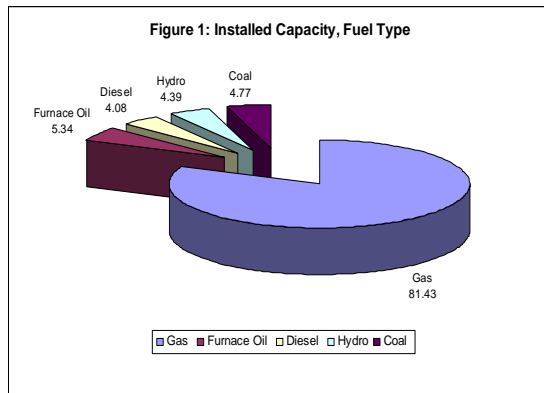


Coal Policy and Concern over Future Energy Security of Bangladesh

The present Caretaker Government is in the process of reviewing the draft Coal Policy submitted in December 2007 by the Independent Coal Policy Review Committee. The Special Assistant to the Chief Adviser in charge of the Ministry of Power, Energy and Mineral Resources who has been vocal in favor of Asia Energy on Phulbari open cast (open pit) mining project, previously abandoned due to mass uprising, has stated that the policy should not dictate which method of mining should be followed.¹ However, allowing open pit mining will result in over-production that will eventually compel the policy makers to export coal in the form of coke as the draft policy has kept the option for exporting coke if there is surplus production over domestic demand.² This course of action will threaten future energy security of the country.



Source: BDPDP 2008

Concern over Future Energy Security:

Bangladesh is facing a supply shortage of energy in an environment of continually increasing demand. In January 2008 average maximum power generation was 3400 MW against the demand for about 5300 MW.³ As in most countries, the main source of our energy for power generation is natural gas which meets 80.43% of energy demand (figure 1). About 90% of the country's commercial power plants are run by gas. Currently, the proven and probable gas reserve stands at 8.3 TCF and 5.5 TCF respectively.⁴ If there is no new reserve discovered the existing reserve will be exhausted by 2015. At present, the production capacity of all

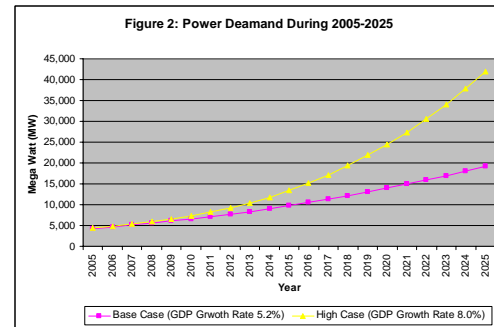
gas field of the country is about 1700 million cubic feet per day (MMCFD) while the demand is about 1800 MMCFD. The production capacity is falling short of about 100 MMCFD everyday.⁵ The shortage has forced the government to stop the planned installation of nine power plants which would have a combined capacity of 1800 MW from its short and medium term plan. The country will need to generate 9,288 MW of electricity to meet the demand by 2012 given average GDP growth rate of 8.0% per annum (high case scenario)⁶. The demand will further increase to about 13,000 MW in 2015. In order to meet future power demand, the government planned to install 45 power plants which would have supplied an additional 6,245 MW of power to the national grid by 2012. This would have required an additional 1233 MMCFD gas per day, of which only 889 MMCFD gas is available⁷ due to this supply shortage.

Salient features of the proposed Coal Policy:

- The Coal Policy shall be treated as an integral part of the National Energy Policy.
- Coal export has been abandoned in the context of very limited coal reserve which is unable to ensure energy security for next 50 years (at present proven reserve is about 884 million tons which can ensure energy security for about 20 years).
- Decisions on mining method (either open pit or underground) should be taken carefully. Any environment destructive initiative should not be taken. Consent of independent local committee shall be taken in order for open pit mining.
- In order to maintain long term energy security production of coal should be limited to the annual demand of the country. The coking coal should be transferred to coke and will be used for domestic consumption.
- If there is not enough demand of coke within the country then the surplus coke can be exported.
- The government will decide the royalty of coal by gazette notification periodically according to advice of the proposed Coal Sector Development Committee.

The second most important energy source for power generation in Bangladesh is petroleum oil which accounts for about 9.5% of total production. However, the operating costs for oil fired power plants is rising due to upward trend of oil price in the world market that has already reached at as high as \$101.32 a barrel.⁸ The scope for alternative sources of energy is extremely limited in Bangladesh. Hydroelectric capacity is only 230 MW (at present making up 4.39% of total power generation) and has limited growth prospects due to generally flat topography of the land. Utilization of solar and wind energy in Bangladesh is negligible and is unlikely to increase to a significant level in the near future. Thus, coal remains the only cheap available source of energy supply. According to the Power Sector Master Plan Update (PSMPU 2006), coal will be the primary supply source of energy for power generation in the future given the present gas reserve. Power

generation from coal based power plant will surpass gas fired power plants in 2018 in the potential case of high GDP growth. The electricity generation from coal fired power plants is predicted to be 9,979 MW compared to 9,378 MW from gas fired power plants in 2018.



Source: PSMPU 2006

Table 1: Coal Reserve in Bangladesh

Name of the field, location	Year of Discovery	Depth (meter)	Proven in-situ Reserve (million tonnes)	Proven + probable Reserve (million tonnes)	Status
Barapukuria , Dinajpur	1985-87	118-509	303	390	In production (Shaft)
Khalashpir, Rangpur	1989-90	257-483	143	685	Dev. Under consideration
Phulbari, Dinajpur	1997	150-240	288	572	Dev. Under consideration
Dighipara, Dinajpur	1994-95	328-407	150	600	Under further appraisal
Jamalganj, Joypurhat	1962	640-1158		1053 (estimated)	Too deep for mining
Total reserve (without JamalGanj)			884	2247	

Source: Geological Survey of Bangladesh (GSB), Petrobangla (as of December, 2007)

Future Demand for Coal in Bangladesh:

In the scenario of low GDP growth (5.2% per annum), the demand for electricity would be 19,312 Megawatt (MW) compared to a demand that would be 41,899 MW in 2025 if GDP growth scenario is high (8% per annum)⁹. In either case, with the limited gas reserve (13.75 TCF), the country will face a serious shortage of

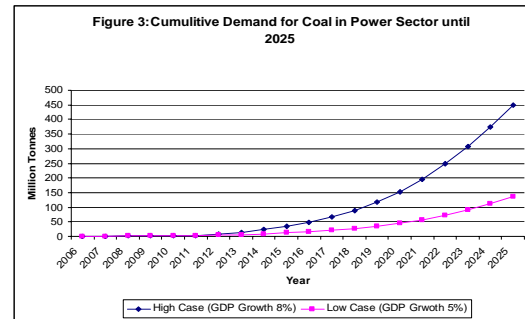
domestic sources of energy to meet demand for the power sector. In 2025 coal fired power plants should supply 32,837 MW of electricity of total 41,899 MW of production. According to the projection for high GDP growth, by 2025 the power sector alone will consume 449.44 MT (450 MT approximately) of coal. If this rate of annual demand stays fixed at 32,837 MW in the years following 2025 energy consumption will

be for next five years additional 375 (5x75) million tonnes and for next ten years additional 750 (10x75) million tonnes will be needed. That will make total demand for coal 825 million tonnes till 2030 and 1200 million tonnes till 2035 from 2005.¹⁰ So the present coal reserve is not sufficient to meet the demand for even 25 years (table 2).

Open Pit Mining for Whose Benefit? (The Dilemma over Open Pit Mining)

The Coal Arithmetic:

The draft Coal Policy stated that the decisions on mining method should be taken carefully and opted for a limited open cast mining as a test case at a shallow depth coal field like Barapukuria north field under government supervision in order to assess the environmental, social and geological impact. If the results are satisfactory, this method would be applied to other mines like Phulbari for commercial extraction¹¹. However, the Special Assistant to the Chief Adviser said that the coal policy should not dictate the mining method, as the method would vary from mine to mine.¹² The draft policy intends to extract coal by open pit method from relatively shallow reserve of Barapukuria and Phulbaria and by under ground method from the remaining two fields. The policy states that total recoverable coal would be 605 MT (the proven in situ reserve is 884 MT). This would be enough to meet the projected demand for power supply until 2027. However, by underground mining method employing mechanized Board and Pillar (B&P) technology 40-50% reserve may be extracted and by manual B&P technology 25% can be extracted. By applying mechanized B&P total extracted coal would be 353-442 MT that would be able to supply coal for power generation until 2024-2025 (table 2). On the other hand applying Manual B&P technology extracted coal would be 221 MT that can supply coal until 2021. Another method of underground mining is Long wall technology which currently accounts for 50% of underground production worldwide at present. Using this technology, roughly 60-70% coal can be extracted depending upon surrounding geology. If such technology was applied and an extraction rate of 60% is met, total production of coal would be about 531 million tons, which



Source: PSMPU 2006

could meet the demand for coal for electricity production until 2026¹³.

This raises the pressing question: why are policymakers insistent on open pit mining, which has strongly been criticized by experts and the communities who are themselves exposed to the effects, on the grounds of environment destruction, threatening food security and eroding social security. This question is especially pertinent when we consider that this method will likely only ensure supply of coal for 2-4 more years than if the underground method were applied. The coal deposits of Bangladesh are laid under densely populated area (1079 per sq km), and open cast mining will lead to the evacuation of people in these areas and the loss of fertile crop land (cultivated for two to three times in a year). For example, the Asia Energy, an UK based mining company, conducted a survey for Phulbari Coalmine. According to their survey report 10,000 hectare¹⁴ land need to be acquired for the project about 50,000 people need to be rehabilitated in 30 years lifetime of the project. This will lead to loss of food grain and other crops and vegetable production, small and large business and other economic activities. The estimated loss of that region will be about Taka 18 billion per year.¹⁵

Between 1987-1991, Mss Wardell and Armstrong, an UK based consultancy firm, conducted a feasibility study on Barapukuria coal mine. The study did not consider the open cast option due to the technical complications associated with pumping large quantities of water from the aquifer. The consultancy firm stated that 8,000 to 10,000 liter of water would be needed to pump out from the mine for 30 years in order to keep the mine dry for mining. This large amount of water withdrawal will lead to adverse impact on that area. Open pit mining method in recent years has been banned in countries like Honduras, Argentina Equador and

Costarica due to serious environmental concerns. Even the United States has opposed a Canadian initiative at the Border of Montana Sates of the USA on the ground of preserving glacial national park, stream.¹⁶

Why Excess Production? (Is that for Allowing Export?)

The draft coal policy apparently restricted the scope of coal export in order to ensure energy security of the country for next fifty years (article 2.0 of the proposed draft policy). However there is a loop hole in the draft policy that has kept the provision of coke export. In article 6.5 it is stated the coking coal (high quality coal) should be consumed domestically. In the case of there not being enough demand in the country, the surplus coking coal can be exported in from of coke. However the report has also stated that the coal production should be

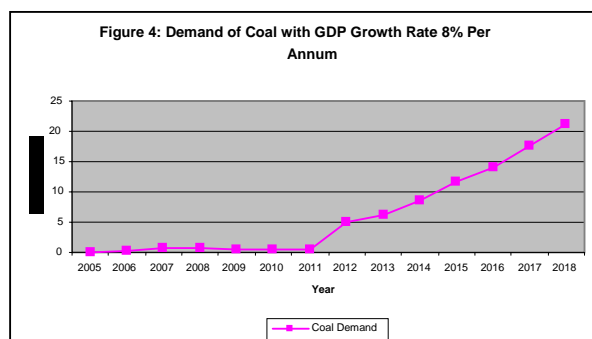
limited to the country's consumption capacity. If the open pit mining method is pursued then the production will surpass domestic demand in the earlier years. The CEO of Asia energy, in December 2007, has asked the government to allow the export of coal that would be extracted from the Phulbari Coal Field. They would extract 15 million tonnes of coal per annum applying open cast method.¹⁷ The demand for coal would not cross 15 million per year before 2017 (figure 4) even in high case of GDP growth.¹⁸ Domestic consumption will not exceed 3 million tons in the earlier years. So only from Phulbari mine there will be excess of produced coal about 12 million if open pit mining method is conducted. This excess production will certainly compel the policymakers to take the decision to export coal and that will certainly contribute to the precarious future of energy security.

Table2: Total Recoverable Coal under Different Mining Method in Bangladesh

Name of the coal field	Total proven In situ Reserve (million tonnes)	Recoverable (million tonnes)			
		Open pit method for first two field and underground B& P method to last two field*	Under ground Long wall (60%)	Under ground mechanized B & P (40-50%)	Underground Manual B&P (25%)
Barapukuria	303	273 (90%)	182	121-151	76
Phulbari	288	259 (90%)	173	115-144	72
Khalaspir	143	36 (25%)	86	57-72	36
Dighipara	150	37 (25%)	90	60-75	37
Total recoverable	884	605	531	353-442	221
Sufficient to meet energy demand till		2027	2026	2023-2025	2021

*The policy intends to pursue open pit mining to relatively shallow reserve of Barapukuria and Phulbari, and underground mining to Khalaspir and Dighipara.

Source: Petrobangla December 2007



Source: PSMPU 2006

Coal mining projects requires huge investment. For that reason open pit mining method is

preferred by the business community and especially by the foreign investors, who stand to benefit from such operations as that would enable maximum extraction of coal to suit their commercial interests and enable them to sell their produced coal. If the country does not have the market then the investors will create pressure on the policy maker for giving permission to export. This would eventually result in export of coal under disguise of coke.

No Lowest Ceiling of Royalty Rate, Whether the Government Intends to Collect Corporate Tax from Company's Losses?

The draft Coal Policy proposed that the government should fix the royalty rate through gazette notification according to advice of the Coal Sector Development Committee.¹⁹ Absence of lowest ceiling of royalty rate in the coal policy will lead to fix royalty at lower rate that would not be able to preserve country's interest. If the policy makers' intention is to collect corporate tax from the multinational corporations, it should be reminded that these corporations are very expert in creative accounting by increasing expenditure and operating cost in order to show less profit. Thus ultimately they will dodge the Government. In neighboring India, the royalty rate is about 17.4 % for high heat value coal similar to that of Bangladesh. So it would be

prudent for the policy makers to fix the lowest ceiling of royalty rate not less than that of India.

Conclusion:

In order to ensure energy security and the country's development efforts, the policy should not allow coal export in any form even in the form of coke. Rather, the Government should encourage the establishment of industries that have demand for coke. The policy shall fix the lower ceiling of the royalty rate at a reasonable level in order to protect the interest of the country. The Coal Policy should be an integral part of the overall development policy of the country. The long term development goal should get priority over the short term gains.

End note:

¹ The New Age , February 28, 2008, "Govt to form Another Committee to Review Coal Policy, Says Tamim: Citizen's Commission rejects idea, branding Tamim "controversial"

² Coke is a solid carbonaceous material derived from destructive distillation of low-ash, low-sulfur bituminous coal, also known as coking coal. It is of high heat value and used in the metallurgical purpose.

³ www.bpdb.gov.bd

⁴ The Draft Coal Policy if June, 2007

⁵ "Oil leads way as commodity prices hit record highs" in The Financial Express, February 25, 2008.

⁶ Power Sector Master Plan Update 2006 (PSMPU 2006 prepared by Nextant)

⁷ "Gas crisis forces Govt to drop 9 power generation projects" in The Financial Express, February 24, 2008.

⁸ "Oil leads way as commodity prices hit record highs" in The Financial Express, February 25, 2008.

⁹ Power Sector Master Plan Update (PSMPU 2006)

¹⁰ Annex 1 of Draft Coal Policy in June 2007

¹¹ "Draft Coal Policy Finalized" in New Age, December 15, 2007.

¹² "Govt to form Another Committee to Review Coal Policy, Says Tamim: Citizen's Commission rejects idea, branding Tamim 'controversial' "in The New Age , February 28, 2008,

¹³ Coal Mining; en.wikipedia.org

¹⁴ According to the information provided by the Asia Energy the Phulbari Coal mine is spread under 135 sq km of land and because mining project there about 656.33 sq km.

¹⁵ Muhammad, Anu, 2005, "Phulbari Coal Project: Whose Benefit and Whose Loss" in Anu Muhammad, 2006, *Unnoyoner Rajniti* (Politics of Development), Sucheepatra, Dhaka.

¹⁶ Muhammad Anu, 2008, Open Pit Mining: A Proposal for Human, Water and Agriculture Destruction, published in *the Daily Prothom Alo*, January 10, 2008.

¹⁷ "Asia Energy links viability of Phulbari project to coal export" in The Financial Express, December 1, 2007.

¹⁸ PSMPU 2006

¹⁹ In 1968 royalty rate was 10% but in 1987 it was increased to 20%. However in 1995 it was again reduced to 6% for open pit mining and 5% for underground mining. In the fifth version of draft coal policy (June 2007) the royalty was proposed to increase to 20% from 6% for open pit mining.

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