

## Outlook for NG use in India

Several analysis reports available in the internet forecast heavy shortfall of NG supply in India in the near future. According to a report prepared by the consultancy firm Mckinsey and quoted in Financial Express, India's demand for NG will nearly double from the current demand of 166 Mcmd to 320 Mcmd by 2015, and with the inadequacy of domestic supplies, India has no option other than to go for large-scale LNG imports, if it were to shift away from coal in the power sector to comply with India's voluntary targets under Copenhagen Accord (co-authored by India!) to reduce carbon emissions.

It was also noted that there is an increasing demand for NG in the domestic sector with plans to increase the number of cities supplied with piped NG from the current 40 cities to 200 or more. In the transport sector too, an increase in the demand is expected with more vehicles using CNG. According to a presentation made at a recently held meeting of the Asia Gas Partnership Summit at New Delhi, it has been mentioned that there is a huge opportunity in the LNG sector with the requirement of about US\$ 50 billion investment over the next five years for expanding the infrastructure to meet the future demand.

### Trincomalee as an energy hub to serve South India

With the anticipated shortfall in the supply of NG in India in the coming years, and the failure of India to secure piped gas supplies from Iran or Turkmenistan, Sri Lanka has the potential to fill that gap by supplying gas through a pipeline to South India from Trincomalee. If India needs natural gas in the Eastern coast, it will be more economical for them to import it as LNG up to Trincomalee and then to get the gas transported to India through a pipeline (for which only the initial capital is required), than importing it as LNG up to a terminal in the Eastern coast yet to be built for which higher freight will have to be paid all the time.

It is proposed that an LNG terminal be built at Trincomalee harbour to serve as an energy hub for the South Asia region. The government could call for proposals from reputed parties to build an LNG terminal on BOOT basis, initially with capacity 5 Mtpy and expandable to 10 Mtpy or more at a later date. In turn, Sri Lanka could offer a suitable site along with the necessary infrastructure facilities to the investor. A pipeline will also have to be laid to transport gas to South India, overland up to the Northern coast and under sea thereafter. A network of pipelines needs to be built within the country too, to distribute the gas to local users.

This facility could then be offered to any other party to import LNG for distribution to direct users after re-gasification, be it to feed power plants or to use as feedstock for the manufacture of such products as urea and other chemicals or to serve industrial zones for generating thermal energy. The terminal at Dhabol has been offered to independent parties to import LNG paying a toll fee to the plant operator. A similar system could be worked out for the Trincomalee terminal too.

A pipeline from Trincomalee will be cheaper to build than building one from Myanmar which is about 900 km over Bangladesh. The distance from Trincomalee to the northern coast overland is about 175 km, while the sea straight is only about 75 km, making the total distance 250 km. to the Indian coast. India is planning to build a high tension DC transmission line to take electricity from Trincomalee to South India once the proposed Sampur coal power plant is commissioned. The costs of such a transmission line and a gas pipe line would be of the same order of magnitude.

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### Suitability of Trincomalee for a LNG terminal

Trincomalee is known for its deep harbour and around it there are several places where the 10 fathom (18 m) bathymetry contour lies very close to the shore, making them suitable for locating an LNG terminal. One is the Chapel Hill lying to the south of Trincomalee town, which ends up at the Elephant Point. Both its western coast and south eastern coasts are steep reaching 10 fathom bathymetry contour within a few hundred metres from the shore. There are also a few islands close to the harbour entrance having steep shorelines suitable for this purpose. The jetty, LNG storage tanks and the re-gasification plant could be built on the island and the rest of the facilities including the gas storage tanks could be built on the mainland.

The problems encountered in building an LNG terminal in the western coast because of the shallow sea, could be overcome at Trincomalee where the sea is deep. Furthermore, it has the advantage of being able to serve both Sri Lanka's needs as well as supplying gas to India. It could source its LNG requirements from suppliers in South-East Asia (Indonesia, Brunei, Malaysia etc.) as well as from Australia, a major supplier of LNG in the region. Iran is also a potential supplier if they manage to get their liquefaction programme operational with Indian assistance.

### Use of natural gas in the country

The Ministry of Power and Energy is currently attempting to set up an LNG terminal near Colombo, but it is very likely to be not feasible, unless it is a floating or an off-shore terminal, simply because the sea is shallow in this stretch. The 10 fathom (18 m) bathymetry contour lies at least 6 km away from the shore at Kerawalapitiya, and building a terminal to unload LNG direct to on-shore cryogenic tanks is just not feasible at this location. A more plausible solution would be to locate a terminal either in the southern coast or at Trincomalee. If the terminal were to serve the needs of the entire country, a technically and economically sound location would be the latter. It is also necessary to bear in mind the future development pattern of the country in locating the terminal.

The National Physical Planning Department has drawn up a National Physical Plan (NPP) up to 2030 where it has been recommended that the future metropolitan and industrial zones need to be shifted away from the Colombo District, as it is not possible for the Colombo District to sustain the future population increase and meet other demands such as water and housing

requirements while maintaining a proper ecological balance.

The recommendation of the NPP is to develop the major Metropolitan and Industrial zone (MIZ) in the future within the Anuradhapura – Trincomalee – Dambulla triangle, the second in the Batticaloa – Ampara area and the third in the Hambantota area. A basic requirement of a major MIZ is an adequate supply of energy; not just energy, but clean energy that will have the least impact on the environment. If an LNG terminal is built at Trincomalee, gas could be taken to industrial and commercial establishments in the proposed MIZ through a network of pipelines from the terminal.

In order to meet the energy needs of the Hambantota MIZ, either a separate terminal could be built or a pipeline laid from Trincomalee depending on the demand and cost-effectiveness. With the construction of a deep harbour at Hambantota, it will be possible to build a small terminal there to meet the local needs if it is more economical. Even for the generation of electricity, small embedded generators distributed in the country could feed the grid more efficiently than transporting diesel fuel by road to feed distant power generators, as done presently causing heavy traffic congestion.

These generators could be supplied with the fuel from the pipelines eliminating the cost of transport of the fuel by road. As done in India, city dwellers and commercial establishments could be supplied with gas on pipelines replacing the LPG as a fuel which need to be transported in cylinders across the country. It may be recalled that gas was distributed in pipelines to Colombo residents and others for cooking and heating purposes many decades ago.

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## Viability of the project

Under the Copenhagen Accord, UNFCCC is expected to create a special fund with contributions from developed countries, particularly USA, to meet additional costs incurred in reducing emission of greenhouse gases in developing countries. With the possibility of reducing emissions by about 30% by 2020 by changing the proposed 1000 MW coal power plants at Sampur and Muttur to NG-fired power plants, Sri Lanka government could seek funding from UNFCCC to make the conversion viable, if it is not so under normal commercial terms.

The utility authorities hitherto have not considered natural gas as a viable option for Sri Lanka, other than what is given in the current website, on the grounds that the country's demand for electricity does not warrant incurring heavy expenditure to build an LNG terminal. However, if the terminal is built to handle a large amount of gas supplies to meet both the local as well as Indian markets, the project should become viable, and Sri Lanka will be in a better position to negotiate prices to obtain LNG on a long term contract.

LNG is traded generally on long term contracts, typically 20 years or more. The price is

negotiated to allow adjustments within upper and lower limits depending on the global oil price. Generally, there is a gap about 4-5 years between the delivery of gas and signing the contract, because the supplier begins to open a well head and commence the associated liquefaction process only after the deal is signed. However, LNG could also be purchased on spot-markets at a higher price. According to a website report dated September 2009, India has agreed to import 1.5 Mtpy of LNG on a 20 year contract from Australia for its upcoming Kochi terminal at a price of US\$ 13.5 per MBtu. According to another website, China is buying 3.6 Mtpy of LNG over 20 years starting 2014, at a price of US\$ 11 per MBtu. As mentioned before, Myanmar has agreed to sell piped NG to China at US\$ 7.72 per MBtu.

### **The way forward**

It is suggested that proposals be invited from reputed parties to build a moderate size LNG terminal at Trincomalee on a BOOT basis. The terminal could be rented out to gas suppliers, both locally and in India, to import LNG and sell the gas. Sri Lanka government could earn revenue for providing the infrastructure facilities to the terminal operator. There will be no burden on the part of the government to meet the capital cost of the terminal as it will be a BOOT project. The gas could be distributed within the country through pipelines for use in power plants, industries, transport, commercial and domestic sectors.

The immediate step the Ministry could do is to renegotiate the proposed Sampur plant with the Indian partner to switch its fuel from coal to NG. The best way to do this is to get the Indian partner himself to seek an Indian investor to build an LNG terminal at Trincomalee. Switching the fuel from coal to NG will benefit India too, as the joint proponent of the Copenhagen Accord. Also, Sri Lanka could renegotiate with Iran to obtain LNG supply as proposed earlier. An early decision needs to be made in view of the escalating prices of natural gas in the region. If this proposal is implanted, then only the country can boast of being the energy hub in South Asia. It will also be a feather in the Minister's cap for being able to develop the country's power sector in an environmentally friendly manner.

~ island.lk ~ By Dr. Janaka Ratnasiri