010, Petrobangla approved a proposal submitted by Chevron Corp. of the United States to share the stakes for the development of the gas Block 7 with the oil company GS Caltex of the Republic of Korea. GS Caltex was the first Korean company to explore for hydrocarbons in Bangladesh. Under the agreement, Block 7 would be a partnership between Chevron, which would be the operator (45%), GS Caltex (45%), and Bangladesh Petroleum Exploration & Production Company Ltd. (BAPEX) (10%) (Thomson Reuters, 2010b).

In July, the Government announced its plans to build a 100-km pipeline to transport natural gas from Chevron's three gasfields (Bibiwana, Jalalabad, and Maulavi Bazar) located in northeastern Bangladesh as the company identified additional gas production capacity. The pipeline, which would cost an estimated \$150 million to build, would be used to transport an additional 25.3 million cubic meters per day of gas (reported as 893 million cubic feet per day) to 52 million cubic meters per day (reported as 1,840 million cubic feet per day). The transmission line was proposed to be set near the Maulavi Bazar gasfield and would connect to the city of Ashuganj. The project was expected to be completed by the end of 2012. The Government also requested Chevron to increase its natural gas output by 28.3 million cubic meters per day (reported as 1,000 million cubic feet per day) within the near future. The request came as a measure to help ease the country's energy shortage. Bangladesh produced about 20,500 million cubic meters of gas per year but had a shortage of about 4,125 million cubic meters of gas per year. By 2012, Chevron expected to install a compression station at Muchai that would boost the production of gas from the company's existing gasfields (Alexander's Gas & Oil Connections, 2010a; Thomson Reuters, 2010a).

In October, the Ministry of Power, Energy and Mineral Resources of Bangladesh and ConocoPhillips Co. of the United States agreed to sign an initial agreement for the exploration of Block 10 and Block 11, which are located in the Bay of Bengal. The Government had awarded ConocoPhillips the right to explore for hydrocarbons in Bangladesh in 2008.

The contract had not yet been made final, and the exploration activities were suspended because of the maritime boundary dispute with Burma and India (EnergyBangla.com, 2010a).

In December, Cairn Energy plc through its wholly owned subsidiary Capricorn Energy Ltd. sold all its share capital in Bangladesh to Santos International Holdings Pty. Ltd. of Australia. Cairn had held 37.5% interest in the Sangu offshore gasfield, and 50% interest in Block 16, which was under exploration. Cairn along with its partners had invested approximately \$1 billion through its 16 years of operation in Bangladesh. For 2011, Santos planned to conduct seismic surveys and drill three wells in the Sangu area (Cairn Energy plc, 2010, p. 24, 98; Oil & Gas Journal, 2010).

Also in December, BAPEX signed a joint-venture agreement with Gazprom Zarubezhneftegaz of Russia for cooperation in the development of Bangladesh's energy sector. The country submitted various proposals to Gazprom, which included the installation of a gas transmission pipeline between the Bibiwana gasfield to the city of Dhanua in central Bangladesh. It also proposed the acquisition of two gas compressors, one to be installed in Chittagong and the other in Khulna. Petrobangla also proposed that the Russian company drill five exploration wells by 2012 (EnergyBangla.com, 2010c).

Petroleum.—In 2010, bids were open for the funding of ERL's expansion project dubbed the Balancing, Modernization, Rehabilitation & Expansion of the Eastern Refinery Ltd. The project, which had a proposed cost of \$1 billion, had the objective to reduce oil imports and increase the supply of locally produced refined products to reach energy security. ERL proposed the use of existing infrastructure and the sharing of common crude oil facilities to keep investment costs as proposed. In August, the Beximco Group (a privately owned industrial conglomerate in Bangladesh) and Marasel Company Ltd. of Saudi Arabia submitted a proposal to participate in the bid to finance the expansion project, which would increase the refinery's production capacity to 4.5 Mt/yr from 1.5 Mt/yr and would include the installation of a pipeline. ERL expected the project to be completed by 2013 (Alexander's Gas & Oil Connections, 2010b; Beximco Group, 2010; Eastern Refinery Ltd., 2011a, b; Gulf News, 2010).

Outlook

The Government has made investment in the country's power generation platform a priority. The building of new powerplants and gas transmission pipelines, the implementation of other infrastructure improvements, such as bridges, and other development projects taking place in Bangladesh are expected to continue to increase demand for building materials, such as cement and crushed stone, in the near future. The fast-growing infrastructure development and the increase of materials demand will most likely influence trading between neighboring countries and positively contribute to the economy of the region.

The success of the country in overcoming its energy supply shortage will be subject to the commencement of projects in the coal and gas sectors that started during the past 2 years and the granting of permits for projects proposed recently. In addition, the country was expected to be less dependent on

imported industrial materials, such as cement, as projects in the development stages reach the production stage. The Government of Bangladesh is expected to continue to establish joint ventures with international companies, particularly for exploration in the mineral fuels sector, given the progress reached between 2009 and 2010 to resolve the maritime boundary disputes with Burma and India.

References Cited

- Ahmed, Mushir, 2010, Local cement plants in mad race for capacity expansion: Dhaka, Bangladesh, *Financial Express*, The, v. 18, no. 35, December 26. (Accessed August 29, 2011, at http://www.thefinancialexpress-bd.com/more.php?news_id=120990&date=2010-12-26.)
- Alexander's Gas & Oil Connections, 2010a, Bangladesh asks Chevron to raise gas output: Alexander's Gas & Oil Connections, July 18. (Accessed September 2, 2011, at <http://www.gasandoil.com/news/2010/08/cns103413>.)
- Alexander's Gas & Oil Connections, 2010b, Joint venture to fund Bangladeshi refinery expansion: Alexander's Gas & Oil Connections, September 30. (Accessed September 2, 2011, at <http://www.gasandoil.com/news/2010/12/cns105030>.)
- Asian Development Bank, 2010, Key indicators for Asia and the Pacific 2010—Bangladesh: Asian Development Bank, 9 p. (Accessed August 26, 2011, at http://www.adb.org/documents/books/key_indicators/2010/pdf/BAN.pdf.)
- Asiantribune.com, 2010, Tribunal to sort out Delhi-Dhaka maritime dispute: Asiantribune.com [Hallstavik, Sweden], March 2. (Accessed August 26, 2011, at <http://www.asiantribune.com/news/2010/03/02/tribunal-sort-out-delhi-dhaka-maritime-dispute>.)
- Bangladesh Economic News, 2010, Bashundhara to set up two giant cement mills: bangladesheconomy.org, March 5. (Accessed August 29, 2011, at <http://bangladesheconomy.wordpress.com/2010/03/05/bashundhara-to-set-up-two-giant-cement-mills/>.)
- Bangladesh Oil, Gas and Mineral Corp., 2009, Annual report 2009: Dhaka, Bangladesh, Bangladesh Oil, Gas and Mineral Corp., 51 p. (Accessed June 17, 2011, at [http://www.petrobangla.org.bd/annual report 2009.pdf](http://www.petrobangla.org.bd/annual%20report%202009.pdf).)
- bdnews24.com, 2010, Govt permits harmful coal import: bdnews24.com, July 6. (Accessed August 18, 2010, at <http://www.bdnews24.com/pdetails.php?id=167045>.)
- Beximco Group, 2010, Saudi Prince backs Beximco for \$1b project: Dhaka, Bangladesh, August 29. (Accessed September 27, 2011, at <http://www.beximco.org/news/newsDetails.php?id=68>.)
- Cairn Energy plc, 2010, Annual report & accounts 2010: Edinburgh, United Kingdom, Cairn Energy plc., 152 p. (Accessed September 1, 2011, at [http://www.cairnenergy.com/uploadedFiles/Investors/Reports_library/2010 Annual Report.pdf?n=545](http://www.cairnenergy.com/uploadedFiles/Investors/Reports_library/2010%20Annual%20Report.pdf?n=545).)
- Choudhury, S.U.S., 2009, Bangladesh starts reacting to maritime dispute: *American Chronicle*, October 14. (Accessed August 16, 2010, at <http://www.americanchronicle.com/articles/view/123727>.)
- Choudhury, S.A., 2011, Self-sufficiency in cement: *The Daily Star* [Dhaka, Bangladesh], January 4. (Accessed August 29, 2011, at <http://www.thedailystar.net/newDesign/news-details.php?nid=168754>.)
- Daily Star, The, 2010a, Economic zones bill placed in parliament: *The Daily Star*, [Dhaka, Bangladesh], June 7. (Accessed September 16, 2011, at <http://www.thedailystar.net/newDesign/news-details.php?nid=141687>.)
- Daily Star, The, 2010b, MoU with India today on coal fired power plant in Khulna: *The Daily Star* [Dhaka, Bangladesh], August 30. (Accessed October 19, 2011, at <http://www.thedailystar.net/newDesign/news-details.php?nid=152907>.)
- Daily-Sun.com, 2010, SEZ Act good, need implementation: *Daily-sun.com*, June 15. (Accessed September 16, 2011, at http://www.daily-sun.com/?view=details&archiev=yes&arch_date=15-06-2011&type=daily_sun_news&pub_no=247&cat_id=1&menu_id=3&news_type_id=1&index=2.)
- Daily-Sun.com, 2011, Plan for coal fired power plant in Khulna: *daily-sun.com*, January 24. (Accessed October 19, 2011, at http://www.daily-sun.com/details_yes_24-01-2011_plan-for-coal-fired-power-plant-in-khulna_107_1_3_1_1.html.)
- Durham University, 2010, Bangladesh and Myanmar fix deadlines in maritime boundary case: Durham, United Kingdom, February 3. (Accessed August 26, 2011, at http://www.dur.ac.uk/ibru/news/boundary_news/?itemno=9459&rehref=%2Fibru%2Fnews%2F&resubj=Boundary+news+Headlines.)
- Eastern Refinery Ltd., 2011a, Corporate profile: Eastern Refinery Ltd. (Accessed August 26, 2011, at <http://erl.com.bd/home/corporateprofile.html>.)
- Eastern Refinery Ltd., 2011b, Development: Eastern Refinery Ltd. (Accessed August 26, 2011, at <http://erl.com.bd/development/bmre.html>.)
- EnergyBangla.com, 2010a, Bangladesh, ConocoPhillips agrees to sign deal on gas exploration: EnergyBangla.com, October 5. (Accessed September 1, 2011, at <http://www.energybangla.com/index.php?mod=article&cat=GasSector&article=2784>.)
- EnergyBangla.com, 2010b, Bangladesh needs \$6 billion to install planned coal based power plants: EnergyBangla.com, October 25. (Accessed August 29, 2011, at <http://www.energybangla.com/index.php?mod=article&cat=CoalSector&article=2858>.)
- EnergyBangla.com, 2010c, Bangladesh, Russia to sign JVA to develop energy sector: EnergyBangla.com, December 29. (Accessed September 2, 2011, at <http://www.energybangla.com/index.php?mod=article&cat=GasSector&article=2948>.)
- EnergyBangla.com, 2010d, Draft coal policy proposes waiver of contractors corporate tax: EnergyBangla.com, November 3. (Accessed August 29, 2011, at <http://www.energybangla.com/index.php?mod=article&cat=CoalSector&article=2864>.)
- Financial Express, The, 2010a, Bangladesh, India to jointly build \$1.7b mega coal-fired power plant: *The Financial Express*, v. 18, no. 359, February 20. (Accessed August 29, 2011, at http://www.thefinancialexpress-bd.com/more.php?news_id=93028.)
- Financial Express, The, 2010b, Speedy power supply bill '10 passed: *The Financial Express*, v. 18, no. 65, October 4. (Accessed September 16, 2011, at http://www.thefinancialexpress-bd.com/more.php?news_id=113695&date=2010-10-04.)
- Global Coal Management Resources, 2010, Annual report and accounts 2010: London, United Kingdom, Global Coal Management Resources, 60 p. (Accessed August 29, 2011, at http://www.gcmlc.com/ir/gcm/pdf/Final_AR10.pdf.)
- Guardian.co.uk, 2010, Lafarge's India-Bangladesh cement project remains frozen: *The Guardian* [London, United Kingdom], August 20. (Accessed October 12, 2011, at <http://www.guardian.co.uk/world/2010/aug/13/india-bangladesh>.)
- Gulf News, 2010, Beximco, Marasel eye refinery bid: *Gulf News*, United Arab Emirates, August 30. (Accessed September 27, 2011, at <http://www.thefreelibrary.com/Beximco,+Marasel+eye+refinery+bid.-a0235981171>.)
- Gurumia.com, 2010, French cement giant Lafarge's plant in Bangladesh may in trouble: Gurumia.com, February 6. (Accessed October 12, 2011, at <http://gurumia.com/2010/02/06/french-cement-giant-lafarges-plant-in-bangladesh-may-in-trouble/>.)
- Haroon, J.U., 2010, Cement exporters' new destination: *The Financial Express*, v. 18, no. 344, January 7. (Accessed October 14, 2011, at http://www.thefinancialexpress-bd.com/more.php?news_id=88851.)
- HeidelbergCement Group, 2010, Annual report 2010: Heidelberg, Germany, HeidelbergCement Group, 240 p. (Accessed August 29, 2011, at http://www.heidelbergcement.com/NR/rdonlyres/0AFACA2F-2EE0-4DB0-8171-3DCAC1491AD6/0/GB_2010_E_Web_Links.pdf.)
- International Tribunal for the Law of the Sea, 2010, Dispute concerning delimitation of the maritime boundary between Bangladesh and Myanmar in the Bay of Bengal: *WorldCourts.com*, January 28. (Accessed June 21, 2011, at http://www.worldcourts.com/itlos/eng/decisions/2010.01.28_Bangladesh_v_Myanmar.pdf.)
- Khan, Sharier, 2010, Final agreement for Khulna plant in Oct.: *The Daily Star* [Dhaka, Bangladesh], September 18. (Accessed October 19, 2011, at <http://www.thedailystar.net/newDesign/news-details.php?nid=154884>.)
- Lafarge S.A., 2010, Annual report registration documents 2010: Paris, France, Lafarge S.A., 240 p. (Accessed August 29, 2011, at http://www.lafarge.com/03222011-press_publication-2010_annual_report-uk.pdf.)
- London Mining Network, 2010, Asia Energy makes new proposal for open-pit coal mining in Bangladesh: London, United Kingdom, London Mining Network, February 7. (Accessed August 29, 2011, at <http://londonminingnetwork.org/2010/02/asia-energy-makes-new-proposal-for-open-pit-coal-mining-in-bangladesh/>.)
- Meghna Cement Mills Ltd., 2011, Meghna Cement Mills Ltd.—About us: Dhaka, Bangladesh, Bashundhara Group. (Accessed October 14, 2011, at http://www.bg.com.bd/M-Cement/index.php?view=about_us.)
- Oil & Gas Journal, 2010, Santos to buy Cairn Bangladesh Sangu interest: *Oil & Gas Journal*, November 5. (Accessed October 28, 2011, at <http://www.ogj.com/articles/2010/11/santos-to-buy-cairn.html>.)

Priyo.com, 2010, India, Myanmar to settle maritime boundary disputes with Bangladesh: Priyo.com, October 25. (Accessed August 26, 2011, at http://www.priyo.com/story/2010/oct/25/9975-india-myanmar-settle-maritime-boundary-disputes-bangladesh?quicktabs_1=1.)

Saleque, K.A., 2010, Budget 2010-2011—Light at the end of the tunnel: ebangladesh.com, June 14. (Accessed August 28, 2011, at <http://www.ebangladesh.com/2010/06/14/budget-2010-2011-lights-at-the-end-of-the-tunnel/>.)

Thomson Reuters, 2010a, Bangladesh to build new pipeline for Chevron gas: Thomson Reuters, July 11. (Accessed September 1, 2011, at <http://www.reuters.com/article/2010/07/11/bangladesh-energy-chevron-idUSSGE66A00R20100711>.)

Thomson Reuters, 2010b, Chevron shares Bangladesh gas stake with Korea firm: Thomson Reuters, February 24. (Accessed September 1, 2011, at <http://www.reuters.com/article/2010/02/24/bangladesh-energy-chevron-idUSSGE61N0J820100224>.)

Titas Gas Transmission and Distribution Co. Ltd., 2010, Annual report 2009–2010: Dhaka, Bangladesh, Titas Gas Transmission and Distribution Co. Ltd., 108 p. (Accessed August 29, 2011, at [http://www.titasgas.org.bd/docs/Titas Annual Report 2009-10.pdf](http://www.titasgas.org.bd/docs/Titas%20Annual%20Report%2009-10.pdf).)

UNBConnect.com, 2010, Construction boom increases cement demand in country 15% this year; Bangladesh eyes clinker import from Vietnam to boost cement production: UNBConnect.com, December 26. (Accessed October 18, 2011, at <http://www.unbconnect.com/component/news/task-show/id-37874>.)

Vietnam Business & Economy News, 2010, Bangladesh eyes cement imports from Viet Nam: vneconomynews.com, December 25. (Accessed August 29, 2011, at <http://www.vneconomynews.com/2010/12/bangladesh-eyes-cement-imports-from.html>.)

World Bank, The, 2010, Bangladesh economic update: The World Bank, October, 16 p. (Accessed August 26, 2011, at <http://siteresources.worldbank.org/BANGLADESHXTN/Resources/295759-1271081222839/6958908-1273702902119/BDEconomicUpdateOct2010.pdf>.)

TABLE 1
BANGLADESH: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2006	2007	2008	2009	2010
Cement, hydraulic ⁴	5,100,000	5,100,000	5,000,000	5,000,000	5,000,000
Clays, kaolin ⁴	8,500	8,600	8,500	8,500	8,500
Coal, bituminous ⁴	388,000	678,000 ^{r,5}	857,000 ^{r,5}	850,000 ^r	850,000
Gas, natural, marketed ^{4,6}	million cubic meters	15,918 ⁵	17,014 ⁵	18,507 ⁵	20,000 ^r
Iron and steel, metal: ⁴					
Steel, crude, ingot only	10,000	--	--	--	--
Steel products	70,000	60,000	60,000	60,000	60,000
Nitrogen, N content of urea, ammonia, ammonium sulfate	1,250,000	1,300,000	1,300,000	1,300,000	1,300,000
Petroleum:					
Crude	thousand 42-gallon barrels	1,715 ⁵	1,800	1,800	1,800
Refinery products	do.	9,300	9,400	9,500	9,500
Salt, marine ⁴	350,000	360,000	360,000	360,000	360,000
Stone, crushed:					
Granite	1,200,000	258,516 ⁵	267,434 ^{r,5}	270,000 ^r	275,000
Limestone	67,736 ⁵	70,000	70,000	70,000	70,000

¹Revised. do. Ditto. -- Zero.

²Estimated data are rounded to no more than three significant digits.

³Table includes data available through October 31, 2011.

⁴In addition to the commodities listed, crude construction materials, such as sand and gravel and other varieties of stone, presumably are produced, but available information is inadequate to make reliable estimates of output.

⁵Data are for fiscal year ending June 30 of following year.

⁶Reported figure.

⁷Gross production is not reported; the quantity vented, flared, or reinjected is believed to be negligible.

TABLE 2
BANGLADESH: STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity ^e
Cement		Bangladesh Oil, Gas and Mineral Corp. (Petrobangla)	Chittagong	1,000.
Do.		do.	Sylhet	1,100.
Do.		Cemex Cement Bangladesh Ltd.	Mahmudnagar	600.
Do.		HeidelbergCement Bangladesh Ltd.	Chittagong and Narayanganj (near the capital Dhaka)	2,000.
Do.		Holcim (Bangladesh) Ltd.	Bagerhat and Narayanganj	1,300.
Do.		Lafarge Surma Cement Ltd. (Lafarge Group and Cementos Molins S.A.)	Chhatak, Sunamganj	1,500 (1,150 clinker).
Do.		Meghna Cement Mills Ltd. (an enterprise of the Bashundhara Group of Bangladesh)	Mongla Port Industrial Zone and Pashur River Bank facility	1,000.
Do.		Premier Cement Mills Ltd.	Muktarpul and Munshiganj	1,460.
Do.		Shah Cement Industries Ltd.	Dhaka	1,860.
Do.		Unique Cement Industries Ltd.	Chittagong, Dhaka, and Sylhet	1,440.
Do.		Various	18 additional facilities	5,240.
Coal		Barapukuria Coal Mining Co. Ltd. (BCMCL) [Bangladesh Oil, Gas and Mineral Corp. (Petrobangla), 100%]	Barapukuria	1,000.
Gas, natural	million cubic meters per day	Bangladesh Gas Fields Co. Ltd. (BGFCL) [Bangladesh Oil, Gas, and Mineral Corp. (Petrobangla), 100%]	Bakhrabad, Habiganj, Kamta, Meghna, Narsingdi, and Titas	22.
Do.	do.	Bangladesh Petroleum Exploration and Production Co. Ltd. (BAPEX) [Bangladesh Oil, Gas and Mineral Corp. (Petrobangla), 100%]	Fenchuganj and Saldanadi	2.
Do.	do.	Santos International Holdings Pty. Ltd.	Sangu (offshore)	3.
Do.	do.	Chevron Corp.	Bibiyana	19.8.
Do.	do.	do.	Jalalabad	3.9.
Do.	do.	do.	Maulavi Bazar	1.6.
Do.	do.	Niko Resources Ltd.	Bibiyana and Feni	6.
Do.	do.	Sylhet Gas Fields Ltd. (SGFL) [Bangladesh Oil, Gas and Mineral Corp. (Petrobangla), 100%]	Beanibazar, Haripur, Kailashtila, and Rashidpur	5.
Do.	do.	Tullow Oil plc, 30%	Bangora field	3.4.
Nitrogen, urea		Bangladesh Chemical Fertilizer Corp.	Auganish	560.
Do.		do.	Fenchugani	100.
Do.		do.	Ghorasai	600.
Petroleum:				
Crude	42-gallon barrels per day	Santos International Holdings Pty. Ltd.	Sangu	30,000.
Refined	do.	Eastern Refinery Ltd.	Chittagong	34,000.
Steel, crude		Bangladesh Steel and Engineering Corp.	do.	20.
Stone, crushed, granite		Maddhapara Granite Mining Co. Ltd. [Bangladesh Oil, Gas and Mineral Corp. (Petrobangla)]	Maddhapara, District of Dinajpur	1,650 hard rock.

^eEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto.