

Black gold



Worth its weight in gold.

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A.T.M. ABDUL WAHAB

COAL is called black gold or black diamond. 50% of the world's energy comes from coal. Bangladesh is facing an energy crisis because of reliance on natural gas, which is depleting fast, as the main source of energy.

Bangladesh had 15 tcf (trillion cubic foot) of proven reserve natural gas, of which the remaining 6 tcf may run out by 2015. As against this, the coal reserves in 5 fields -- Phulbari, Barapukuria, Jamalgonj, Dighipara and Khalaspeer -- are estimated to be 3 billion tons, equivalent to 67 tcf of gas, which can serve our energy needs for 50 years.

But due to lack of vision and political commitment, we failed to explore and exploit the natural resources for economic development. We have age-old mining policy, mining act, and mining regulations. We do not have a strategy for exploration or utilisation of gas reserve. We have yet to finalise a coal policy. So-called energy experts in Bangladesh, having no exposure to active mining, are opposing coal mining. This group is misguiding policy makers.

We should immediately go for mining in Phulbari and Barapukuria using modern mining technology appropriate to our conditions. If we go for open-pit mining we can extract 90% of the coal, and if we go for under-

ground mining we can extract only 5% of the coal. The obvious option is open-pit method.

Care must be taken so that mining would be safe, economical and environmentally friendly. The affected people must be properly compensated and relocated, and should get a portion of the royalty of the coal mined from the locations which once used to be their own property. The mined land may be reclaimed within 10 to 15 years, and must be handed over to original owners.

The concern and propaganda about desertification and massive environmental disaster are illogical. There are hundreds of open-pit mines in India. 88% of electrical power plants of India are coal-based. There are 273 mine fields in Jharkhand, Orissa and West Bengal, of which 90 are open-pit. India has not become desert. South Africa, Poland, China, Australia and US have not become deserts, though they use their own mined coal to the tune of 49% to 93% for power generation.

The above chart shows the details of coal-fields in Bangladesh. The total coal deposit is 3 billion tons. 1.73 million tons of coal had been extracted by underground method from Barapukuria up to December 2008. The present prices of coal per ton in the international market is \$65-115 of steam coal, \$250 of coking coal, \$525 of metallurgical coke coal. The total value of the deposit will be more than \$500 billion.

Coal Reserves in Bangladesh

No.	Place/Field (Discovery)	Depth (metre)	Area (sq km)	Estimated Reserve (million ton)
1	Barapukuria, Dinajpur (1985)	119-506	6.68	390
2	Khalaspeer, Rangpur (1995)	257-483	12.00	143(GSB), 685(Hosaf)
3	Phulbari, Dinajpur (1997)	150-240	30.00	572
4	Jamalgonj, Jaipurhat (1965)	900-1000	16.00	1050
5	Dighirpur, Dinajpur (1995)	327	Yet to be known	200

Choice of method

The method of mining depends on several things -- geology, soil conditions and nature, nature of overburden, hydrology, depth, thickness and nature of coal seam. Barapukuria underground mining initiative was not an appropriate choice. The mine has a strong aquifer above the coal layer and does not have strong roof support for underground mining. The feasibility report according to many was not properly done.

Risk analysis and Hazard and Operability Analysis (HAZOP) were not properly carried out at the design stage. It has been established by now that underground mining at Barapukuria was a technical blunder. All kinds of mine disasters -- flooding due to water ingress, spontaneous combustion of coal and release of lethal carbon monoxide and explosive methane gas, huge land subsidence, coal dust and excessive heat and humidity in the mine atmosphere, rock bump and sudden caving etc. in a coal mine have taken place there.

More than Tk.2,000 crore was spent for mining at Barapukuria, where no further mining based on the present underground long wall mining will be feasible after the current phase is completed. All this evidence confirms that open-pit mining would have been an appropriate choice for Barapukuria. We must not make the same mistakes in Phulbari and must go for open-pit. The experiences of Barapukuria and Phulbari will dictate what will be course for Jamalgonj and other minefields. The energy ministry has realised its mistakes, and plans to take up a pilot project for open-pit mining in Barapukuria.

Effects of mining

Mining of coal and burning of coal have definite environmental and social impacts. Coal mining releases approximately twenty toxic chemicals, of which 85% is managed on site. Coal mining produces carbon dioxide (CO2) and methane (CH4), potent greenhouse gas causing climate change and global warming. It creates acid rain, acid rain drainage (ARD), dust, mercury emissions, interference with the ground water and water table levels, renders land unfit for use, and pollutes the air.

Modern scientific methods have been evolved to manage these harmful impacts. Water is treated and re-cycled for use. Dust is suppressed by water sprinkling. Top-soil preserved separately is placed on the top

again when land is reclaimed. This is how the management of water, air and land is done.

Coal mine act

Bangladesh government must adopt a coal mine act immediately for the development and operation of coal mines and create an inspectorate of mines, which will monitor, observe, and make sure that the provisions of the act are followed.

Recommendations

- We should immediately go for coal mining for economic development of the country;
- Mined coal to be used for electrical power generation;
- Mined coking coal (30%) found suitable for making metallurgical coke coal to be used for steel making. Iron ores may be imported from Indian state of Orissa. A steel mill may be established in the mine area;
- No export of coal. Develop coal-based industries so that the coal can be fully utilised;
- We should float a Bangladesh Coal Mining Company. A GOB-private partnership mining company may be established for close monitoring and checking of probable exploitation.
- As we have no experience and expertise, a foreign mining company may be invited for mining in the first phase, but must not be given the lion's share;
- People in the mining area must be properly and adequately rehabilitated and compensated;
- Open-pit method for mining will be appropriate and most suitable for Phulbari and Barapukuria coal mines. Out of 390 million tons reserve coal of Barapukuria only 1.73 million tons, which is less than 1%, have so far been extracted by underground method;
- Social and environmental impact management must be ensured;
- The Bangladesh government must get proper royalty, excise duties, taxes, fees, VAT, stowing excise etc.

Major General A.T.M. Abdul Wahab, is a Mechanical Engineer.



An idle chat on a rainy night

WE huddled in a restaurant as rain lashed down in Lan Kwai Fong. I had just downed my third drink, so had moved from the lively stage to the stunned one. Which was probably why I wasn't quite sure how to respond when a colleague asked: "So, are you a half-full or a half-empty person?"

Eventually, I replied: "I usually skip lunch." He shook his head. "No no no, I'm talking 'philosophically.'" He showed me the headline of an article in a recent issue of Businessworld: "A Glass Half Full, A Glass Half Empty." He asked: "What does that mean to you?"

"It totally shocks me," I replied. "I'm totally shocked that there are still editors who use ancient clichés for headlines." My colleague agreed. "True. It's sad. One should only use a cliché if one can reinvent it," he said.

A light bulb (fluorescent, energy saver, 40 watts) flashed over my head. I saw a challenge. "Okay. Let's rescue this prehistoric cliché by working out how various modern people of our acquaintance would respond to it."

And so we set to. I grabbed a pen and a napkin, we looked at the people around us and this is what we came up with, "the Modern Guide to Half Full or Half Empty Glasses."

The optimist says: "I see a glass which is half full."

The pessimist says: "I see a glass which is half empty."

The engineer says: "I see a 180 cc glass containing 90 cc of liquid."

The detective says: "I see a surface likely to bear fingerprints."

The financial analyst says: "I see a leading indicator that the level of water in the glass may fall, rise, or stay the same."

The manufacturer says: "I see a \$3.50 mass-produced glass containing \$0.018 of water."

The teacher says: "I see half a glass, which is just not good enough. Must try harder."

The auditor says: "I see evidence of mismanagement."

The tax consultant says: "I see that a person has deliberately kept the level of liquid in his glass at just under the threshold at which it becomes a delectable asset."

The designer says: "I see a worrying mismatch between form and function."

The political risk analyst says: "I see trouble, but then I always see trouble."

The bank teller says: "I see myself asking a question: Would you like your water in single cc droplets, or 10-cc portions?"

The mortgage issuer says: "I see an opportunity to give you the funds to buy more water, which you can pay me back at LIBOR plus 3% over 25 years, giving a total sum payable of \$54.3 million."

The psychologist says: "I see evidence that someone has problems, probably with their parents."

The loss adjuster says: "I don't know how everyone else values this, but I think it is worth significantly less."

The columnist says: "I see evidence that it's time for someone to buy another round of drinks." Cheers!!!

Outside, the pouring rain was becoming a monsoon, but inside, it was warm and cosy. Having a laugh with friends does that to your evening.

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China and rare earth metals

Although China has subsequently denied that it is bent on using its influence over the world market of these raw materials for political ends, worries among foreign companies using the metals and among international speculators have not subsided even now.

PETER CUSTERS

THE row started with a minor incident, which apparently was not directly related to the international uproar that followed it. On September 7, a Chinese trawler collided with a Japanese coastal-guard boat not far from the Senkaku archipelago, located in the North-East of Taiwan. Presently under Japanese control, sovereignty over this group of islands has been claimed by China ever since the 1970s.

In the wake of the incident, the Chinese captain of the trawler was detained by Japan, which evoked an angry reaction from China. Yet, the diplomatic row between the two Asian giants was not limited to mutual re-assertion of claims over the Senkaku islands alone.

By September 20, international media reports stated that Chinese ports had informally blocked the transportation to Japan of rare earth metals which are crucial in the production of high-tech goods. And although China has subsequently denied that it is bent on using its influence over the world market of these raw materials for political ends, worries among foreign companies using the metals and among international speculators have not subsided even now.

In fact, the incident has sparked worldwide nervousness. According to leading Western newspapers, during the second half of 2010, China has reduced its exports of rare earth-metals by 70%. Moreover, China itself has announced that in 2011 it will be forced to further restrict these exports, as part of a policy aimed at securing provisions for China's own industries that use the metals.

What then is the real, the larger, story behind this row? Has China started challenging a form of dominance which the West for many centuries has sought to preserve, i.e. exclusive or privileged access to strategic

raw materials?

First, a brief note on the meaning of "rare earth metals." Just a year ago, the term had hardly ever been used in the world press. Rare earth metals are a group of some 17 metals which share chemical properties that put them apart from the minerals traditionally used in large quantities, such as copper and steel.

They reportedly appear in the earth's crust much more abundantly than the term "rare earth" suggests, but are not generally extracted separately. Instead, they are usually mined along with mass minerals and are then separated chemically. Modern industries -- ranging from factories manufacturing mobile phones, computers and flat screen televisions, to companies producing solar panels and windmills, as well as armament corporations -- are highly dependent on rare earth metals.

The total amount extracted and sold today is some 125,000 tons. But worldwide demand is growing by 10% per year. And China, as all reports agree, alone holds the key, being responsible for the extraction of as much as 98% of the total! In the case of neodymium for instance, a rare earth metal required to manufacture modern windmills, China supplies 98%. China is also a leading supplier of indium (60%) and of gallium (83%), two raw materials employed in production of solar panels.

Now one might think that China's monopolistic position is an accident of history or Nature's gift. But this is far from the case. In fact, while the size of China's stocks of proven reserves is stated to be from a third to half of the world's total, other leading world powers hold sizeable quantities below their soil too. So does a country like Kazakhstan.

The present structure of the world's trade in rare earth metals appears to be both the outcome of a conscious Chinese strategy, and of a lack of foresight among China's

main competitors.

China had targeted the extraction of these metals since the seventies, when the country's then ruler Deng Hsiao Ping declared that the 17 rare earth metals in the future could have the same significance for China as crude oil holds for the Middle East. Since then, China's government has developed large mining operations, sacrificing the health of its workers and emitting radioactive and other waste, primarily in the region of Inner Mongolia.

Moreover, whereas in various other sectors private companies can freely function, the mining of rare earth metals is controlled by a few large state enterprises, notably by Bantou Steel. A revealing essay which has just appeared in the November issue of the progressive French monthly *Le Monde Diplomatique* explains the Chinese strategy. In the context of a rapidly expanding domestic market for computers and other high tech goods, China seeks to reserve a part of its stocks for its own future needs by putting restrictions on the exportation of the rare earth metals.

Again, whereas China's present monopolistic position is partly the outcome of capitalistic foresight, it is also an effect of prolonged Western acquiescence. During this last year, i.e. well before the incident near the Senkaku archipelago occurred and the informal suspension of exports of rare earth metals to Japan started, American civilian think tanks and research centres connected to US army had brought out reports detailing the enormous dependence of high-tech companies and the armaments' industry in US on China's supplies of rare earth metals.

The flutter of reports does not just confirm that China has achieved an overall strategic position vis-à-vis US industries, which parallels US's dependence on China's investments in bonds of the US Treasury. The reports also expose the fact that in the era of neo-liberalism domestic extraction of rare earth metals in US has simply been neglected.

Historically, i.e. until the era of Deng Hsiao Ping, world extraction of these metals was reportedly dominated by US. Yet, once China expanded its supplies of these metals to the world market, interest in sustaining

extraction in US fell, basically because Chinese imports of the same materials were relatively cheaper. Extraction in Mountain Pass, US's most well-known mine for rare earth metals, was closed down and its workforce dismissed, as US high-tech industries preferred to rely on easily available imports.

What, then, is the morale of the above story? One wonders whether it has previously happened in history that Western powers more or less willingly acceded to non-Western control of raw materials that are of strategic value for their own defense and other leading industries. At US capital, as also in Brussels, policymakers are frantically searching for an answer to the production dilemmas which China's export restrictions may soon pose.

Thus, US policymakers have been discussing a rare earth "Revitalization Act," and the Mountain Pass mine reportedly will be re-opened soon. Yet, perhaps true foresightedness demands a redirection of Western policymaking in an entirely different manner. The flipside of Western dependence on Chinese production of consumables these last few years has been the "dumping" in China of computers and other info-tech which have outlived their use for Western consumers. No ships bringing consumables to US returns to China without containers being stuffed with US end-waste. And rates of (domestic) recycling of many rare earth metals in many cases are just zero.

Perhaps, then, the only proper answer to China's growing reticence to export rare earth metals is not outrage, but a new resolve to transform industrialised economies. In my view, the only human and environmentally responsible answer -- both to growing limitations in international supplies and to the future exhaustion of rare earth metals -- is a conscious choice by the West in favour of greatly expanded domestic recycling, and in favour of other steps towards industrial conversion, that are overdue.

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Dr. Peter Custers writes from Leiden, the Netherlands.