Energy Security in South Asia: Bangladesh Perspective

1. Energy security is at the top of the agenda for almost all countries, consuming and producing countries alike, due to the extreme uncertainty in today's energy markets. It regularly features in the agenda of major global conferences, including the G-8 and G-20 meetings. In South Asia, successive SAARC summits have also acknowledged the importance of this issue, and during the 16th SAARC Summit in Thimphu in April 2010 the member states have committed to "developing a Saarc Regional Energy Framework Agreement for collaboration among the Saarc Member States in harnessing indigenous energy resources and procuring energy supplies from other regions to meet their increasing energy needs." Clearly such a commitment has cast focus on a much larger canvass with multiple implications.
2. At this point it may be helpful to understand what the concept of energy security means? Sometimes there is a tendency to equate energy security with self-sufficiency or energy independence. But Chinese scholar Zha Daojiong defined it "as a sound balance between energy supply and demand serving the purpose of facilitating sustainable economic and social development. By 'balance' we do not just mean the relationship between the overall amount of supply and demand, but the fit between a variety of energy sources and a complex set of needs." We shall try to understand the issue of energy security in Bangladesh within these parameters.
3. **Energy scenario in Bangladesh -** The energy sector in Bangladesh presents a complex picture. The mismatch between what is available and what is being utilized is the most significant element in this matrix. As per the existing estimates Bangladesh has enough gas and coal reserves to meet its commercial energy demand for the foreseeable future. According to available information Bangladesh has natural gas reserve of 20 trillion cubic feet (tcf) in the proven and possible categories. Some estimates put the figure at 63 tcf. However, up until the middle of 2011 we have extracted 9.5 tcf of gas. Likewise, five coal fields in Bangladesh posses 3.0 billion tons of good quality coal, which is equivalent to 37 tcf equivalent of gas. This means that the existing coal reserve is almost double the size of existing gas reserve in Bangladesh. Yet Bangladesh is in the midst of a serious energy crisis. Due to shortage in gas supply electricity production has been seriously affected. Currently against the daily requirement of 5800 MW of electricity, daily production ranges from 3900 to 4300 MW. Against the daily gas demand of 2500 million cubic feet (mcf) from all users daily production hovers around 2000 mcf.
4. In terms of per capita energy consumption, Bangladesh is almost at the bottom in South Asia; per capita energy consumption in Bangladesh is 220 kilowatt hour (kwh) while the figure is 4444 kwh in India and 388 kwh in Pakistan. Sri Lanka has similar consumption pattern as that of Pakistan. Energy coverage in Bangladesh is still limited roughly to half of the population. Likewise, energy resources are unevenly available in the country. For example, gas reserves are situated in the east and south east, while coal is located in the north western part of Bangladesh. Hydro sources are located in the south east part of the country. Although Bangladesh has relatively small territory, ensuring optimal energy coverage has been stymied by several obvious physical constraints. As the pace of economic growth has been accelerating in recent years the issue of energy security has assumed a new significance. The gap between demand and supply has widened and the growing supply is again creating new demands. Given the criticality of energy in everyday life and activities, this issue has occupied the centre stage in the political debate and discourse.

5. Growing role of the international oil companies (IOCs) in gas exploration and private sector contribution in electricity generation is a noteworthy reality. For an example, in 2001-2002 the national companies used to lift 312 billion cubic feet (bcf) of gas against the IOC lifting of 79 bcf of gas. By 2009-2010 the situation has changed significantly. During this period national companies lifted 330 bcf of gas while IOCs lifted 373 bcf of gas. This trend is likely to continue in the coming years. Likewise, the share of private sector in electricity generation is also growing. According to Power Division statistics 68% of the electricity in Bangladesh is generated by the government run plants, while 38% of generation is coming from the private sector. With the recent decision of the government to go for quick rental power plants, this trend is likely to be strengthened. Many experts have however raised question about the wisdom of giving huge subsidy for purchasing electricity from quick rental projects. They strongly feel that such investment in public sector could have produced better results.
6. Indeed, ensuring energy security was the most visible commitment of the present government to the people. Despite some tentative initiatives, including the effort to open up new link for energy trade with neighboring countries, the energy crisis persists. Several reasons have contributed to the creation and continuation of the energy vulnerability for the nation.
7. **Why Energy Vulnerability? -** Over the last twenty years, Bangladesh has single mindedly used natural gas as its major source of primary energy. Currently 88 percent of electricity is produced from gas based power stations. Yet investment in gas exploration has been at best laggard. Consequently, gas availability has come under severe pressure forcing the government to ration gas supplies. Although Bangladesh has reasonably good amount of high quality coal, utilization has been very modest. Out of five coal fields only one in Barapukuria has come into operation since 2005. Due to anxiety over the extraction methods and the technological security, successive governments have remained hesitant to develop a policy and an action plan for extraction and utilization of coal from four other mines. Present government has promised that it would soon finalize the draft coal policy, including exploring all avenues to maximize coal extraction keeping the interest of the nation and that of the affected people in those localities in mind. Bangladesh has also not been consistent about exploring other sources of energy such as hydro, nuclear and renewable energy sources, although some initiatives have become visible in recent months.
8. With the economy growing the pressure for import of oil has been mounting. During the financial year 2009-10 Bangladesh imported 3.7 million tones of oil, while during the current FY 201-11 the amount will shot up to 5.4 million tones. Same trend is likely to continue during the next financial year, and according to some prediction the import bill is going to soar to $6 billion, which will put huge pressure on the exchequer. This will represent the rise by almost by a third and increase the cost of subsidy on fuel to the tune of $222 million a month. Several factors may have contributed to boosting the demand for oil. First, shortage in electricity supply has spurred the demand for use of oil by practically all sectors of economy. Second, quick rental power plants will use diesel and furnace oil for generating electricity, which will raise the demand for imported oil. Some experts argued that the government's reliance on new diesel and furnace oil power plants was misplaced and hence such short-term solutions could widen the fiscal deficit and cost the country more in the long run. Third, if the price volatility continues in the global oil market then it may put additional financial burden on the government. Clearly it is a catch twenty two situation for the government.

9. **Regional context -** Incidentally energy crisis in Bangladesh coincides with several significant regional and global developments, particularly in the energy sector. Four issues are noteworthy here.
    - First, several estimates indicate that over the next 20 years the growth in demand for energy will come from the developing world, particularly from two emerging giants: China and India. According to the International Energy Agency, not only will oil demand grow by 25 percent by 2030, but 93 percent of that new demand will come from non-OECD countries, mainly from China and India. China is the largest source of oil consumption growth in their outlook, with consumption forecast to grow by 8 Mb/d to reach 17.5 million barrel per day (Mb/d) by 2030, overtaking the US to become the world's largest oil consumer. India presents a similar picture. According to a former Indian Petroleum Minister "India is already importing over 75 per cent of its crude oil needs. Even if it raises its domestic output by half - from nearly 35 million tonnes per annum at present to, say, 50 million tonnes - over the next two decades, owing to its high growth rates import dependence of India will only rise to 85 per cent and beyond. As for natural gas, which is increasingly substituting for crude oil in many applications, India is short by 50 per cent of its current requirements. Even a doubling of current levels of domestic gas output by 2025 will leave India with the same level of relative deficit - 50 per cent or, perhaps, even more. Obvious impact could be tightened global oil market."
    - Second, in a shrinking oil market, Bangladesh will have to fight China and India and other major consumers for this finite, currently irreplaceable resource. In the process, we may have to pay higher prices for oil. Indeed, all South Asian nations will have to face this reality. This prospect is particularly troublesome for Bangladesh. As the government is trying to diversify the supply of primary energy, it is likely that the share of oil in the domestic energy mix will increase, and in the process deepen its dependence on imported oil.
    - Third, among all the commercial energies, demand for electricity in all the South Asian countries is surging at a very high rate. It is evident that electricity demand between 2010 and 2020 will increase by 93per cent to 488per cent in South Asian countries whereas between the period from 2002-05 to 2010 electricity demand had increased by about 23per cent to 82.81per cent. During this period, electricity demand in India will increase by 96per cent. Electricity demand in Pakistan will increase by 93per cent, in Bangladesh by 130per cent, in Sri Lanka by 113per cent, in Nepal by 112per cent, Maldives by 336per cent, in Afghanistan by 243per cent and in Bhutan by 488per cent. If adequate power can be supplied, GDP in all the economies of South Asia will increase correspondingly.
    - Fourth, energy market is South Asia is largely segmented and segregated. Except some exchanges with between Nepal and India, Afghanistan and Pakistan, and electricity trade between India and Bhutan, not much energy related trade takes place among South Asian nations. Although Bangladesh and India have recently started setting up transmission lines for electricity trade, actual flow is unlikely to materialize before 2013. Technical possibility apart, political differences continue to complicate the possibility of exploring all sources of energy in South Asia for the benefit of interested parties. Likewise internal political turmoil in some nations is slowing down the

process of exploring more sustainable energy sources in South Asia. As a result, no major investments have come to explore energy sources in the region.

10. **Response of Bangladesh -** Bangladesh has responded to this emerging challenge at two levels: normative level and policy level. At the normative level, the present ruling party and coalition had promised to use sustainable energy as a strategic priority for poverty alleviation, among other things. In order to achieve that goal, government has assured to make an assessment of non-renewable indigenous energy sources, exploration and development of new gas and coal fields, appraisal and conversion of probable and possible reserves to proven reserves, strengthening the capacity of national companies involved in exploration and delivery systems, and installation of transmission and distribution network. They promised to provide access to affordable and reliable electricity to all citizens by 2021. They made an outline to produce electricity to 7000MW by 2013, 8000MW by 2015 and 20,000 MW by 2021.
11. At the policy level several options have been explored. A few of them are noted below. In the field of gas exploration, which is the main source of primary energy in Bangladesh several short to long term initiatives have been undertaken. They include more aggressive re-exploration of the abandoned gas wells; exploration of new gas fields through BAPEX. On the medium and long term, government has negotiated a deal with Australian firm Santos to drill on the off shore gas wells, and the Cabinet has approved a contract with Conoco Philips to carry out off shore exploration for gas under block 10, and 11. In the mean time, government has signed a contract with Qatar for import of LNG to meet the shortage of gas.
12. Fuel diversification for power production is yet another highlight of the energy policy of the present government. As a part of this process, government has decided to set up new power plants on dual fuel basis. According to latest reports government has taken initiative to produce additional 20,000 MW of power from coal fired plants by the year 2030. In addition, government is now ready to buy increased quantum of electricity from the captive power producers in the private sector. Government is also looking at the possibility to get 10 percent of electricity from the renewable sources by the year 2015. A framework agreement has been signed with the Russian Federation for setting up a nuclear power plant to produce 1000 MW of electricity. It is expected that by 2016 this plant would come into operation.
13. Besides, government is trying to instill a culture of energy saving and encourage energy saving habits among the people. In this direction, campaigns have been launched. Price adjustment is yet another policy initiative undertaken by the government to address the challenge.
14. Liberalization of energy market is yet another hallmark of policy. Three policy initiatives are noteworthy in this regard. Against the backdrop of ongoing energy and power crisis, government has embraced three new ideas. First, it has decided to allow the international oil companies (OICs) to sell gas to private sector enterprises beyond the state owned oil, gas and mineral organization, known as Petrobangla. Santos, an Australian gas company, has recently signed a contract with such a provision. Second, Bangladesh decided for the first time to engage in energy trade with India through dual tracks. Bangladesh is getting ready to import electricity from India and at the same time inviting Indian companies to invest joint venture power projects in Bangladesh. Third, Bangladesh has approached several countries to rent out their coal mines on a long term basis for supply of coal for upcoming power plants in Bangladesh. Reportedly, Indonesia has already responded positively to overture by Bangladesh and discussion with several other countries is going on to procure such

facilities. Clearly, these policy initiatives are departure from earlier policy of the government and they hold the potential for a larger cooperation in energy sector in the region and beyond, if the mutuality of interest could be maintained. Some IOCs are also showing interest to exercise their good offices to help reach out to other energy rich nations in the neighbourhood and beyond.

15. **Why Energy Cooperation in South Asia is useful? -** The big question is: can South Asian nations ensure their energy security independently against the backdrop of their fast growing economies, which are essentially energy intensive in nature? Let us look at the facts from two angles. From an internal perspective South Asian Nations present a classic case of complementarities in terms of energy production and consumption, in other words the potential surplus area and potential deficit area. For example, India, Pakistan, Bangladesh are major producers and consumers of energy; indeed they consume more than they produce and hence considered to be in the deficit category. All of them are net importer oil and coal, and all are looking for new options for gas import to meet their growing domestic needs. On the other hand, Nepal, Bhutan and Sri Lanka have enough capacity to produce electricity from clean hydro and wind power sources, which they may not need for their own consumption. In other words, they would fall in energy surplus category. Behind these complementarities, the flip side of massive use of fossil fuel by them should not be overlooked. They are likely to negatively contribute to the process of global warming, which is again a big concern for all.
16. From another angle, South Asian countries are getting increasingly dependent on foreign sources of energy. Collectively they are now able to meet less than 30 percent of their combined oil needs from within the region; South Asia accounts for less than 0.5 percent of the world's crude oil reserves; the region contains about one per cent of the total gas reserves in the world. Of the total gas produced, 48 percent is accounted for by India, 36 percent by Pakistan, and 16 percent by Bangladesh. India's primary energy consumption has risen 4.6 times in the last 30 years.
17. Consequently, major consumer nations in South Asia have already been probing the possibilities of establishing network for supply of energy from outside the region. Pakistan and India have recently explored the possibility for setting up a gas pipeline with Iran; India has also agreed to participate in the Turkmenistan- Afghanistan-Pakistan pipeline (TAPI). It has been working with nations in other continents too for this purpose. Pakistan is now working with Tajikistan to import gas from the latter. India tried to import gas from Myanmar through Bangladesh a few years ago. Bangladesh also made some overture recently to Myanmar for import of gas and electricity. Likewise, outside actors are also exploring to establish linkage with South Asian nations for energy cooperation. In recent times, China looked at Nepal as a potential source of energy supplier from its hydro sources. Unfortunately, despite some talks of cooperation in the energy sector, no tangible progress could be made so far among the South Asian nations themselves. Since the problems are already known they do not need elaboration.
18. From Bangladesh perspective, following principles could perhaps be considered in addressing the challenge of energy deficit in a collective manner by the South Asian nations.
    - Resource nationalism to resources partnership: Recently some scholars, such as Mikkal Herberg have started writing about the growing tendency toward the rise of energy and resource nationalism in Asia. In this context, he argued that major stakeholders in the strategic environment in Asia, including some nations from the South Asian region, have also been trying hard to secure their

economic and energy supplies through a variety of means. Such efforts have in a way fed the rise of a new round of competition in the region. One could easily argue against such an assertion. Yet fact remains that South Asia as a region is rife with mistrust and suspicion.

- Over the last few years several attempts have been made within the purview of SAARC to build up a common framework of cooperation in the energy sector. Bangladesh has given a proposal for building up a SAARC electric grid, among others. The progress however has been modest. India floated the proposal of South Asian Market for Energy (SAME) during the Thimphu summit of SAARC in 2010. Detailed discussion is needed to make it useful to all stakeholders. It is true that India is the largest consumer market for energy in the region and other members would like to take advantage of such a huge market. Yet it is necessary to go beyond bilateralism, give a sense of participation and create an energy market based on shared interest and benefits of all stakeholders. In order to achieve such an objective observers believe that it would perhaps be prudent to making such as process multi dimensional and multi sectoral in nature, so that an interdependent regional energy strategy could be developed. This could include joint mapping, investment and development of energy resources, along with development of other support mechanism, ranging from carrying out research to the delivery of products to the consumers in a mutually beneficial manner.
- An independent body could be set up to mange and coordinate development of energy sources, develop mechanisms for energy exchanges and trade within the region and beyond. They could also set a plan to facilitate development of low carbon economies in line with the global standards. What is important is to generate mutual trust and confidence, which subsequently could open avenues for greater regional cooperation in future.
- On shore and off shore opportunities: It is well recognized that a large reservoir of primary energy resources in the form of oil and gas may be available in the off shore areas of South Asian landmass. Yet, no notable exploration in the Bay of Bengal could be conducted to due to maritime delimitation problem, particularly for Bangladesh. In the absence of progress in the bilateral discussion, Bangladesh has referred the case to international arbitration. It is perhaps possible that concerned parties could explore the possibility of mapping out a cooperative framework for exploration of maritime energy resources in the Bay of Bengal. Several options could be considered in this respect keeping the mutuality of interest and benefits of the concerned parties in mind.
- Non-renewable to renewable energy sources: It is likely that fossil fuel will dominate the energy market in South Asia for the next few decades. Yet, there is no denying the fact that public mood is shifting and becoming more sophisticated with regard to energy exploration and consumption. They are not only interested in the outcome or product; they are also keen to understand the process. They weigh cost and benefit of the value of various energy resources. Recent problem in Fukushima nuclear power plant in Japan has raised the level of public concern about the value of even nuclear energy as a primary source of energy. It is evident that people have begun to appreciate the value of using the renewable source of energy. Against the backdrop of growing public consciousness, it would be prudent not only to develop energy strategy based on the assessment of current fossil fuel reserves, but also to develop

some plans and infrastructure, which will be able to muster the regional capacity for utilization of all renewable sources of energy, including geothermal, wind, solar and hydro power, among others.

- Government and Private sector involvement under PPP: Proposed exploration of energy resources in South Asia on a regional scale would entail massive investment, which would require mobilization of funds from the international donors, governments and the private sector under the public private partnership (PPP). Needless to say that with their experience, energy and outreach IPPs could play significant role in this context. Indeed, they are the most competent partners to catalyze the strengths of all stakeholders in a creative manner.
- Getting politics and diplomacy right: Most of the South Asian nations are practicing coalition politics within their domestic context, yet such an initiative in the regional context is simply absent. Regional context is still dominated by outdated model of bilateralism and attendant conflict dynamic. It is hoped that under the new regional context, where all governments are under pressure to deliver public goods, including jobs and economic opportunities, which again is largely dependent of energy supply, it is time to seriously look at the possibility of exploring our complementarities, particularly in the energy sector, and also to build a larger network of cooperation with the neighboruing regions for our common pursuits. After all, in a globalized world our destinies are getting interconnected and interdependent, whether we like it or not!

This Article was published in Asia Energy Summit 2011, IPPAI Research Publications