

Tackling our gas crisis



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Natural gas is a non-renewable energy source and its depletion is an inevitable outcome of a gas development programme. The occurrence of natural gas is geologically area selective, meaning that the natural gas preferably occurs in selective areas of the world, for example a deltaic landmass. Bangladesh, one of the largest deltas in the world, is known as a rich natural gas province although its true potentials are yet to be unearthed. Other deltaic land masses including Nigeria, USA, Gulf Coast, Brunei, etc., are also natural gas rich and are well-known for their reserve bases because of high maturity of exploration.

Gas exploration in Bangladesh has not reached a mature stage and therefore the presently known reserve is not necessarily a reflection of the true gas potential of the country. The present gas crunch has left the country with serious energy crisis affecting economic development. This is mainly because the country has been for the last four decades a gas-based mono-energy player and there had never been a plan B in the past for a gas depletion scenario.

Bangladesh now stands at a turning point of major change in its energy and power sectors. This will be a change from a long drawn gas-based mono-energy status to one with multiple energy mix that will include natural gas, LNG, coal, oil, cross-border power, nuclear, solar and other renewables. Most of the above energy will be imported and therefore the country will be predominantly import dependent for its energy sources.

Reduced role of gas in multiple energy mix

Bangladesh Power Sector Master Plan (PSMP) in its revised version (2015) projects an energy mix for power gener-

ation in 2030 with 35 percent by gas and LNG, 35 percent by coal, 25 percent by cross-border power, renewable and nuclear power, and 5 percent by oil. How resilient and sustainable are these energy sources?

Gas production and supply have seen a steady growth from 1,790 mmcf (million cubic feet per day) in 2009 to 2,720 mmcf in 2016. The government as well as independent consultants project that gas production and supply would continue to increase up to 2018 and would decline thereafter. In the face of continued growth of gas demand, the post-2018 period would see an ever increasing gap between demand and supply for years to come. As the share of local gas decreases in the energy mix, this will be supplemented by introduction of imported LNG. Yet the local gas and LNG together are projected to have a share of 35 percent in power generation in 2030. This is a significant reduction of gas use compared to 2009 when local gas used to contribute about 90 percent of power generation. This is based on the assumption that gas has little hope to be a major player in the energy budget of the country.

Is the gas depletion alarm overly played?

In 1993 the remaining reserve of natural gas of the country was estimated at 10.55 trillion cubic feet (TCF) (Petrobangla 1993, based on IKM evaluation of gas reserve). It was projected that the country would run out of gas in about a decade. About a decade later, in 2001, the gas reserves stood at 15.11 TCF (Petrobangla 2004, based on HCU-NPD (Hydrocarbon Unit of Bangladesh and the Norwegian Petroleum Directorate) evaluation of gas reserve, and once again it was projected that the country would be gasless in about a decade. In 2011 the country was not devoid of gas but the reserve

actually increased to an estimated 16.74 TCF (Petrobangla 2011, based on RSP Energy evaluation of gas reserve).

The above was possible because of what is known as reserve growth. Known reserve of a country may grow either by finding new gas fields or by finding new gas zones in existing fields. Over the period of the time specified above significant reserve growths were noticed in both categories in Bangladesh and gas depletion was

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outpaced by new addition of gas. But since 2005 reserve did not grow to any notable scale because of lack of enough exploration. Without rounds of serious exploration, it is not justified to comment on how much reserve growth could be achieved. And on that count adopting a long-term large scale costly LNG programme is also not justified.

Unfortunately, exploration has remained at a minimum for almost a decade now. Less than 10 exploration

wells have been drilled over the last ten years, and this is anything but a serious programme under any standard.

Therefore no significant addition to the gas reserve could be made. The present remaining reserve of 13 TCF gas is supposed to run out in about a decade with an average consumption of 1 to 1.5 TCF per year. However, geological analyses suggest that significant amounts of new gas could be found by further exploration. There are two areas of exploration that could be discussed: Onshore unexplored plays and offshore plays, especially deep offshore. Bangladesh remains immature in terms of exploration status.

Onshore, the easily identified major structural traps ('trap' is a term to denote a place in the underground where gas pool is formed) are mostly explored and drilled. But there are still several smaller structures which remain untested. More importantly, a second type of target has hardly been explored or drilled. These are called stratigraphic traps which are more subtle, generally smaller and more difficult to identify. In deltaic land areas this kind is generally very common and Bangladesh is no exception. From seismic trace analyses gas explorers could identify many of these kinds of stratigraphic traps beneath the Bangladesh delta. But these are never taken seriously as exploration targets. Therefore exploration in the land area remains in the first stage when only simple targets are tested and the more subtle ones are not.

Offshore, the exploration status is even worse. Compared to any other offshore basins (Vietnam, India, Myanmar, Malaysia, to name a few) Bangladesh offshore remains little explored to this day. Shallow offshore saw some exploration with some success while the deep offshore has not seen a single well drilled yet. This is in spite of the fact that international oil

companies have their eyes on the Bay of Bengal because of the recent gas discoveries in the offshore Rakhine basin in Myanmar adjacent to the offshore basin in Bangladesh. In fact the Rakhine offshore basin and the Bengal western offshore belong to a single geological entity with similar structural and geological features. Interestingly, the latest Myanmar offshore discovery of Thalín gas field took place close to the maritime boundary with Bangladesh. Geologists believe the Bangladesh offshore adjacent to the Myanmar maritime boundary is the most prospective for gas and Bangladesh should immediately launch large scale exploration in this area. Should Myanmar make a gas field discovery in an area that crosses the maritime boundary and if Bangladesh is unaware of it, then the total amount of gas will flow toward Myanmar producing wells and Bangladesh will lose its legitimate share of gas. The Saldanadi gas field in Comilla, for example, crosses the Bangladesh-India border and India extracts far more gas from the field than Bangladesh because India discovered it much earlier and has more producing wells than Bangladesh has on its side.

In the context of the above discussion it appears that Bangladesh's gas depletion alarm is perhaps overly played. Bangladesh will most likely find more gas and in significant volume, if full scale serious exploration programmes are run, especially in the offshore. Therefore costly LNG fuel cannot be a reasonable replacement for local gas in a long-term programme. Bangladesh has been, for a long time, fuelling its homes, industries, power plants with indigenous natural gas available at USD 2 to 3 per unit from national and international oil companies.

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