



NATURAL GAS OF BANGLADESH: ISSUES ON EXPORT AND EXPLORATION

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Abstract: This paper is aimed at analyzing the nature and consequences of involvement of foreign companies in the oil-gas exploration sector of Bangladesh. In this direction, it explores the energy scenario of the country and deals with two very sensitive current time issues like exploration activities in the Sundarbans and gas export. The paper suggests that such activity would endanger the ecology of the forest by proving disastrous to its delicate biodiversity. It also shows that the success rate in case of gas exploration is 3:1 for the whole of Bangladesh which is much higher than the world average of 10:1. Therefore, the term 'risky venture' does not go with the case of gas exploration. With respect to gas export the stand of the study is that, excess of production of gas over demand and consequent export of the same will ultimately lead to using up of the existing reserve within a period of only 15 to 20 years. As a result, in the future the country may be found importing gas at much higher prices than she has exported. Given this background, the paper questions the involvement of foreign companies in such activities not to speak of action in block 5. It is argued that no foreign intervention is necessary in the energy sector of the country as the national oil company alone is sufficient to meet up the demand for gas. What is needed is the formulation of an appropriate energy policy to ensure scientific exploration and economic use of this valuable natural resource.

Key words: Natural gas, foreign intervention, Sundarbans, gas export, gas exploration

Introduction

Our generation is face to face with a bitter reality. Like the kindergarteners kicking and screaming to grab all the cookies from a jar, we must learn to share. Our cookie is the environment – the water, air and land that support life. What's more, we have to share these resources not only with everyone else alive today, but also with future generations. Luckily, some resources can be easily shared; they are free. The spectacular view of the sunset in the beach of the Cox's Bazar, for example, can be enjoyed by all of us without detracting from the pleasure of any one of us. This is a free resource but oil and gas are not free. Moreover, our use of these today reduces supply available for future generations, because it is not only nonrenewable but also nonrecyclable. To date, proven recoverable reserves have always expanded as needed. New discoveries have been made to meet our needs. As for example, between 1986 and 1989, the world's 'proven recoverable reserves' of crude oil rose from about 650 billion barrel level of the previous 10 years to 890 billion barrels, an increase of 33 %. For coal the increase was more dramatic. From the 500–600 billion metric ton level of the previous few years, between 1985 and 1988 the amount of proved recoverable reserves rose by 80 %. For natural gas, proved recoverable reserves have doubled every 10 years in recent decades (as on, 1989). These numbers show that we always have more, not less, despite our consumption. But the point is that this precious nature's gift is not geographically evenly distributed among the countries of the world. Hence, if there is unplanned use of this resource, there is every possibility that strategically a country will be reliant on the rest of the world for energy supply.

This paper is mainly aimed at critically analyzing the nature and consequences of involvement of foreign International Oil Companies (IOCs) in the oil-gas exploration sector of Bangladesh. In this direction, it

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explores the energy scenario of the country both from historical and present perspectives. It also focuses light on two very sensitive present time issues like exploration activities in the Sundarbans and gas export.

Energy Scenario – Historical Perspective

Exploration for oil and gas in Bangladesh dates back to early 1900's, when Burma Oil Company started its exploration activities. The first exploratory well was drilled at Sitakunda in 1910, followed by three more exploratory wells by 1914. During 1923-31 Burma Oil Company drilled some shallow wells in Patharia. The wells were abandoned though there was a reported discovery of oil. A total of six exploratory wells were drilled. The programme was abandoned in 1933 following successive failures in this field. Further activity in this field was disrupted by the second world war. During Pakistan period the Standard Vacuum Oil Company of USA, Pakistan Petroleum Ltd., a Burma Oil Company affiliate and Pakistan Shell Oil Company took up initiatives in this field during the early fifties. While the first one drilled three wells without success the second one drilled several wells and made the first gas discovery in Haripur in 1955 followed by Chhattak in 1959 and the last one was the most successful company and discovered five gas fields. Later, Oil and Gas Development Corporation which was established in 1961 drilled wells in Jaldi and Semutang, discovering gas in Semutang in 1970. After liberation, Bangladesh Oil Gas and Mineral Corporation (Petrobangla) was formed. The 1980s saw accelerated exploration activities in the form of drilling twelve wells and discovering seven gas fields. Meanwhile a new milestone was achieved when Petrobangla discovered the first commercial oil pool in Sylhet on December 23, 1986. From 1989 BAPEX has continued exploration for Petrobangla, and by drilling exploratory wells discovered gas in Shahbazpur and Salandadi. Even though exploration history for oil and gas goes back almost a century, exploration rate has remained very low in a country like Bangladesh having high potentiality of hydrocarbon reserves. Since the first exploration well was drilled in 1910 a total of 128 wells have been drilled in Bangladesh till 2001. Of these 65 are exploration wells, which has resulted in the discovery of 22 gas fields of sizes ranging from more than 4 to 25 tcf. Moreover, among these, 52 wells have been drilled in onshore areas and 13 in offshore areas. Of the discovered gas fields 20 have been in onshore areas and only 2 in offshore areas. Among the drilled wells 22 have been excavated by Petrobangla which helped discovering 11 gas fields. On the other hand, the foreign companies have excavated 30 wells, among which 9 wells have gas. Thirteen wells have been excavated by foreign companies in offshore areas, from which two gas fields have been discovered. The oil field has been discovered by the BAPEX. In fine, this indicates an extremely low exploration density but high success rate of approximately one in three exploration wells which is one of the highest in the world, the rate of success for the whole of the world being 10:1 on average. Gas exploration activity and corresponding outcome has been summarized in Table 1 of the appendix. Depending on the geophysical characteristic, the country has been divided into three regions, viz. the eastern region, the western region and the offshore region. It is found that among 52 onshore wells, most of the exploratory wells (45 in number) were drilled in the eastern part of the country and gas has been found in 19 wells. Hence the success rate is 2.37:1 in this case. On the other hand excavation of 7 wells in the western region has discovered only one gas field. So in this case success rate stands at 7:1. Lastly the corresponding figures for the offshore region are respectively 13 and 2, which gives a rate of success of 6.5:1. On an overall basis the rate of success stands at a ratio of 2.95:1. Obviously then, the eastern region of the country seems to be most potential for oil-gas discovery. Table II of the appendix summarizes the above facts. While Table 3 shows that during Bangladesh period on average only one exploratory well has been drilled per year (GOB, 1996).

Though recently in Bangladesh, oil and gas exploration has become a significant sector, until the beginning of the 1990's, state oil and gas company, Petrobangla, along with its eight operating companies was the sole player in this sector. However, over the past few years, as international oil prices soared, exploration of hydrocarbon resources of the country by the IOCs has been highlighted. Consequently, the country started encouraging foreign oil companies to do business in this sector of the country and in this direction, divided the country into 23 exploration blocks on a geographical basis. Initially, six multinational oil companies undertook exploration activity in the Bay of Bengal but later left it without any significant outcome. In later periods some more companies engaged in the same kind of attempts but ended without any mentionable result. But discovery of 'Sangu' gas field in the offshore region by Cairn Energy Company in 1995 changed the whole scenario. It ignited other foreign companies' interest in the oil and gas sector of Bangladesh. Side by side, the government also started a process of open bidding to attract major investment by foreign enterprises in this field. In 1993, first round bidding was announced for petroleum exploration in the country.

Six offshore and eleven onshore blocks went on offer to international operators. A total of 8 Production Sharing Contracts (PSCs) were awarded from first round bidding. In 1997 the second round bidding was announced, with the remaining 15 unsigned blocks on offer. By 2001 several foreign companies have signed PSCs with the Government of Bangladesh (GOB, 1993).

Energy Scenario – Bangladesh Perspective

Bangladesh is a low energy consuming country with approximately 72 kgoe (kilograms of oil equivalent) annual per capita energy consumption (GOB, 2000). This is one of the lowest energy consumption in the world. On the other hand, per capita consumption of commercial fuel is 45 kgoe. In the year 2000 approximately 65% of total commercial energy consumption of the country was met by natural gas and the remainder almost entirely from oil (36%), coal (4%) and indigenous hydro-power (1%). Among its energy resources, Bangladesh has limited indigenous reserves of oil and coal, some hydroelectricity, significant reserves of natural gas and a large amount of fuel wood, crop residue, cow dung etc. Of the total energy consumed in Bangladesh 55% is collected from traditional organic fuels, while natural gas, hydroelectricity and imported coal and mineral oil meets respectively 24%, 2% and 19% of the total fuel need of the country “Ministry of Power, Energy and Mineral Resources, Government of the Peoples’ Republic of Bangladesh, 1995 described”. The pronounced general objectives of the ‘National Energy Policy’ (1995) of Bangladesh government are to: (a) provide energy for sustainable economic growth so that the development activities of different sectors are not constrained due to shortage of energy; (b) meet the energy needs of different zones of the country and socio-economic groups; (c) ensure optimum development of all the indigenous energy sources; (d) ensure sustainable operation of the energy utilities; (e) ensure rational use of all potential energy source with balanced energy-mix, so that total dependence on single source viz., natural gas may be avoided; (f) ensure environmentally sound sustainable energy development programs causing minimum damage to environment; (g) encourage public and private sector participation in the development and management of the energy sector “Production and marketing Division of Petrobangla, Reserves of Natural Gas of Bangladesh, 2002 described”.

Though Bangladesh is primarily an agricultural country, urbanization is proceeding rapidly and since the mid 70’s it has moved increasingly towards a market-oriented economy. One of the most affected areas by the ‘development’ push is the Sundarbans mangrove forest. It is suggested that if exploration in the Sundarbans is successful, it could result in the development of the much needed energy infrastructure within the southwest region of Bangladesh. By providing a possible new indigenous energy source for both household use and commercial activity this will contribute to long run sustainable development of the area. But the issue is not so straightforward to make such sweeping comments. Instead there is a need to have an overall idea about the Sundarbans before taking the crucial decision of exploration activities in this part of the country. We now turn to that.

Oil and Gas Exploration in the Sundarbans

The Sundarbans Reserved Forest (SRF), which falls in the southern part of the block 5 is the most spectacular, diverse and the richest natural forest in Bangladesh. It is located on the coast in the extreme south- west corner of the country. The SRF acts as a barrier against severe cataclysms like soil erosion and cyclones which frequently occur in this disaster-prone country. It is therefore known as the southern greenbelt. The SRF is acknowledged as the most vital and valuable forest in Bangladesh. It donates about 41% of the total forest revenue and provides employment and income for 2.5 million people. It is unique because of its mangrove ecology. Mangrove forests are vital for healthy coastal ecosystem as it stabilizes the coastline, enhances land-building and enriches both soil and aquatic environment.

Recently, the Sundarbans is threatened by oil and gas development. Shell Hydrocarbon Holdings BV, Cairn Energy Plc., BAPEX and Petrobangla have signed a PSC on July 4, 2001, for exploring and exploitation of oil and gas in block 5. They are intended to conduct exploration activity not only outside the Sundarbans but also outside the environmentally critical area, a 10 km band outside the Sundarbans. There is going on a preparation to undertake an electromagnetic and seismic survey in block 10, which is just beside the Sundarbans, and has a patch of forest in it to study the geological structure of that region. Different environmental organizations vigorously oppose all oil activities in the Sundarbans. They consider 20 km as the impact zone of the forest. Any drilling in the upstream of the forest is bound to carry polluted water down

stream in the Sundarbans. Drilling in block 10, next to the forest, carries the same risk, because many rivers flow into the forest from the areas of block 10. In support of their stand they recall the case of Shell's brutal devastation of the Niger Delta mangroves which is a grim warning that oil and mangroves don't mix and the case of destruction of the mangrove forest of Thailand following a seismic survey in a tin mine. According to experts, the land pattern of the Sundarbans is so sensitive that had there eventually been conducted any sort of such survey in this area it would endanger the ecology of the forest and damages caused to its topographical condition would be countless. In response, Shell has asserted that they were committed to carrying out all the requisite environmental and social studies prior to commencement of any operation so that eco-disaster can be kept away from the Sundarbans. Moreover, since 1999 Shell Bangladesh and partners have repeatedly attempted to make it very clear that no exploration activities will be carried out within the sensitive areas of the Sundarbans. However, the entire Sundarbans is ecologically sensitive, vulnerable and vital for Bangladesh.

Gas Export by Bangladesh–Global Energy Scenario

Presently, oil-gas exploration and its management has become a burning issue in both national and international sphere. There are varying estimates regarding actual reserve of oil and gas in Bangladesh. According to the government of Bangladesh the total reserves (proven and probable) of natural gas in the country is estimated at 23.099 trillion cubic feet (tcf) of which 13.790 tcf is feasible to extract. A total of 3.735 tcf gas had been extracted by December, 1999. Hence gas feasible for extraction in the future amounts to 10.055 tcf. According to the experts of BAPEX and Petrobangla this figure is supposed to be 10 to 15 tcf. However, there is a debate over the actual amount of gas reserves. According to some very much optimistic observers, Bangladesh is floating on gas, while some are of the view that the undiscovered reserve of the country is nearly 80 tcf which is eight times the present discovered amount. The foreign companies apprehend that the gas reserves are much higher than the estimate given by the government. According to them even with a relatively optimistic view of the growth in domestic demand, there appears to be sufficient reserves to allow Bangladesh to be a major player in regional energy trading if the government so desires.

In Bangladesh natural gas is the main source of commercial energy. Consequently, demand for gas has been increasing over time mainly due to its increased use in the electricity and fertilizer sectors and for household purposes. The utilization pattern (as on 2000) shows that the power, fertilizer and other sectors (industry, commercial, domestic and others) consume approximately 46%, 27% and 27% respectively of the total commercial gas (GOB, 2001).

The estimate of gas reserve in discovered gas fields exemplifies the nature of demand for and supply of gas in the past and in the years to come has been shown in Table 4. It shows that if no new gas fields are discovered then there will be a serious mismatch between demand for and supply of gas in the near future and such consequence has already started to be felt. According to Petrobangla the present reserve will be able to sustain the demand of the country at best up to the year 2015 or optimistically the figure may be raised to 2020, if production of it goes up with the rate of increase in demand.

It is well known that Bangladesh is an electricity deficit country. In this modern stage of 21st century, 84% of the population are without any electricity facility. Importance of fertilizer for an agro-based country like Bangladesh is also easily apprehended. At present 85%-90% of the raw material used for the production of electricity and fertilizer comes from natural gas. Proposed electricity producing-units are also going to be gas-based. Regarding fuel consumption, presently gas is considered to be next to petroleum in importance. In many cases it is replacing the latter. With the invention of newer and modern technology multiple use of gas is forthcoming. Starting from a level of only 17% of total fuel consumption in 1968-69, at present 75% of total fuel consumption is met by it. It is clear then that, with the passage of time production of gas should also go up. This requires increased production in the discovered gas fields and discovery of new gas fields. For this, exploration activities should also be geared up. Accordingly, the government is no doubt proceeding with exploration activities in collaboration with foreign companies but instead of planning gas use pattern for the country it is planning to export it.

Until recently there was no international concern regarding oil and gas reserve of Bangladesh. Only India expressed its interest to buy it. Accordingly, from the late 70s she has been creating pressure on Bangladesh for gas export. On the consideration of national interest no previous government agreed to this proposal. During the rule of the present government (Bangladesh Nationalist Party) the issue has again come up. In the

international sphere the issue of oil and gas of Bangladesh gained momentum when in the 1990s attempts were made to lease the gas fields of the country to foreign owned oil companies. The previous government arranged several World Bank financed conferences in London and Houston to attract large multinational oil companies in this sector. Following this track several blocks have been leased to foreign companies and several others are on the way of being leased.

The rate at which the government is proceeding with the signing of PSCs with foreign companies, there will soon be a situation when production and hence supply of gas will start exceeding existing demand for the same. As more and more gas fields are discovered over time and go into production there will be an increasing rate of excess supply. This will directly follow from the terms and conditions of the PSCs, according to which if there is any discovery of gas then the investor will have the right to produce gas at an annual rate of 7.5% of total extractable gas. Hence as rapidly as there would be discovery of gas in the country the more rapidly the country will be faced with excess production of gas. If, at the same time Petrobangla ceases its own production to tackle such unavoidable crisis, production by foreign companies will inevitably lead to export of excess gas production. Evidently, the ultimate fatal consequence will be extraction of the whole reserve of the country within a very short time period and making the country depleted of gas. The obvious consequence of that would be to import gas to maintain the gas based industries. Moreover, use of the already constructed thousands of kilometers of gas pipelines will also require gas import rather than to be left unused. Hence rate of leasing gas blocks to foreign companies and decision of not exporting gas seems to be contradictory.

The nature and dimension of the disaster caused by the above mentioned decision is surely to be multifarious. This will lead to the ineffectiveness of the age old institution, Oil and Gas Development Corporation (later renamed Petrobangla), starting from the year 1961 which have gradually attained international standard in all of its aspects. The obvious consequence of which will be lay-off of its producing units causing huge unemployment and unutilization of machines and structures worth of millions of dollars. Again, according to the terms and conditions of the PSC the country will have to buy gas from the former at a rate double than the domestic price of gas, leading to rise in the domestic price of gas. Even if Petrobangla doesn't cease its production completely it may have to cease it to some extent, thus leading to stagnation. Moreover, gas based industries will face serious problem in the form of dearth of energy supply, consequently leading to stagnation in these industries and finally hampering the industrialization process of the country. This will also lead to lowering of the GDP growth rate. By exporting gas at present international rate (approximately US \$3 per thousand cft), in the near future (say after 15-20 years) the country will be importing gas at much higher rate (approximately US \$7-8 per thousand cft). Because of the fact that 80% of the electricity producing units of the country are gas based, any supply deficit or like problem in the gas sector will lead to electricity hazards. Obviously, in an agro-based country like Bangladesh agriculture sector will be the hardest hit due to any gas disaster through its dependence on fertilizer whose main raw material is natural gas. Last but not the least, the process of gas buying from the investor companies will lead to serious imbalances in the balance of payments position of the country, which will also create problem for the foreign currency reserves.

It is to be mentioned here that the countries which are interested to import gas from Bangladesh are themselves well endowed with this natural resource. The obvious question thus arises why then they want to buy the same from us. The answer is straightforward. Facing the high energy crisis, every one is very cautious about using this scarce resource. As a consequence, they are adopting the policy of beggar-thy-neighbour. If this move becomes a success then the future scenario will be of a kind when present gas exporting countries will be devoid of that and the present importing countries will be using their gas reserves which they have so carefully protected down over the years. The irony of the matter is that, the present gas exporting countries will be looking for gas imports at much higher prices than they have sold their so precious nature's gift.

Countries all over the world are very sensitive and cautious about the use of this scarce natural resource. But Bangladesh seems to be an exception in this regard. While only 3% of the population of the country are getting gas facility, many of the factories are being closed due to shortfall of gas supply, production of electricity is hampered due to dearth of gas, the country is moving along with the suicidal decision of leasing the gas blocks to foreign companies. It thus seems that the government seeks to explore the whole of the yet undiscovered gas reserve and drill it out without any thoughtful plan for mere present use of the country at

the expense of the future. Such type of action is sure to make the country gas-less in the near future. No doubt this kind of antinational attitude is not likely to be found anywhere in the world.

A comparative analysis shows that USA has a reserve of oil usable for 30 years, 1,295 tcf of gas for 65 years and coal for 250 years. The same figures for India are respectively 14-15 years, 32 years and 275 years (Haider, 2000). Conversely, the picture for Bangladesh is a bleak one having no reserve of oil, almost nil reserve of coal and only 10 tcf of gas. That is, gas is the single most important natural resource of Bangladesh. A reserve of 10 tcf gas seems to be significant only because 10% of the population are using gas. Moreover, due to insignificant use of electricity (by only 10% of the population) gas use is low, as 70% of fuel for electricity production is met by gas. Obviously then, if also only the direct use of gas and electricity by the present population increases then gas use will grow remarkably and the reserve of 10 tcf will seem to be rather insignificant. In Bangladesh the rate of use of gas was 0.365 tcf in the year 1999. If this rate remains unchanged then the existing reserve will last approximately for next 27 years. But available data for the period 1989-1999 shows that the rate of increase of gas use is 8% per annum. A revised calculation based on this estimate shows that the reserve may not last longer than a period of only 16 to 17 years. If demand of increased population and other new alternative uses like use of gas as raw material in petrochemical industries is considered then the figure for gas use will again be revised to get a still lower time period figure (Haider, 2000).

It is seen that many countries of the world having a huge amount of fossil-fuel reserve meet their demand for energy through import. As for example USA imports gas from Canada. While Pakistan with a reserve of 27 tcf is importing it from Kazakhstan. India also imports oil and is recently creating pressure on Bangladesh to export gas to her. Keeping intact their own reserve the motive behind using up of the reserve of other countries is crystal clear to all. Modern civilization is to a great extent dependent on the use of energy. Although use of energy has intensified in the last seven or eight decades, already energy crisis has crept in the international energy scenario. So far, various alternative sources of energy are being considered but at all cost fossil fuel remains the single most important source of energy. Research for finding out of other feasible sources for the same has not yet come out fruitful over the past several years and there is little chance that there would be any significant success in this field in the near future. Given this bitter reality, countries are attempting to meet their demand for energy through imports such that they can use their reserves of the same in times of severe crisis. In this respect it is obvious that they have engaged themselves in a cut-throat war. In doing so they have started roaming over the globe in search of newer and cheaper sources of energy. Naturally the economically poor countries, unable to make their both ends meet, are the main victims of these countries' energy policies.

Under these circumstances how do the government dare to export gas having a reserve of only 10 tcf to last for only 13-14 years. But the reality is that some multi-national companies backed by their national counter parts are, with the logistic help of some so called 'experts' and 'intellectuals', trying to camouflage the whole scenario by expressing views regarding huge reserve of gas in Bangladesh. Their main target is obviously to serve the international interest. We now turn to another aspect of gas issue which centers on the question, whether Bangladesh is importing gas.

Is Bangladesh Importing Gas?

In several occasions the government has tried its best to ensure that the country is not going to export gas unless and until gas reserve is confirmed to be sufficient to meet up the requirement for next 50 years. This assurance has at least ruled out the fear that the country is going to be devoid of gas within only 15-20 years from now. Though it is sufficiently clear that the country may not be indulging in the suicidal decision of gas export but another question remains unanswered. This centers on the issue, whether the country is importing gas at present or not. Gas import by a country having a moderate reserve of gas seems to be contradictory. A little bit clarification of this point will make it clear that the country is not just thinking of gas import but already has started a process of doing so and is likely to be kept involved in that for several years to come. If import means buying of a good from a foreign agent (either an individual or a firm) in exchange of foreign currency then Bangladesh is definitely importing her own gas from foreign companies. This process has started just at the moment when foreign oil companies like Cairn Energy and Occidental has started producing gas in this country.

This type of import is causing losses for the Petrobangla. According to a report prepared by the Petrobangla for the task force of the Ministry of Finance indicates that for the first nine months of the year 1998-99 it had to pay an amount of foreign exchange to Cairn Energy and Occidental for gas purchase which was equivalent to Tk. 204.9 crore. With an addition of VAT of Tk. 9.18 crore the actual expenditure stands at Tk. 214.15 crore. This gas when sold in the domestic market at much lower price made Petrobangla to face a loss of Tk. 100.47 crore. In another report it is mentioned that Petrobangla has bought gas from the same source at a rate of Tk. 150 per thousand cft and had sold it at a rate of Tk. 62 per thousand cft. This unequal exchange has amounted to a loss of Tk. 215 crore for the year 2000. In this connection it is to be recalled that with the passage of time production of gas by IOCs will increase and hence payments to them and losses of the BAPEX will also increase. But obviously Petrobangla will not be able to pay off these liabilities for a long period of time, so consequently this will result in increase in domestic price of gas at regular intervals. Eventually the ultimate thrust is to be felt in the form of increased price of electricity and fertilizer or increase in subsidy for the fertilizer sector. Finally, this will result in increased prices of both agricultural and industrial goods due to their increased production costs.

While production process of only two companies had made the energy and economic scenario of the country so bleak, it is easy to apprehend what will be the condition when newer companies will be going in production having signed more and more PSCs. Besides, increase in domestic price of gas this will also shrink the foreign exchange reserve of the country.

Starting from 2000-2001 and for the next five years the total amount of money leaving the country will be yearly in an average of US\$ 111 million in the form of payment for cost recovery and profit gas of Cairn Energy and Occidental. The same figure will be around US \$200 million for next five-year period. With this amount will be added the loss faced in the domestic market from gas sale (World Bank, 1999). This reporting is sufficient to alarm the economic catastrophe going to occur due to foreign investment in almost all gas blocks of the country.

It is needed to be mentioned here that excluding one or two exceptional cases it has been found that most of the gas fields have their gas level at a depth of 3,000–4,000 metres. BAPEX, the national oil company of Bangladesh needs to invest on average an amount of Tk. 40 crore for drilling a well having a depth of around 4,000 metres. Hence the approximate cost of drilling three wells stands at Tk. 120 crore. This investment is likely to produce around 700 billion cft gas which is worth Tk. 4,300 crore equivalent to Tk. 8,000 crore in international price. This calculation does not seem to exemplify a case of risk. Hence often mentioned term 'risky venture' does not go with the gas sector of the country. Moreover, it is historically established that in the field of oil and gas exploration, Bangladesh is not a case of uncertainty and in this regard there are availability of requisite data, required experience and above all high rate of successfulness. So it becomes crystal clear that, camouflaging by the concept of risky and consequently encouraging foreign investment, in this case we are giving them a share of this valuable resource and in effect intending to serve the interest of the foreign governments. Moreover, by doing so we are compelled to buy our own gas at a high international price than at lower domestic price.

It is often mentioned by the authority that the PSC holders are undertaking a risk on behalf of the government which is unable to do the same. It is advocated that the venture being risky is rather handed over to foreign bodies as they are financially solvent enough to take the risk. Is actually the case like that? The answer is straightforward, no. It is seen that whatever their cost involved in the leased gas fields they can recover it due to the presence of a specific rule of cost recovery in the terms and conditions of the PSCs. As for example, Cairn Energy who have drilled a total of 6 exploratory wells: 4 in Sangu, 1 each in Sonadia and Halda gas fields can recover their total investment from Sangu gas field alone even though the latter attempts had ended in failures. Then, in reality not the foreign investors but the government itself is bearing the whole of the risk in the form of buying its own gas at higher international price; selling of the same at lower price in the domestic market and incurring huge losses; making the Petrobangla ineffective and a losing concern; allowing foreign dominance over a scarce natural resource; igniting international pressure for gas export and so on.

According to Bangladesh Energy Policy 1995, Ministry of Electricity, Govt. of the Peoples' Republic of Bangladesh, Dhaka the national company will drill at least 4 exploratory wells in its own initiative. But in reality there is observed a tendency to lease out all the potential blocks keeping no such block for Petrobangla. This seems to be an ultimate attempt to make the national company ineffective and insignificant.

From various calculations and estimations made by the Petrobangla regarding present and forecasted demand and supply projections it becomes clear that the national oil company alone is sufficient to meet up the demand for gas by operating production in the already discovered fields and side by side going on with attempts to discover newer ones.

Gas of Bangladesh -A Case of National and International Conspiracy

Once an oil-rich country, Nigeria can be the best example to show the deadly consequence of unplanned use of valuable and nonrenewable resource (oil in their case). A comparative analysis shows that in 1982, average per capita income (PCI) of Bangladesh and Nigeria were respectively US\$ 140 and US\$ 860. In 1998 the same figures were US\$ 360 and US\$ 300 respectively. Even after exporting petroleum for three decades Nigerian PCI has remained lower than that of Bangladesh. The Nigerians have experienced the bitter taste of becoming once rich and then poor again. The common people though have not enjoyed the fruits of petroleum export but are suffering from the environmental disaster caused due to pollution stemming from exploration and other extraction related activities. Political leaders, bureaucrats and other influential persons of the society along with their international counterparts were in the forefront regarding oil exploration and its export from Nigeria. In the same fashion Bangladeshi counterparts are now playing exactly the same role to make our country a second Nigeria on the globe. The same type of views and ideas are now flourishing in the minds of some of our corrupt leaders and over ambitious officials who are over loaded with the dreams of earning huge amounts of foreign exchange in a short period of time.

Conclusion

One day or the other the gas reserve of Bangladesh will be depleted. The country has almost no alternative source of energy. Though there is prospect of production of hydro-electricity, the amount of the same produced in the country is not sufficient. Another alternative source, that is coal has not also gone for commercial production on a large scale. Even if it starts at a large scale production of coal is discouraged for its contribution to creation of pollution. Given this unimpressive energy background there is need for thoughtful decision regarding exploration, extraction and final use of natural gas. In this direction following suggestions can be at our aid. First of all, there should be an overall survey regarding the actual and exact gas reserve of the country. The country should formulate its own planning and other related policies in light of the necessity of the country. Policy of gas export should be totally omitted in accordance with the energy policy announced by the government. In all gas related activities the importance and significance of the national institution, Petrobangla should be recognized and emphasized. To meet up the growing energy demand of the country exploration activity in the gas sector should be speeded up. It may be mentioned that so far discovered gas fields are situated in the eastern region of the country.

In this zone there are a number of potential geological sites not yet explored for gas discovery. This number is approximately equal to the number of sites where so far exploration has taken place and has led to discovery of gas fields. So remembering the success rate of the country and especially of the national company there is every possibility that if exploration activity is carried out in these sites then gas reserve of an equivalent amount of present reserve may be forthcoming. Gas extraction and its optimum utilization should be in accordance to the need of the country. Present gas use should be such that provision for gas use by the future generation is not hampered. In accordance to the demand of the country gas-based electricity plants and petrochemical complex should be established. This will be able to generate an export earning far greater than is expected to be generated through gas export. Moreover, this will create employment for a large section of people.

We then are in a position to question the involvement of foreign companies in such activities not to speak of action in block 5. Hence the paper concludes with the view that no foreign intervention is necessary in the energy sector of the country as the national oil company alone is sufficient to meet up the demand for gas by operating production in the already discovered fields and side by side going on with attempts to discover newer ones. What is needed is chalking out of a comprehensive, coherent and appropriate energy policy to ensure scientific and most economic extraction and use of this nonrenewable valuable natural resource.

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Appendices

Table 1. Summary of exploration activities in Bangladesh by region and participating company during the period 1910 –2001.

Region	Company	Number of exploratory wells	Number of discovered gas fields	Rate of success
Onshore	National	22	11	2:1
	Foreign	30	9	3.33:1
Offshore	Foreign	13	2	6.5:1
Total		65	22	2.95:1

Source : GOB (2000), Petrobangla and Bangladesh Economic Survey.

Table 2. Summary of exploration activities in Bangladesh by region during the period 1910 –2001.

Heads	Eastern region	Western region	Off-shore region	Whole country
Exploratory Well	45	7	13	65
Discovery of Gas Field	19	1	2	22
Rate of Success	2.37:1	7:1	6.5:1	2.95:1

Source : GOB (2000), Petrobangla and Bangladesh Economic Survey.

Table 3. Summary of exploration activities in Bangladesh by political regime during the period 1910 –2001.

Political regime	Number of exploratory wells	Number of discovered gas fields	Rate of success in gas discovery
1910-1933 (British period)	6	No discovery of gas field except some traces of oil in Patharia	0
1951-1971 (Pakistan period)	22	8	2.75:1
1972-2001 (Bangladesh period)	37	14	2.64:1
Total	65	22	2.95:1

Source : GOB (2000), Petrobangla and Bangladesh Economic Survey.

Table 4. Comparative analysis of demand for and supply of gas (million cft per day).

Year	1995	2000	2005 (projected)	2010 (projected)	2015 (projected)
Demand	780	1235	1800	2600	3800
Supply	780	1000	1000	1000	1000
Deficit	0	235	800	1600	2800

Source : GOB (2000), Petrobangla and Bangladesh Economic Survey.