Plan and Implementation Support for Commercialization of NW-1

Summary of 12th Pilot Movement

Bandel to Falta

IFB Agro Industries Ltd.

02nd July 2018

Plan and Implementation Support for Commercialization of NW-1

Summary of 12th Pilot Movement

Bandel to Falta

IFB Agro Industries Ltd.

This report has been prepared by:

HPC
Hamburg Port Consulting GmbH
Am Ballinkai 1
21129 Hamburg,
Germany

JV HPC-UC
C/o HPC Hamburg Port Consulting GmbH

Phone: +49-40-74008 108
Fax: +49-40-322764
E-mail: f.busse@hpc-hamburg.de
Web: www.hpc-hamburg.de

02nd July 2018

Table of Contents

List of Figures

Page

List of Tables

Page

1 Introduction

In India, the National Government intends to increase the use of inland waterway transport (IWT) and to exploit the potential benefits that this mode of transport offers for the country's growing economy. In this regard, the National Government and the Inland Waterways Authority of India (IWAI) as the statutory authority in charge of the nation's inland waterways have undertaken considerable efforts to enhance the navigability on India's national inland waterways and boost freight movements by IWT.

Given India's recent economic growth, the country's land based transportation networks are overloaded in many places and movements of cargo and passengers suffers from heavy congestion as well as the presence of physical bottlenecks. Moreover, increasing pollution requires a comprehensive and coordinated approach to an integrated national transportation policy in order to meet environmental goals. Recognizing IWT's specific advantages and given the extensive network of rivers, canals and backwaters, the Indian Government therefore intends to make barge transport an integral part of the country's future transport system.

In order to foster a sustainable and commercially viable future development of the country's IWT sector, the competent authorities have invited external expertise for a project on Plan and Implementation Support for the Commercialization of National Waterway-1 (NW-1). Started in 2017, the given project thereby aims to facilitate actual business development and to stimulate the sustainable development of freight movements on India's longest National Inland Waterway.

Having been awarded the contract to conduct the assignment, a Joint Venture of HPC Hamburg Port Consulting GmbH, UNICONSULT Universal Transport Consulting GmbH and its local Partner La Mer Maritime Ltd. have put together a team of experts with comprehensive and long-standing knowledge of both, international IWT markets in general and the Indian inland waterway shipping sector in particular. Aiming at the conduct of pilot movements and at the closing of actual working contracts, the Consultants continuously engage into direct interaction with relevant market stakeholders from the shipping sector and from potentially interested industries as well as with the competent public authorities.

Considering the practical experiences and also building upon the interim findings of the project's ongoing field work as well as the Consultants' profound knowledge of the Indian IWT market, this summary of the twelfth pilot movement provides implementation-oriented recommendations for creating the necessary conditions for a sustainable development of IWT transports on NW-1.

In the following, Chapter 2 gives an overview of the general background of this specific pilot movement of broken rice in form of bagged cargo from Bandel, West Bengal to Falta, West Bengal and the efforts undertaken to initiate it. Chapter 3 presents the financial issues while Chapter 4 provides details on the operational aspects. Based on the findings, crucial success factors and requirements for commercially viable transports and their technical feasibility are discussed in Chapter 5. Chapter 6 gives recommendations on needs for action.

2 Preparation of Pilot Movement

During the ongoing market research conducted within the scope of the current project, the Consultants' local team of experts has engaged in discussions with IFB Agro Industries Ltd. Incorporated in 1982, the Kolkata based company produces various products, inter alia including grain alcohol, organic manure as well as alcoholic beverages and processed frozen shrimps. IFB Agro's products are thereby distributed both domestically as well as on export markets.

In the course of the professional exchange with the Consultants' experts, IFB Agro Industries Ltd. has expressed its interest in the conduct of a trial transport of broken rice in bagged cargo form Bandel, West Bengal to Falta, West Bengal. Following comprehensive discussions and sound planning by the Consultants' local team, a first pilot movement on the transport of broken rice for animals has hence been agreed on.

Due to its availability and adequate technical specifications, inland vessel MV Lal Bahadur Shastri, a 2004 built IWAI general cargo vessel with a maximum capacity of 300 metric tons and a maximum draught of 1.4 meters has been deployed for the transport of the bagged broken rice on the approximately 120 kilometers segment between Bandel, West Bengal and Falta, West Bengal.

As a result of the negotiations in between the Consultants, the shipper IFB Agro Industries Ltd. and IWAI as the vessel operator, it was commonly agreed upon a freight rate of INR 330 per metric ton for the barge transport of the bagged broken rice. The rate which includes costs for loading and unloading operations was paid for by the shipper to the barge operator. Costs for first and last mile transport by road were however not part of the agreement and were paid for by the shipper.

3 Financial Aspects

Following discussions with the Consultants' local team of experts the shipper IFB Agro Industries Ltd. expressed his interest in the conduct of a pilot movement on the transport of broken rice from Bandel, West Bengal to Falta, West Bengal. Under the Consultants' lead and placement, the Kolkata based company and IWAI as the owner and operator of IWT cargo barge MV Lal Bahadur Shastri thus agreed upon the conduct of a pilot movement of 300 metric tons of the commodity on NW-1's Hooghly River stretch.

Both, the shipper and the barge operator commonly accepted a freight rate of INR 330 per ton for barge transport of the shipment of broken rice. Based on the given transport volume of 300 metric tons of bagged broken rice, total IWT related transport costs thus amounted to a total of INR 99,000 and were payed directly by the shipper IFB Agro Industries Ltd. to IWAI as the barge operator. As for the shipper, no additional charges for loading and unloading of the cargo at the waterways' entry and exit points incurred.

Charges for transport of the cargo on the first mile-leg to the loading site at the Bandel, West Bengal thermal power station as well as for last mile transport from the unloading site at Falta, West Bengal to the transport's final destination were borne by the shipper IFB Agro Industries Ltd. and therefore not subject of the agreement on the pilot movement. As the shipper and the vessel operator managed to agree on a freight rate that did not require public gap funding, it can be assumed that a capable IWT operation constitutes a financially attractive and economically efficient alternative to current land based transport concepts.

Table 1 below shows the major cost items of the twelfth pilot movement.

Table 1: Freight and Transport Charges

Position (Cost Item)	Charges (excl. Service Tax)
First mile transport to the loading site	NA
Loading at Bandel, West Bengal	Incl. in IWT freight charges
Vessel transport freight charges	INR 330 per metric ton
Discharging at Falta, West Bengal	Incl. in IWT freight charges
Last mile transport from the discharging site	NA

Source: The Consultants 2018

4 Operational Aspects

The twelfth pilot movement covers the transport of 300 metric tons of broken rice in bagged cargo form over approximately 120 kilometers on the NW-1's Hooghly River stretch form from Bandel, West Bengal to Falta, West Bengal. With a number of commodities and various O-D pairs already covered by previous trial runs conducted within the scope of the ongoing project, the current movement is the first on the transport of this particular commodity as well as the first serving loading and unloading sites at Bandel, West Bengal and Falta, West Bengal.

Starting in at the early morning hours of 19th June 2018 and being completed by the evening of 27th June 2018, the overall duration of the pilot movement including first- and last mile transport as well as time for loading and unloading of cargo amounted to a total of nine days. Throughout the complete process of preparation and conduct and in order to detect potential hurdles and bottlenecks early on, the movement was closely monitored by the Consultants at all times. This allows to take countermeasures if necessary and to prevent, respectively to mitigate organizational or operational delays throughout the movement.

With regard to organizational delays, handling procedures at Bandel, West Bengal were somewhat delayed due to high fluctuations in water tide at the barge's loading site, resulting in a suspension of loading operations for approximately three to four hours. Following an otherwise smooth barge movement on NW-1, discharging operations Falta, West Bengal were again delayed due to bad weather, including heavy rainfalls at the unloading site. Moreover, non-availability at the receiver's end resulted in some extra delays.

Documentation included a cargo manifest that had been issued for the conduct of the pilot movement and that had been signed by the master as evidence for the cargo quantity on board.

Table 2 below presents a summary of information on the movement.

Table 2: Pilot Movement at a Glance

Route	Bandel, West Bengal – Falta, West Bengal
Shipper	IFB Agro Industries Limited
Vessel Operator	IWAI
Vessel Name	MV Lal Bahadur Shastri
Commodity	Broken rice (in bagged cargo form)
Cargo Quantity	300 metric tons
Distance on NW-1	120 km
Loading at Bandel, West Bengal	19|06|2018 – 23|06|2018
Departure at Bandel, West Bengal	23|06|2018
Arrival at Falta, West Bengal	24|06|2018
Unloading at Falta, West Bengal	26|06|2018 – 27|06|2018

Source: The Consultants 2018

4.1 Loading Procedure

Loading operations took place at a jetty facility at the Bandel thermal power plant, West Bengal. Following an early morning first mile-transport by truck over a distance of approximately 40 kilometers, loading operations started on 19th June 2018 at 08:10 hours and were finished by 23rd June 2018 at 10:00 hours. Loading thereby involved the use of pontoon crane equipment for heaving the bagged broken rice off the trucks and onto the inland vessel. As to the overall duration of charging operations, loading was delayed due to high fluctuations in the Hooghly River's water tide, resulting in the suspension of loading operations by approximately three to four hours

Figure 1 below shows the site of the loading location at Bandel, West Bengal thermal power station.

Figure 1: Loading Location

Source: The Consultants 2018, based on Google Earth

Figure 2 below provides photographic illustrations of MV Lal Bahadur Shastri during loading operations at Bandel, West Bengal thermal power station including the use of a pontoon crane.

Figure 2: Loading operations

Source: The Consultants 2018

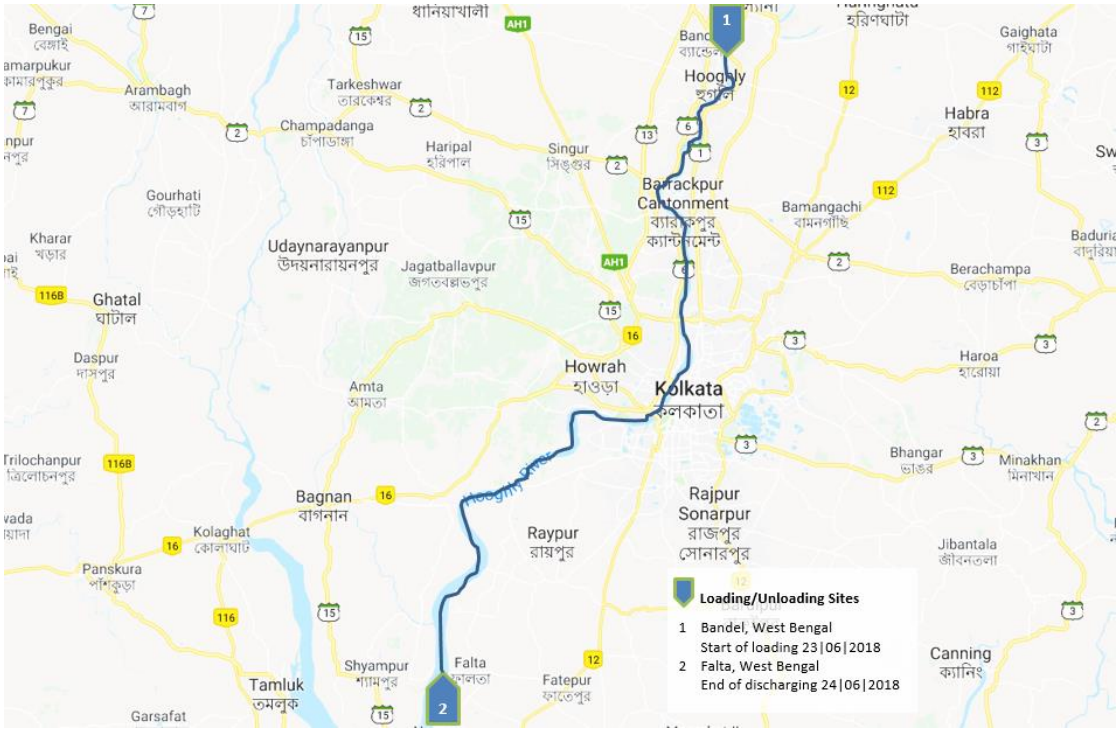
4.2 In-transit Procedure

Following the loading of 300 metric tons of broken rice in bags, IWAI inland waterway vessel MV Lal Bahadur Shastri departed Bandel, West Bengal on 23rd June 2018 at 11:00 hours. Tarpaulins and onboard-mounted hatch covers were used to protect the broken rice from weather, moisture and other external influences and to prevent damage to the cargo.

Due to generally good navigational conditions on NW-1's Hooghly River sector, the pilot movement was able to operate without significant restrictions at an average barge speed of approximately eight knots. No en route groundings were encountered throughout the course of the voyage. Following a covered distance of approximately 120 kilometers and a nighttime dwell time due to the unavailability of night time navigation the movement reached Falta, West Bengal in the late evening hours on 24th June 2018 at around 12:00 hours.

Figure 3 below provides a map of the IWT movement plan covered by the recent pilot movement on the transport of 300 metric tons of broken rice.

Figure 3: Movement Plan



Source: The Consultants 2018, based on Google Maps

4.3 Unloading Procedure

Discharging of the bagged broken rice took place at Falta, West Bengal jetty. Unloading operations using land-mounted crane equipment commenced on 26th June 2018 at 09:00 hours and were completed by 27th June 2018 at 21:00 hours.

Discharging of the cargo at Falta, West Bengal was thereby delayed due to severe weather conditions involving heavy rain falls. Moreover non-availability at the receiver's end resulted in some further delays of unloading operations. However, once discharging of MV Lal Bahadur Shastri was completed, last mile transport by truck commenced without additional delay. Following road transport over a distance of approximately 45 kilometers the movement thus reached its final destination on 27th June 2018 at around 21:45 hours.

Figure 4 below shows the unloading location of the twelfth pilot movement at Falta, West Bengal.

Figure 4: Unloading Location

Source: The Consultants 2018, based on Google Earth

Figure 5 below provides illustrations of the unloading operations. A shore-mounted moving crane was used for heaving the bagged broken rice off the inland vessel and directly onto the trucks for the last mile-transport to the shipment's final destination.

Figure 5: Unloading Operations

Source: The Consultants 2018

5 Experiences and Findings

During the twelfth pilot movement several issues have been documented by the Consultants' team of experts. These include in particular:

- First pilot movement involving the transport of broken rice in bagged form, protected from weather, moisture and other external conditions by tarpaulins and onboard-mounted hatch covers.
- First pilot movement under the scope of the current project using loading and unloading facilities at Bandel, West Bengal and Falta, West Bengal.
- Otherwise fast loading operations including the use of a pontoon mounted crane delayed by high fluctuations in water tide at Bandel, West Bengal, resulting in a suspension of loading operations for approximately three to four hours.
- Issuance of necessary transport documentation, including cargo manifest signed by the master as evidence of cargo quantity carried on board.
- Smooth downstream transport on NW-1's Hooghly River section from Bandel, West Bengal to Falta, West Bengal, including complication-free passage through the greater Kolkata area.
- Night time operations not possible due to unavailability of adequate night navigation equipment and facilities.
- No en route groundings due to sufficient available water depth at all stages throughout the course of the voyage.
- Unloading operation (also including night time discharging) involving the use of shore-mounted moving crane equipment for heaving the bagged cargo of broken rice off inland vessel MV Lal Bahadur Shastri and directly onto trucks for last mile-transport.
- Unloading at Falta, West Bengal affected by bad weather conditions involving heavy rainfall; discharging further delayed by non-availability at the receiver's end.
- Direct payment of vessel operator (IWAI) by cargo owner (IFB Agro Industries Limited), general overall economic viability for both parties results in no requirement for public gap funding.

6 Recommendations

Based on the findings of the twelfth pilot movement of broken rice in bagged cargo form, the following actions are recommended:

- Ensure technical and operational feasibility of unhindered night time navigation on all sectors on NW-1.
    - Suggestion: Improve navigational aid infrastructure (inter alia navigation lights) on NW-1 and foster availability of adequate onboard equipment for night time navigation on inland vessel fleets.
- Take measures to enhance operational independence of loading / unloading operations from variations in water tide levels.
    - Suggestion: Ensure the technical feasibility of loading operations at Bandel, West Bengal thermal power station jetty independent of tide-related variations in water levels, e.g. by dredging the jetty's surroundings.

7 Conclusion

Covering the transport of 300 metric tons of bagged cargo broken rice on NW-1's Hooghly River stretch from Bandel, West Bengal to Falta, West Bengal, the twelfth pilot movement conducted within the scope of the current project on Commercialization of NW-1 provides additional and new evidence on the technical capabilities and operational efficiency of IWT on India's longest inland waterway.

The most recent trial run thereby showed that given the availability of an adequate vessel and under the fairly good navigational conditions prevailing on the NW-1's Hooghly River sector, inland waterway transport can provide a reliable as well economically efficient alternative to land based transport modes. Moreover it demonstrates the importance of suitable in-port handling equipment being at disposal. In this regard, the given movement took advantage of both pontoon-mounted and shore-based crane equipment for efficient loading and unloading operations.

As to the deficits encountered, the given pilot movement once again demonstrated the yet existing vulnerability of loading and unloading operations to external influences such as bad weather conditions or tide-related fluctuations in water levels, with the later having also been an issue during previous trial transports. Efficient, smooth and reliable in-port handling operations are thereby of particular importance to the overall competitiveness of IWT, as land based transport alternatives usually yield a significant advantage when it comes to transport durations and may not involve intermediate handling operations.

In line with the findings of previous pilot movements it should moreover be noted that night time operations were not possible during the course of the current trial run due to missing night navigation aid facilities, respectively the unavailability of adequate onboard equipment. Enhancements with regard to the operational feasibility of night time operations may thereby constitute an important aspect in increasing IWT's transport speed and service quality, thus improving its overall competitiveness with land based transport alternatives.