



Smart Management Of Gas Systems Operation

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Bangladesh is suffering from a chronic energy crisis - gas supply shortages. The present maximum supply of gas, including imported LNG, is 2800-2900 MMCFD against the coincident peak demand of 4200 MMCFD. The deficit of 1200-1300 MMCFD is widening every day and has become a pain in the neck for energy sector management. Petrobangla cannot even meet 50% of the gas demand of the power sector, most of the fertilizer factories remain out of operation most of the year, and industries are suffering from a situation like a gas-drought. Many small and medium industries have closed operations because of the gas and electricity crisis, and other impacts. Production of own gas fields is alarmingly decreasing every day due to depletion of proven reserves. Lack of a perspective planning and poor vision of Petrobangla have led to exploration activities for increasing proven reserves from untapped resources onshore and offshore well below the required level. The LNG import initiative has also suffered from an ill-motivated poor mindset. Starting from 2010, only two Floating Storage Regasification Units (FSRUs) could be set up with a total capacity of 1100 MMCFD RLNG supply to the gas grid. At one stage several other FSRUs and a few land-based LNG

terminals (LBTs) were planned. Few other initiatives were taken for the import of RLNG by pipeline from the neighboring country. But all these failed to deliver after wasting time, energy and efforts. It is highly uncertain when and where from the new supply of LNG would come as a new plan for LBT at Matarbari is going for public-private partnership. Hence it is highly unlikely that gas supply will increase significantly before 2030. But in the meantime, domestic gas production may even deplete below 1500 MMCFD or less. The present daily production of gas from our own fields is 1900-1950 MMCFD. Chevron, operated by Bibiyana gas field, alone produces 950 MMCFD. Most of the gas wells have a well-paced production plateau. The nature of water drive gas reservoirs is as such that it depletes very sharply. Just imagine what happens if that happens with Bibiyana. Bangladesh has experienced this at Bakhrabad and Shangu. What is the contingency plan of Petrobangla?

Enough has been written and discussed about exploitation of coal resources to relieve gas from excessive reliance or reducing stress created from increasing reliance on imported energy and power. Experts and observers suggested repeat-

edly expediting exploration of Petroleum resources from onshore and offshore. But the energy sector dominated by non-professional bureaucrats created a mess. From 2000-2025, only a little over 3 Tcf new gas could be added but for phenomenal growth of demand over 12 Tcf gas from the proven reserves has been used. Desperate EMRD and Petrobangla launched two exploration projects – 50 wells drilling program by 2025 and 100 wells drilling program by 2028. Present state and historical records evidence that such over-ambitious dreams have no possibility of realization. What is going to happen between now and 2030?

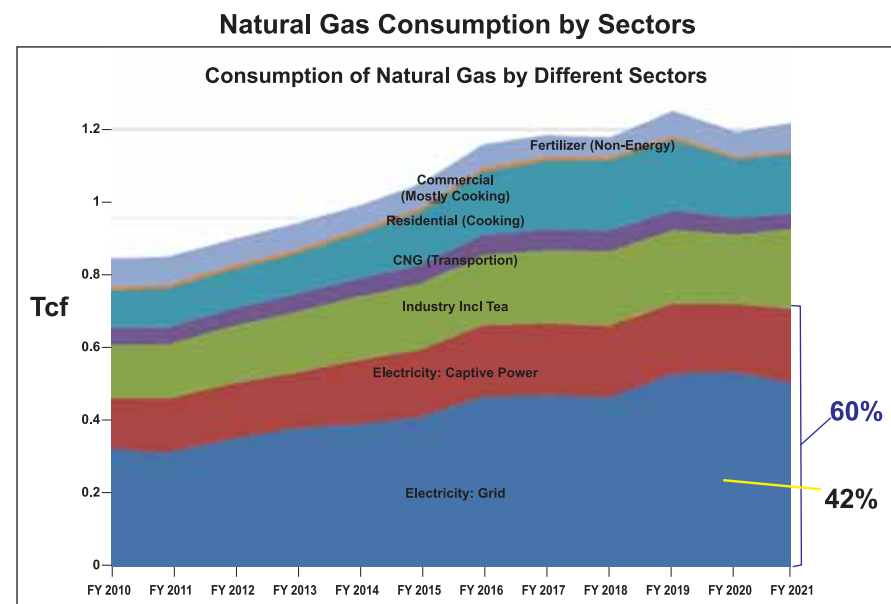
Time has come to seriously review how the existing gas resources can be optimized through smart management. Every drop of gas is now as precious as life's blood. There is no scope to misuse and waste. There is a huge scope of increasing efficiency at every stage of the gas supply chain, production, transmission, distribution and utilization through application of smart technologies.

The production from domestic gas fields - Titas, Habiganj, Rashidpoor, and Bakhrabad - can be enhanced through developing these fields to full potential and exploring at deeper high-pressure

zones. Petrobangla can take assistance and advice from IOCs operating in Bangladesh. Halliburton and Schlumberger identified gas wells can be reentered and worked over on top priority basis. The previously identified gas prospects at some areas in Chattogram Hill Tracts (CHT) must be explored on a priority basis. Stranded gas resources of Bhola island must be evacuated to the gas grid as soon as possible. We are not sure that any reputed international oil company would respond to block bidding onshore or offshore till an elected formal government is in place. BAPEX should hire some experts and utilize its human resources to achieve as much as possible to try and maintain gas production at the present rate.

Gas transmission activities have a lot of room for improvement. GTCL was created mainly for smart operation of high-pressure gas transmission pipelines and ancillary facilities (Compressor Stations, CGS, DRS, SCADA). But over a decade or so GTCL was made to focus on expanding its network from Matarbari to Rangpoor, Beanibazar to Khulna. Not much focus was given to its main function of operation and maintenance. Millions of dollars were spent on gas infrastructure expansions with no assured increase in gas supply. Can you imagine that a few pipelines are running well below design capacity. Elenga Compressor Station was never put into operation, Ashuganj Compressor Station is lying idle. Ashuganj-Bakhrabad gas transmission lines 1 & 2 very often get no supply from Ashuganj. Even the Bibiyana-Dhanua pipeline runs well below design capacity. Why GTCL was made to invest for Bogura-Rangpur pipeline while Petrobangla cannot supply gas to Kushtia, Jessore, Khulna and not even to all users in Rajshahi, Bogura. GTCL network has capacity for managing supply of 6000 MMCFD now while it is not operating at more than 3000 MMCFD. If one visits CTMS Moheshkhali and Anowara CGS, one would be shocked by the huge over capacity of the metering and regulation systems. Who is to be blamed for this?

The vision for creation of GTCL was that it will evacuate gas or LNG from



sources through modern custody transfer meters and would deliver gas to local distribution companies through custody transfer metering stations at designated locations. All high-pressure gas transmission pipelines should have been transferred to GTCL by now. GTCL was supposed to regulate and monitor the transaction of every molecule of gas transacted using SCADA. It is a sad commentary now that vision has been compromised. TGT DCL and JGT DCL still operate a few transmission pipelines. At many places GTCL transmission pipelines were hot-tapped for supplying gas to bulk consumers. Gas transactions to and from the GTCL network are not done through GTCL-owned custody transfer meters. As such disputes have surfaced from Petrobangla imposing 3% system loss upon GTCL. We must say gas transactions across the gas supply chain are not being done following globally practiced standards. We learned that GTCL also does not operate its metering and regulation system professionally. There is a lot of scope of improvement of the metering and regulation systems through smart use of meter calibration, chromatography and SCADA.

On review, one finds construction of gas transmission line from Bhola to gas grid and the under construction Bakhrabad to Shiddhirganj should have been given higher priority than construction of Bogura to Rangpur pipeline.

Petrobangla's Planning Directorate and GTCL must be made accountable for the failures. When GTCL constructed the Bibiana -Dhanua pipeline and extended Ashuganj - Monohordi parallel pipeline to Elenga, it should not have set up a compressor at Elenga. What was the reason behind the construction of Ashuganj Bakhrabad parallel transmission pipeline? Who would account for this overinvestment?

Would you suggest that GTCL reviews its metering and regulation system and modernizes it for accuracy wherever required? The Elenga Compressor should be relocated wherever it can be used soon. Gradually at all transfer points of gas from GTCL to distribution companies custody transfer metering stations should be set up. At all transfer points there must be joint calibration carried out at a given frequency, Online or handheld chromatograph must be used. GTCL must smarten its system operation and maintenance.

Gas Distribution and Gas Utilization

Of the six distribution companies TGT-DCL, KGDCL and BGDCL distribution networks are in a mess. In the TGTCL network, many gas distribution pipelines constructed in the 1970s and 1980s are profusely leaking. There are no "as build documentations". The efforts for setting up digital mapping could not be completed. Many pipelines in greater Dhaka and Narayanganj areas have gone below 8-

10 meters below the surface. It is almost impossible to track leakages. Following suspension of domestic gas connections evil syndicates have messed around through illegal tapping and constructing hundreds of kilometers of illegal pipelines. The very unsafe pipelines are causing fatal accidents. The situation is not very different in BGDCL and KGDCL either. 10% system loss at a very critical stage of the gas crisis is not acceptable at all. Distribution company officials are desperately trying to bring the situation under control. But damages done from 2010-2024 have made managing unauthorized use of gas almost impossible. The government must seriously review the gas utilization strategy. It is not advisable to change and replace all the distribution pipelines. In many congested areas of major cities and towns, construction of gas pipelines is no longer possible. The government should



phase out gas supplies to domestic and commercial consumers as there are other options available for cooking. Even installation of prepaid metering cannot solve and create few new issues. Buried distribution networks must have digital mapping and above ground installations must be monitored by GIS. In addition to domestic consumers, there are allegations of some industrial consumers using gas through meter manipulations and bypassing. Bringing industrial consumers under telemetry, this can be closely monitored.

The huge TGTDCCL system spread over greater Dhaka and Mymensingh has become very challenging to policing. There were suggestions for creating three companies for ease of operations. If not three, at least two companies in greater Dhaka and Mymensingh can be created. For managing the law and order situation of Dhaka, RAB, Ansar and BGB

are often required to manage thousands of kilometers of distribution pipelines that can have two or three companies.

Bottom line is transparent smart operation of the gas supply chain applying modern technology. While the system suffers from chronic gas crisis it can afford 10-12% gas system loss mostly through theft and pilferage.

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