New Initiatives

Coal Movement through IWT

Background

Power shortage in several parts of the country has become a 'normal feature' with adverse impact on economic production of goods and services apart from difficulties in the daily lives of millions of consumers.

Presently several power plants cannot operate at full plant load factor on account of shortage or poor quality of domestic coal. Eastern Coal Fields is unable to supply more than 15 million tonnes of coal to Farakka & Kahalgaon Super TPS against their requirement of about 27 million tonnes per annum. Reports of CEA indicate that the current stock of coal in several Thermal Power Stations of NTPC is 'supercritical'. ***Kahalgaon and Farakka often have zero days of coal stock!*** Development of new coal fields has been slow. This shortfall is being met by imported coal. The Power Ministry has reportedly decided that all TPS of NTPC must mix at least 5% of imported coal with domestic coal to improve their quality. This clearly implies that there are serious production and transport bottle necks.

At present there are ten thermal power plants which are located adjacent to or on the banks of National Waterway 1(Ganges) in West Bengal and Bihar. Several more new power plants, apart from capacity additions in existing power plants, are expected to come up by 2017 which include, *interalia*, Kahalgaon II, Barh I &II and Farakka III of NTPC.

It is estimated that thermal power plants consume about 10,000 tonnes of Indian coal (6,000 tonnes of imported coal with lower ash content) per day for every 500 MW. A 60 wagon coal train can carry about 1500 tonnes of coal, which means about 7 trains per day for every 500 MW. Hence, for Barh Super TPS alone (3300 MW) nearly 25 trains per day will be required. Keeping in view the existing traffic load on the Main Line passing through Bihar, it is almost impossible for Railways to meet this demand. Hence, there is urgent need to develop an efficient '***multi-modal transport system'*** and inland water transport has to be an integral part of multi-modal logistics solution.

National Waterway 1

A 1620 km stretch of Ganga between Allahabad and Haldia was declared National Waterway 1 by Government of India in 1986. Least Available Depth (LAD) of 2.5 m is being maintained between Haldia and Farakka (560 km) and 1.8 m to 2 m between Farakka and Patna (460 kms) by Inland Waterways Authority of India (IWAI) for about 330 days. IWAI expects to soon provide 2 m LAD upto Varanasi for at least 300 days.

IWAI also issues fortnightly 'river notices' for the entire stretch of NW 1. 24 hour Night navigation facilities are in place upto Farakka and this is to be extended upto Varanasi by March 2010. A new DGPS station has been commissioned by IWAI at Bhagalpur in August 2009 and others are proposed to beset up at Katwa, Patna and Varanasi by December 2010.

Advantages of IWT

As per a NCAER study report prepared in 2006, one barge can carry cargo equivalent to 15 rail wagons or 60 trucks and on an international standard, the operating cost of IWT

per tonne per mile is 1 cent by barge, 2.5 cent by rail and 5.3 cent by truck. IWT also provides higher fuel efficiency as compared to either rail or road as 3.8 litres of fuel can transport one tonne of freight through 827 km by barge while it is only 325 km by rail and 95 km by truck. Fuel savings to the tune of Rs.1100 crore for every 10 btkm (3 lakh kilo litre) has also been calculated for modal shift from road to IWT at diesel price of Rs.36 per litre.

IWT compares favorably with rail and road costs and if the economic costs of less carbon dioxide emission and noise pollution are factored in, then IWT will score over rail and road transport.

Memorandum of Understanding (MoU)

A **Memorandum of Understanding (MoU)** was signed on **24.9.2008** between Inland Waterways Authority of India (IWAI) and NTPC Ltd. for proposed movement of imported coal from Haldia / Sagar to Farakka, Kahalgaon, and Barh power stations of NTPC through inland water transport (IWT) mode.

As per MOU entered into between NTPC and IWAI, NTPC shall provide a commitment of 2-3 million tonnes of coal and also assured return cargo in the form of fly ash from NTPC Power Plants. NTPC is expecting that delivered cost of coal to power station coal stack yard would be competitive / cheaper vis-a-vis rail / road transportation

IWAI on the other hand committed to provide navigational channel for the movement of barges, undertake project development activities and design suitable framework for the induction of private player for carrying out the entire coal movement.

Feasibility Report

Pursuant to the signing of the MoU, IWAI got a Feasibility Study carried out covering all elements and economics of transporting the coal across the identified waterway stretches. In **Phase 1** the stretch identified was Haldia to Farakka power station. Thereafter in **Phase 2** the movement was to be extended to Kahalgaon and Barh. The Draft Feasibility Report was handed over to NTPC in Feb. 2009. However, keeping in view the requirement of NTPC, **it is now proposed to meet the needs of both Farakka and Kahalgaon Super Thermal Power Station in Phase 1 itself.**

Key Features

(1) Proposed Logistic Solution

(a) Vessel call at Diamond Harbour/ Sagar
- Mid stream transshipment.

(b) Movement of coal through barges to Farakka and Kahalgaon
- Target Quantity **2.8 mn Tonnes**: **1.2 mn MT upto Farakka** and **1.6 mn MT upto Kahalgaon Power Plants**
- 2 Merry Go round of Barges will ply on the channel

(c) Discharge mechanism at Farraka and Kahalgaon
- Jetty
- Material handling equipment as stipulated by NTPC

Explained in detail in table hereunder

Steps	**Distance**	**576 Km**	**724 Km**
	Particulars	**Farakka Power Plant**	**Kahalgaon Plant**
1	Receiving port	Transhipper- Haldia	Transhipper- Haldia
2	Barges-1500 MT	Haldia-Farakka (16 nos)	Haldia-Kahalgaon (27 nos)
3	Unloading Jetty	Farakka Power Plant	Kahalgaon Power Plant
4	Material Handling equipments	Farakka Terminal-Plant (1.2 Kms)	Kahalgaon terminal-Plant(3.5 Kms)
5	Desination/Delivery at	Coal yard-Farakka Power Plant	Coal yard- Kahalgaon Power Plant

It is assumed that out of total 2.8 mn MT of imported coal handled at Haldia, 1.6mn MT coal will be for Kahalgaon Power Plant and 1.2 mn MT for Farakka Power Plant

(2) Turnaround Time and Fleet Sizing for Farakka and Kahalgaon Power Plants

	Hal-Far	**Hal-Kah**
(a) Voyage Time: Round trip per Barge	130 hrs ~ 6 dys	165 hrs ~ 7dys
• Total upstream time (Voyage, Waiting time, Loading time)	59 hrs	73 hrs
• Total Down stream time (Waiting time, unloading and Voyage)	32 hrs	44 hrs
• Unloading of Fly ash at Haldia	15 hrs	15 hrs
• Lock Gate & Bunkering time	2 hrs	6 hrs
• Unforeseen	22 hrs	27 hrs
(b) No. of trip per month	5	4
(c) Target Quantity per annum	1.2 mn MT	1.6 mn MT
(d) Fleet size (based on 10 months operation)	16	27

(3) Project Cost

The project cost has been worked out based on the proposed logistic and its components. The detailed breakup of the same is provided hereunder:

(in Rs. crore)

Particulars	**Haldia to Farakka Plant**	**Haldia to Kahalgaon Plant Option-1**	**Total**
Barge*	96.00	162.00	258.00
Transhipper**	46.00	69.00	115.00
Farakka NTPC terminal	17.21		17.21
Kahalgaon Terminal	-	16.01	16.01
Material Handling equipment	62.91	142.81***	205.72
Sub Total	**222.12**	**389.82**	**611.94**
Pre-operative cost	2.00	1.00	3.00
Interest during construction	5.55	9.02	14.57
Sub Total	**229.67**	**399.84**	**629.51**
Contingency @5%	11.10	19.49	30.95
Total Project Cost	**240.77**	**419.33**	**660.10**

* *Assuming LAD of 2.5 mtrs*

** *The cost of Transhipper has been allocated to the 2 plants based on quantity delivered. There would be only 1 Transhipper of 30000 MT capacities*

*** *Material Handling Equipment includes the conveyor belt for 3.5 km from IWT terminal to Kahalgaon power plant*

Conclusion:

Inland Water Transport provides an economically viable and reliable system for transportation of 2.8 million metric tones of imported coal for Farakka and Kahalgaon Thermal Power Stations of NTPC. Further follow up action in this regard is being undertaken under the guidance of the Planning Commission.

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