

Tapping coal to meet energy deficit

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THE world's most developed nations are also the world's biggest energy consumers, and the world's least developed nations are the smallest energy consumers. Being a less developed country with only 42 percent electricity coverage, Bangladesh's per capita electricity consumption of 140 kWh is ranked one of the lowest in the world.

Bangladesh's overall energy consumption is also among the lowest in the world. It has to import almost the entire demand for petroleum which is around 3.5 million tonnes.

Bangladesh mainly depends on its own natural gas resources as its main energy source to generate power, to manufacture fertiliser, industrial products, for domestic use and for transportation. Natural gas accounts for about 70% of the country's commercial energy supply, with its current consumption reaching about 1650 million cubic feet a day. The use of gas annually saves several thousands crores taka worth of petroleum import.

Yet at the current rate of gas consumption the nation is set to face gas supply shortfall from 2011, and seriously from 2015, unless new gas discoveries are made, says a Petrobangla forecast. Such a forecast is disturbing, as chronic gas supply shortfall will directly hit Bangladesh's growth. This also brings in the question of diversifying Bangladesh's main energy sources so that the nation has the better chance of maintaining its energy security.

Do we have enough gas to supplement growth?

Bangladesh's geology promises oil, gas, coal and other mineral deposit discoveries in

different locations including in the Bay of Bengal. Discovery of hydro-carbon resources started in 1910 but it was not till the early sixties that the country started to use its natural resources especially natural gas.

Bangladesh largely depends on its natural gas resources to cater its energy demands. Till now 23 gas fields have been discovered in the country. Of them 22 gas fields had 28.41 Trillion Cubic Feet (TCF) gas in place, with 20 TCF recoverable.

The country now has about 14 TCF proven gas, which is currently being consumed at the rate of 1640 million cubic feet per day (mmcf). Around half of the daily gas is being produced by foreign oil companies like Chevron, Cairn and Tullow under Production Sharing Contracts (PSCs) that were signed through two rounds of block bidding. There are eight effective PSCs and one Joint Venture Agreement with foreign oil companies for exploration and production of hydrocarbon resources.

Around 40 percent of the natural gas is used for power generation, 35 percent for fertilizer production and the rest for industrial, commercial and domestic consumption.

The country's future power requirements alone demand that it needs new gas field discoveries to support power sector development. This is why, the government is now preparing for a third round international bidding of oil and gas exploration in 23 off-shore blocks. This bidding is likely to be floated in 2008.

According to a United States Geological Survey (USGS) study for undiscovered gas resource of the country in 2000, there is a 50 percent probability of discovering getting another 32 TCF gas. Discovery of this gas depends on having a clear



vision, competent exploration companies working in the country and huge investment. Then to be able to use the gas that has been discovered, the nation will have to wait at least two to four years.

Finally, the USGS assessment of potential gas resources can not be termed as comfortable for a nation of 140 million people. While the nation should tap this gas, it should also tap other sources of energy.

Tapping the coal resources

The government now needs to realign its focus on alternative energy source to cater its power demands. This alternative source is Bangladesh's vastly untapped bituminous coal deposits. We have only primarily explored five potential coal zones and detected a high quality proven coal reserve of 2357 million tons (mt). The probable reserve of

coal from these five locations alone stands at 3258 mt.

Only one of this five zones the Barapukuria coal field, discovered in 1987, is now producing a small quantum of coal from an underground mine that came to operation from 2005.

The importance of tapping the coal can be understood from the demand forecast given by the PDB in the draft coal policy. It says that till 2025 if Bangladesh's GDP remains as low as 5.5 percent, the country needs to add 19000 megawatt additional power and the GDP is as high as 8 percent, it needs 41000 mw power. It adds that to meet its power demands in a GDP growth rate scenario of 5.5 percent, Bangladesh will need 136 million tons (mt) of coal till 2025. If the GDP rate is 8 percent, then Bangladesh will need 450 mt coal.

The draft says that the country's existing four discovered coal fields of Barapukuria, Phulbari, Khalashpir and Dighipara can cater this need till 2030 or so. The draft however left out the Jamalpur coal zone (that promises of around 1000 million tonnes of coal) as its deposit lies at such a depth that it will not be economically viable to tap it in conventional mining methods.

Coal promises energy security

The primary findings of coal deposits in the north Bengal is very promising. Other than the Jamalpur coal deposit, the coal beds in the four other zones can be found at a depth from 120 meter to 500 meter below the surface. These can be mined either by underground method or by open pit method.

A significant part of this coal is semi-coking coal which is used for mixing with coking coal to manufacture steel. The

price of coking coal is very high, semi-coking coal is also costly, our mainstream coal bituminous coal is also well sought after in the international coal market. This means, what we have, has high value in the world market. Its 100 billions of dollars worth.

If all of this coal is converted into power, it could generate 5000 megawatts of power for up to 66 to 90 years. Our bituminous coal is considered one of the cleanest coal in the world having less than 0.05 sulfur content. 3 million tonnes of our coal can make 1000 mw power for one year, whereas it takes 9 million tons of Germany's lignite coal to generate the same. The level of CO2 emission remains one ton coal= one ton CO2. It means our coal will emit one third of Germany's CO2 emission to make one megawatt power. We can also convert coal to make CO2 free synthetic petroleum and gas products. The possibilities are endless, if we had the will.

Coal can also cater domestic need for fuel, it can be converted into synthetic petroleum with a price tag less than 30 US dollars per ton.

Development of the known coal fields is increasingly making the planners aware of the environmental issues associated with coal mining. The subject of controversies between open pit and underground mining need to be closely examined and adequate field oriented pilot studies should be made before open pit mining is adopted in any coal field in Bangladesh. If open pit mining can be allowed for coal exploitation then similar approach for development of peat resources in southern part could also be given due importance.

Government and local stakeholders should invest in coal: Experience of other coun-

tries with successful mining ventures show that coal should be a national affair, not a private affair because a coal mine heavily involve the environment and communities. Its not just a business or an investment. Coal mining can a way of life in a region.

The involvement of private companies could be at executive stage, but those will not control the decisions alone. In other words; all coal fields must be developed under "X coal mining company" with shares held by government, local entrepreneurs, local banks or institutions, nearby municipalities (with carried over share) with maximum 49 percent foreign investors stake. For instance Asia Energy's financial proposal sought 2 billion dollars (tk 14000 crore) initial investment. When the level of return could be 25 billion dollars or so in the next 30 years, should it be very hard for the government to invest Tk 1400 crore initially for 10 percent share and another 6000 crore by the banks/ institutions/private entrepreneurs? Coal mines should not be awarded to traders or unknown companies. All successful mining companies around the world be it Tata or BHP- is home-grown.

Dighipara can be a test case: Petrobangla has sought a license for exploration of coal in Dighipara. If awarded, Petrobangla will take a strategic partner through a bidding making way for the private investors to be involved in the mining. This can be a perfect test case for the country to try out Open Pit mining off course following the best practice models around the world.

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