



Plan and Implementation Support for Commercialization of NW-1

Summary of 14th Pilot Movement

Kolkata to Varanasi

PepsiCo



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PepsiCo**

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

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1 Introduction

During recent years, the National Government of India and the Inland Waterways Authority of India (IWAI) as the statutory authority in charge of the national inland waterways have undertaken significant efforts to enhance the navigability on India's National Waterways and to foster freight movements by inland waterway barge. The actions taken aim at the implementation of the government's policy objective to increase the use of inland waterway transport (IWT) and make use of the potential benefits that this mode of transport offers for the country's growing economy.

Given the growth of India's economy, existing transport networks are overloaded in many places and transportation of cargo and passengers by road and rail often suffers from heavy congestion as well as the presence of infrastructural bottlenecks. Environmental pollution and pursued sustainability goals moreover require a comprehensive as well as coordinated approach to an integrated national transportation policy. Given the existing network of rivers, canals and backwaters and recognizing IWT's mode-specific advantages, the Indian Government thus intends to make transport by inland barge an integral part of the country's transport system.

Covering the Ganga-Bhagirathi-Hooghly river system, National Waterway-1 (NW-1) has the potential to open up large markets in the northeastern states of India for IWT. In order to ensure a sustainable and commercially viable development of IWT in these parts of the country, the competent authorities have invited external expertise for the project on Plan and Implementation Support for the Commercialization of NW-1. The given project thereby aims to facilitate actual business development and to foster the sustainable development of cargo movements on India's longest National Waterway.

As the commissioned consultants, 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 knowledge of the Indian inland waterway shipping sector and international IWT markets. In the course of the ongoing project work, the Consultants constantly engage into direct interaction with relevant market stakeholders as well as the competent public authorities, primarily aiming at the conduct of pilot movements and the closing of actual working contracts.

This summary of the 14th pilot movement conducted within the scope of the ongoing project provides a documentation of the practical experiences made during this first movement of containerized cargo on NW-1. Building upon the findings of the given pilot transport as well as from current field work and the Consultant's knowledge of the regional freight market in the northeastern parts of India, the given report moreover provides implementation-oriented recommendations for the further development of the necessary infrastructural conditions and processes for a successful and sustainable development of IWT on NW-1.

In the following, Chapter 2 provides an overview on the background of the first container pilot movement from Kolkata, West Bengal to Varanasi, Uttar Pradesh and the efforts undertaken to initiate it. Chapter 3 presents financial issues while Chapter 4 provides details on the operational aspects. Chapter 5 summarizes relevant findings and experiences while Chapter 6 gives recommendations on further needs for action.

2 Preparation of Pilot Movement

The 14th pilot movement conducted within the scope of the current project constitutes the first container transport on NW-1 and was arranged and timed as part of the official opening of the new Varanasi Multi Modal Terminal (MMT). In identifying a suitable shipper for the conduct of the pilot transport, the Consultants' local team of experts has inter alia been in contact with the Indian subsidiary of the multinational food, snack, and beverage company PepsiCo. Since entering the Indian market in 1989, the American company has constantly invested in the areas of product innovation, manufacturing capacity, market infrastructure as well as supply chain optimization. In doing so, PepsiCo has grown into one of the foremost foods and beverage suppliers in India and operates 62 plants across the country.¹

As a result of comprehensive discussions, PepsiCo India agreed on the conduct of a first pilot movement on the transport of approximately 85 metric tons of food products between Kolkata, West Bengal and Varanasi, Uttar Pradesh. The cargo was thereby transported in containerized form and packed into 16 twenty-foot container units (TEU) that were arranged by the Consultants. With costs for first and last mile transport borne by IWAI, an original freight rate of INR 35,500 per TEU for barge transport from Kolkata, West Bengal to Varanasi, Uttar Pradesh was thereby agreed on (excl. costs for loading and unloading – loading and unloading also borne by IWAI).

Following the approval by the competent authorities, the pilot movement was thereafter initialized and all preparatory actions were taken. As the inland waterway vessel assigned for the transport, MV Rabindra Nath Tagore was relocated to Kolkata GR Jetty, West Bengal and loading of cargo took place on 29th October 2018. Specific requirements regarding the choice of vessel included the ability to carry standard containers at low draught and an operational speed of around 7-8 knots.

¹ See: <http://www.pepsicoindia.co.in/company/pepsico-india/about-us>

3 Financial Aspects

Under the coordination of the Consultants' team of local experts, PepsiCo India as the commissioning shipper and IWAI as the barge operator reached an agreement on the conduct of a first container pilot movement of 16 TEU on NW-1 from Kolkata, West Bengal to Varanasi, Uttar Pradesh.

PepsiCo India and IWAI thereby agreed upon a final freight rate of INR 35,500 per TEU for barge transport from Kolkata GR Jetty to Varanasi MMT. Based on the given load of 16 twenty-foot equivalent unit containers, IWT related transport costs invoiced to the shipper thus amounted to a total of INR 568,000 and were paid directly by PepsiCo to IWAI. Loading and unloading was arranged by IWAI. Originally proposed at INR 60,000, actual costs for loading of the 16 TEU at Kolkata GR Jetty did thereby not exceed INR 32,096.²

First mile transport to the loading site at Kolkata GR Jetty, West Bengal, as well as last mile transport from the unloading site at Varanasi MMT, Uttar Pradesh, to the shipment's final destination were arranged by the Consultants and charges to be met by IWAI. As to the financial viability of the agreed freight costs it must be noted that IWAI acted as barge operator. However, from the shipper's perspective, it can be assumed that the given overall freight rate of INR 35,500 per TEU excluding additional costs for first and last mile transport constitutes an economically efficient alternative to land based transportation.

Table 1 below shows the major cost items of the 14th pilot movement.

Table 1: Freight and Transport Charges

Position (Cost Item)	Charges (excl. Service Tax)
First mile transport to Kolkata GR Jetty, West Bengal	INR 8,000 per TEU
Loading at Kolkata GR Jetty, West Bengal	INR 32,096
Vessel transport freight charges	INR 35,500 per TEU
Discharging at Varanasi MMT, Uttar Pradesh	NA (IWAI crane)
Last mile transport from Varanasi MMT, Uttar Pradesh	INR 6,000 per TEU

Source: The Consultants 2019

² Costs for loading and unloading were not invoiced separately and were covered for by IWAI.

4 Operational Aspects

The 14th pilot movement covered the transport of 16 twenty-foot containers loaded with food products on the 1,168 kilometers stretch from Kolkata GR Jetty, West Bengal to Varanasi, Uttar Pradesh. The given transport is thereby the first movement of containerized cargo on NW-1 and was planned and timed in line with the official opening of the Varanasi MMT in the presence of the Prime Minister of India Mr. Narendra Modi on 12th December 2018. Moreover, it is the first pilot movement conducted within the scope of the current project that covered voyage on NW-1 sectors upstream from Patna, Bihar.

The overall duration of the pilot movement including time for first and last mile transport as well as loading and unloading of cargo amounted to 16 days. Throughout all stages of the transport the movement was closely monitored by the Consultants' local team of experts. Monitoring allows for early detection of potential hurdles and bottlenecks as well as the initiation of countermeasures, thus mitigating organizational or operational delays.

Following the pick-up from a local depot, the 16 empty containers were brought to PepsiCo's Kolkata based warehouse for stuffing of cargo before being transported to GR Jetty for loading onto IWT barge MV Rabindra Nath Tagore. Compared to previous pilot movements on the transport of bagged or bulk cargo, loading as well as unloading of the containers was accomplished in short time and involved the use of modern crane equipment. Due to fairly short distances and proximity to the IWT terminal sites, first mile transport in the Kolkata region over a distance of 80 kilometers and last mile transport in the Varanasi area over a distance of 5 kilometers were executed on the same days as loading and unloading.

Official documentation issued for the pilot movement included a cargo manifest that had been signed by the master as evidence for the cargo quantity on board. Moreover, an on-hire survey on the condition of the containers and a loading supervision survey on cargo and containers safety were conducted. While operations were generally executed according to the schedule, the movement was decelerated due to a lack of night navigation infrastructure.

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

Table 2: Pilot Movement at a Glance

Route	Kolkata GR Jetty – Varanasi MMT
Shipper	PepsiCo India
Vessel Operator	IWAI
Vessel Name	MV Rabindra Nath Tagore
Commodity	Containerized cargo
Cargo Quantity	16 TEU (approx. 85 metric tons)
Distance on NW-1	1,168 km
Loading at GR Jetty, West Bengal	29 10 2018 – 29 10 2018
Departure at GR Jetty, West Bengal	30 10 2018
Arrival at Varanasi MMT, Uttar Pradesh	09 11 2018
Unloading at Varanasi MMT, Uttar Pradesh	13 11 2018 – 13 11 2018

Source: The Consultants 2019

4.1 Loading Procedure

Following an early-morning first mile transport over a distance of around 80 kilometers, loading operations took place at GR Jetty on the southern outskirts of the Kolkata metropolitan area. Loading of the containers started on 29th October 2018 at 11:00 hours and was completed by 16:00 hours on the same day. Loading operations thereby involved the use of a shore-mounted mobile crane. In the absence of spreader equipment, the containers were hooked to the crane by steel cables. On board MV Rabindra Nath Tagore, the containers were stacked in two layers of eight containers each.

Figure 1 below shows the site of the loading location at Kolkata GR Jetty, West Bengal.

Figure 1: Loading Location



Source: The Consultants 2019, based on Google Earth

Figure 2 below provides illustrations of the loading of containers at Kolkata GR Jetty by crane equipment and stowage on board of MV Rabindra Nath Tagore.

Figure 2: Loading operations



Source: The Consultants 2019

4.2 In-transit Procedure

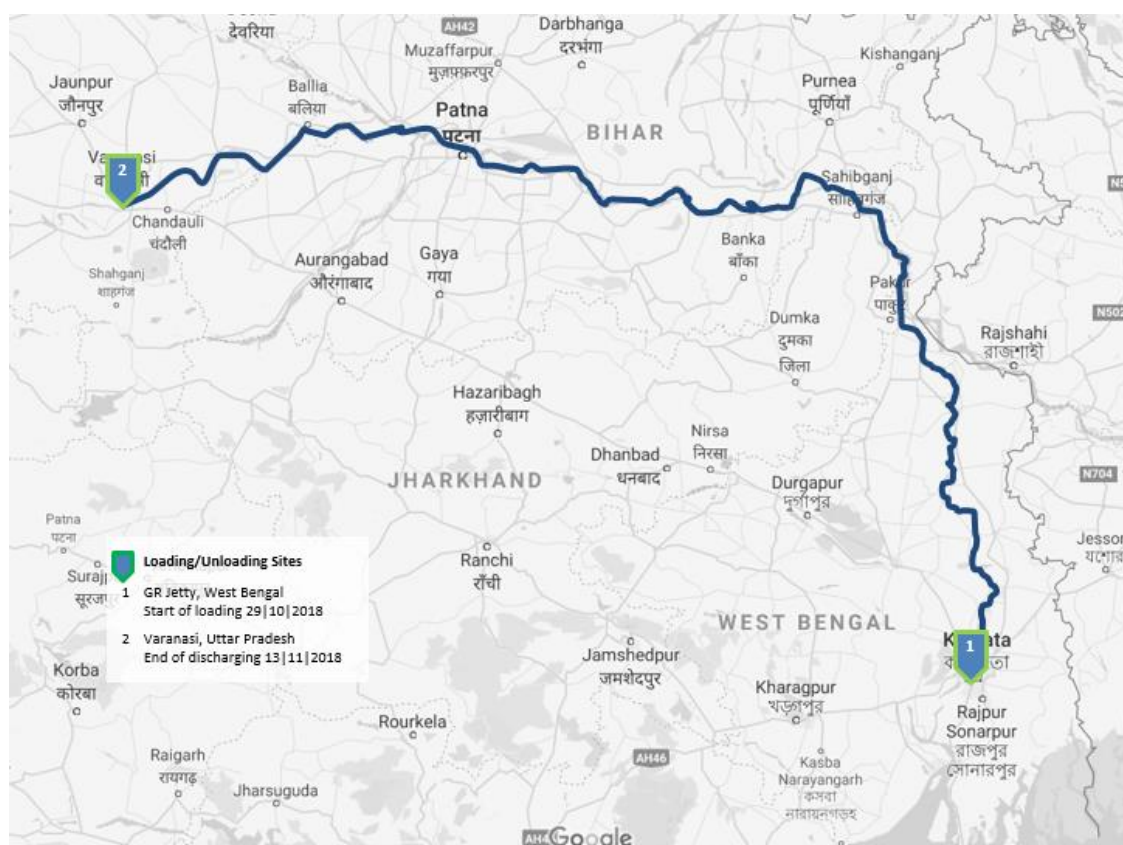
Following the charging of the 16 twenty-foot containers at GR Jetty on the southern outskirts of Kolkata, West Bengal, inland waterway vessel MV Rabindra Nath Tagore departed for Varanasi, Uttar Pradesh on 30th October 2018 at 16:30 hours.

Due to sufficient water levels and generally good navigational conditions on NW-1's en route-sectors, the pilot movement was able to operate on both the Hooghly River and the Ganga River during day time hours without significant restrictions. In particular, no en route groundings or other severe disturbances occurred. Navigation was however restricted to day light hours due to missing night navigation infrastructure.

Generally operating within the planned time schedule, the movement reached Varanasi MMT on 09th November 2018 at 17:30 hours, approximately 2 ½ days before the official opening of the newly constructed terminal in the presence of Mr. Narendra Modi, Prime Minister of India and Mr. Nitin Gadkari, Minister of Shipping.

Figure 3 below provides a map of the IWT movement plan from Kolkata, West Bengal to Varanasi, Uttar Pradesh covered by this pilot movement.

Figure 3: Movement Plan



Source: The Consultants 2019, based on Google Maps

Figure 4 below shows MV Rabindra Nath Tagore while mooring at the loading site at Kolkata GR Jetty before departure to Varanasi. The on shore mobile crane used for loading of the containers is visible in the background of the photo.

Figure 4: Cargo Vessel MV Rabindra Nath Tagore



Source: The Consultants 2019

4.3 Unloading Procedure

Following the official inauguration of the new IWAI MMT at Varanasi, Uttar Pradesh in the presence of the Prime Minister of India Mr. Narendra Modi and the Minister of Shipping Mr. Nitin Gadkari on 12th November 2018, discharging of the remaining containers took place in the early morning hours of 13th November 2018. Unloading thereby started at around 06:00 hours and was completed by 09:00 hours.

Unlike the mobile crane used during loading operations at Kolkata GR Jetty, West Bengal, the newly acquired shore mounted cranes at the new Varanasi MMT are equipped with modern spreader equipment, thus allowing for a more efficient and faster as well as safer discharging of containers. At the terminal and following the official opening ceremony, the containers were loaded onto waiting trailers for last mile transport over a short distance of just approximately five kilometers to the shipment's final destination.

Figure 5 below shows the discharging location of the 14th pilot movement at the new IWAI Varanasi MMT, Uttar Pradesh.

Figure 5: Unloading Location



Source: The Consultants 2019, based on Google Earth

Figure 6 below provides illustrations of the discharging of the first containers during the official opening ceremony of the new IWAI Varanasi MMT, Uttar Pradesh.

Figure 6: Unloading Operations



Source: The Consultants 2019

5 Experiences and Findings

During the 14th pilot movement several issues have been documented by the Consultants' team of experts. These include in particular:

- First container movement on NW-1, smooth and fairly fast transport of a total of 16 TEU from Kolkata, West Bengal to Varanasi, Uttar Pradesh.
- Empty containers were picked up from Tristar depot at Kolkata and brought to PepsiCo warehouse for stuffing of cargo while containers were on trailers.
- “On-hire” survey conducted for safety/condition of containers and loading supervision survey conducted for cargo and container safety.
- Stuffed containers on trailers were moved from PepsiCo warehouse to Kolkata GR Jetty, here containers got loaded from trailers onto vessel MV Rabindra Nath Tagore.
- Vessel moved from Kolkata GR Jetty to IWAI Varanasi MMT. At Varanasi MMT containers were unloaded from the vessel onto trailers. Trailers were then moved to PepsiCo warehouse Varanasi for stripping of cargo.
- No night navigation throughout channel from Kolkata to Varanasi on NW1.
- Vessel was safe all time i.e. no grounding from Kolkata to Varanasi on NW1.
- Vessel maintained average speed of 7 knots and reached Varanasi on time.
- Prime Minister of India Mr. Narendra Modi received the container vessel at IWAI MMT, Varanasi on 12 November 2018.
- No gap funding required for this containerized pilot movement.
- No spreader equipment available during loading at Kolkata GR Jetty.
- Other shippers are much more interested in door-to-door basis transport rather than normal pilot movement.

6 Recommendations

Based on the findings of the 14th pilot movement on the containerized transport of food products from Kolkata, West Bengal to Varanasi, Uttar Pradesh, the following actions are recommended:

- Take measures to improve handling of containers at Kolkata GR Jetty, West Bengal.
 - Suggestion: Ensure permanent availability of adequate crane equipment for container handling (e.g. equipped with spreader equipment).
- Ensure technical and operational feasibility of night time navigation on NW-1.
 - Suggestion: Improve navigational aid infrastructure (inter alia navigation lights) on all stretches of NW-1.
- Take measures to facilitate and support the arrangement and development of door-to-door transport solutions.
 - Suggestion: Extend the current pilot movement initiatives to cover more comprehensive door-to-door transports solutions instead (including arrangement and conduct of first and last mile transport, loading and unloading operations as well as interim storage (if applicable)), support the offering of corresponding transport concepts by private logistics providers.

7 Conclusion

The 14th pilot movement conducted within the scope of the current project on Commercialization of NW-1 provides an important advance in the development of economically efficient and financially attractive IWT solutions on India's longest National Waterway. Constituting the first container movement on NW-1, the given pilot transport demonstrated IWT's mode-specific capabilities in the transport of containerized freight. Moreover, with its arrival accompanying the official inauguration of the new IWAI Varanasi MMT in the presence of the Prime Minister of India Mr. Narendra Modi, the movement also achieved high and nationwide awareness through corresponding media coverage.

While generally operating within the anticipated time schedule and without severe disturbances, the 14th pilot movement nevertheless highlights some fields of action that should be addressed in order to further improve the operational reliability and overall competitiveness of IWT on NW-1. Compared to an overall transport duration of approximately 35 hours for land-based shipments of cargo from Kolkata, West Bengal to Varanasi, Uttar Pradesh, movements by IWT will naturally require considerably more time. Providing adequate navigational aid infrastructure and enabling reliable night time navigation for inland barges would thus be a way of reducing overall transport durations on NW-1.

Whereas the state-of-the-art and permanently available cranes at IWAI's new Varanasi MMT are equipped with modern spreader equipment for fast and efficient handling of containerized cargo, no such gear was available for loading at Kolkata GR Jetty. Instead, steel cables had to be used to secure the containers to the mobile crane that had been arranged for handling of the given pilot transport. Ensuring the availability of spreader equipment at all major IWT loading sites would constitute a step to further improve both the safety and efficiency of container handling operations in inland waterway ports, thus also improving the mode's overall competitiveness for this form of cargo.

While talking to potential shippers and organizing the given pilot movement, the Consultants' local team of experts repeatedly experienced that shippers are often more interested in complete door-to-door transport solutions rather than normal pilot transports. Whereas road transportation usually only involves the hiring of one transport company, contractual matters often become more difficult in IWT transport solutions as more parties become involved. In order to facilitate the development of door-to-door transport solutions and support the development of the IWT sector it may thus be helpful to extend current pilot movement initiatives to cover more comprehensive door-to-door transport concepts or to support the development of corresponding offerings through private logistics providers.