SPECIAL ARTICLE

# National Water Ways: Integrated Transport Network

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The Government of India is aggressively pushing for the development of inland waterway routes as part of an integrated transport network strategy.

On November 12, 2018, the Prime Minister dedicated India's first riverine multimodal terminal on river Ganga (National Waterway-1) at Varanasi to the nation. On the same day, he also received the country's first container cargo that travelled on river Ganga (National Waterway-1) from Kolkata to Varanasi.

The twin events not only marked watershed moments in the development of Inland Water Transport (IWT) in India but also broke grounds for a spurt in business activities on National Waterway (NW-1) as is evident with a slew of cargo owners like PepsiCo, Emami Agrotech, IFFCO Fertilizers, Dabur India that have come on board inland waterways.

106 new national waterways were announced under the National Waterways Act, 2016. With the five existing National Waterways (NW), the addition of the new ones takes the total number to 111 in the country. Out of the newly announced waterways,

**A developed IWT will not only augment the overall transport capacity of the country, but will also help correct the transport modal mix that impose huge logistics costs on the Indian economy.**

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development work is in full swing on eight of them.

The Union Finance Minister, in his Budget Speech for 2014-15, delivered on July 10, 2014, had announced Jal Marg Vikas Project (JMVP) on National Waterway-1 (NW-1) to enable commercial navigation on Varanasi-Haldia stretch of river Ganga. Soon after, began the capacity augmentation on NW-1 under the JMVP, with the technical assistance and investment support of the World Bank at an estimated cost of ₹ 5369 crore. In four years, close to ₹ 2000 crores worth of work is already on ground on National Waterway-1. Of the three multimodal terminals being built on river Ganga under JMVP, the one at Varanasi is already operational and second in Sahibganj (Jharkhand) will be ready by mid-2019.

### Jal Marg Vikas Project (National Waterway-1, River Ganga)

On NW-1, Jal Marg Vikas Project (JMVP) is being implemented for capacity augmentation on Haldia-Varanasi stretch for a distance of 1,390 km, with technical and financial assistance from the World Bank.

NW-1, along with the proposed Eastern Dedicated Freight Corridor and NH-2, constitute the Eastern Transport Corridor of India connecting the National Capital Region (NCR) with the eastern and North-eastern states and will function as a link to Bangladesh, Myanmar, Thailand, Nepal and other east and Southeast Asian countries through the Kolkata Port and Indo-Bangladesh Protocol Route.

In fact, on October 1, 2018, completing a month-long voyage from Bihar to Assam through waterways, 1233 tonnes of fly ash reached Pandu, Guwahati, marking one of the longest hauls in Inland Water Sector (IWT) movement in the country. 1233 tonnes of bagged flyash (by product from National Thermal Power Corporation's (NTPC) Kahalgaon power plant, Bihar) bound for Pandu Inland Port in Assam had sailed on September 30, 2018 to cover a distance of 2085 KMs.

This was an integrated movement through three Waterways (NW-1, river Ganga), the Indo Bangladesh Protocol (IBP) route and (NW -2, river Brahmaputra).

The movement has evinced confidence and interest in the inland waterways industry and vessel operators as more than 15 such pilot movements have been successfully completed lately on various stretches of NWs. In July, IWAI launched a dedicated portal 'FOCAL" to connect cargo owners and shippers with real time data on availability of vessels.

A developed IWT will not only augment the overall transport capacity of the country, but will also help correct the transport modal mix that impose huge logistics costs on the Indian economy. The costs of logistics in

**Table 1: Monetization of Benefits of Inland Waterways**

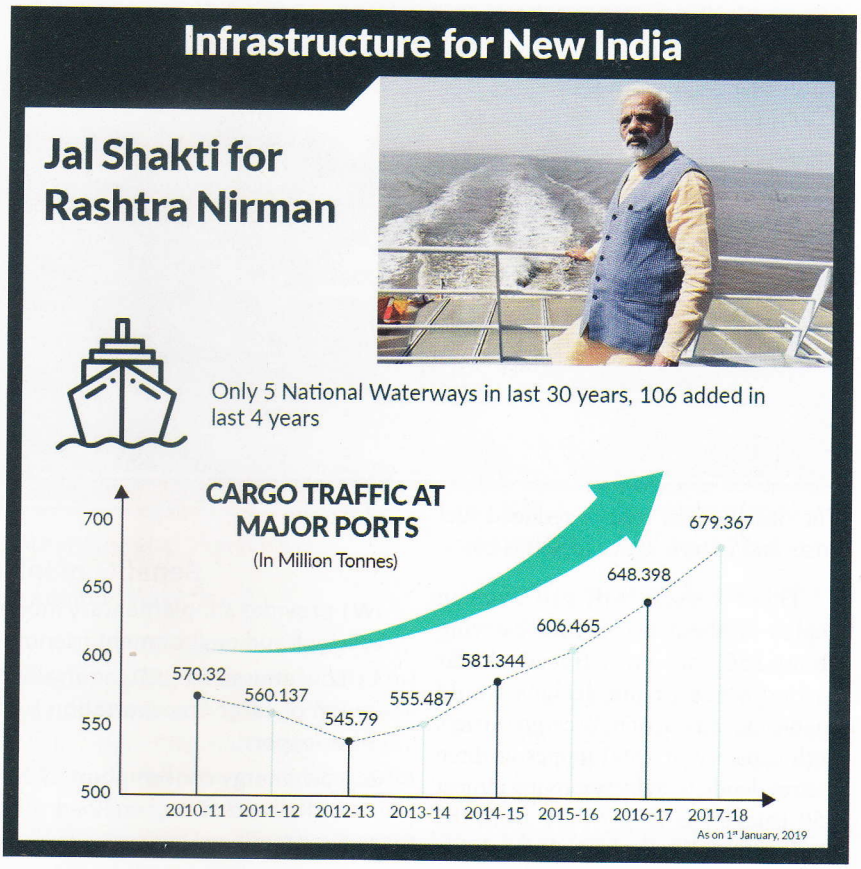
| Factor(s) Considered | Rates Considered (Rs./TKm) | | | Sources |
|---|---|---|---|---|
| | Waterways | Road | Rail | |
| Air Pollution | 0.03 | 0.202 | 0.0366 | Planning Commission : TTS Study |
| Noise Pollution | Negligible | 0.0032 | 0.0012 | Permanent International Association of Navigation Congresses (PIANC) |
| Soil & Water Pollution | Negligible | 0.005 | NIL | PIANC |
| Emission of GHGs | 0.0006 | 0.0031 | 0.0006 | 12th Five Year Plan |

India, at 15 per cent of GDP, is about twice those in the United States. The logistic share of waterways in the USA is 8.3 per cent, in Europe (7 per cent), in China (8.7 per cent), while in India it is only about 1.5 per cent. India has 14,500 kilometres of navigable inland waterways.

Inland Waterways Authority of India (IWAI), the nodal agency under the Ministry of Shipping is mandated to make National Waterways commercially navigable. IWAI aims to increase the cargo transportation through IWT on National Waterways in the country from 55 million tonnes currently to 150 million tonnes by 2023.

According to a World Bank economic analysis, approximately1.5 lakh direct and indirect employment opportunities will be created due to interventions under the Jal Marg Vikas Project.

JMVP is a wholly inclusive, economic and environment friendly game changer intervention on river Ganga. Along with giving a fillip to trade and commerce, it will help rejuvenate the river. The project not only creates an alternative, cost effective mode of transport but will create 'Room for River' which has proved to be an effective flood mitigating and river conservancy measure internationally, especially in low lying Netherlands.




## Vessel Design

In August, 2018, IWAI made public 13 standardised state-of-the-art ship designs suitable for large barge haulage on river Ganga (National Waterway-1).

This marked attaining of a critical milestone in the growth of the country's Inland Water Transport (IWT) sector as it will help overcome the unique navigation challenges river Ganga throws up due to its complex river morphology, hydraulics, acute bends, shifting channels, meanders and currents. It will serve as an enabler for the domestic shipbuilding industry working on inland vessels and open huge possibilities for cargo and passenger movement on National Waterway-1.

The specially designed vessels will navigate on low drafts with high carrying capacity which are at the same time, environment friendly. For the shipbuilding industry, the new designs will translate into a savings of Rs 30-50 lakhs in the building of a vessel. Available free on the IWAI website, the designs will remove ambiguity on the class and type of vessels that can sail on river Ganga with efficient manoeuvrability. They will help shipyards build vessels of standardised dimensions and capacity and make them available off the shelf besides developing the 'sale and purchase' market for inland vessels.

The designs will lead to reduced fuel costs and in turn lesser logistics costs.

These vessels will sail even in depths of about two metres carrying about 350 cars on a five deck car carrier. Some of the designs would enable movement of bulk cargo carriers with capacity of 2500 tonnes at three metres depth, thereby removing almost 150 truckloads of pressure from the road or one full rail rake with the plying of just one such vessel.

The new designs for various categories of dry and liquid bulk carrier, Ro-Ro vessels, car carrier, container carrier, LNG carrier, Tug Barge flotilla (Table 1) have been made by M/s DST, Germany which specialises in low draft and high carrying capacity vessels. The model testing of these designs were done at Duisburg, Germany. The new designs will obviate the dependence of Indian ship builders on foreign ship designs for IWT and prove to be a boost to the 'Make in India' initiative of the Government.

## IWAI at Social Congregations

Inland Waterways Authority of India (IWAI) has been working hard towards facilitating safe passenger movements at Kumbh-Mela, 2019.

Kumbh-Mela is scheduled to be held at Sangam, Prayagraj from January 15 to March 15, 2019. IWAI has set up four floating terminals, one each at, Kilaghat, Saraswati Ghat, Naini Bridge and Sujawan Ghat. Further, two IWAI vessels namely CL Kasturba and SL Kamla will be deployed for pilgrim movement.

Fairway with navigational aids will be maintained between Prayagraj and Varanasi with targeted least available depth (LAD) of 1 m. Five temporary jetties at Chatnag, Sirsa, Sitamarhi, Vindhyachal and Chunar have also been set up for embarkment and disembarkment of passengers.

As part of the development of NW-1 (Prayagraj to Haldia) IWAI is making substantial interventions to make navigable the Prayagraj -Varanasi

### Benefits of Inland Water Transport

IWT provides supplementary mode of transport which is cost effective, fuel efficient and environment friendly

1. Low emissions - $CO_2$ equivalent greenhouse gases emission per tonne-km of cargo transportation is 15g by IWT, 28g by Rail and 64g by Road transport.
2. Low energy consumption - 1 HP can carry 4000 kg load in Water, 500 kg by Rail and 150 kg on Road.
3. Low fuel cost - 1 litre fuel can move 105 tonne-km by IWT, 85 tonne-km by Rail and 24 tonne-km of freight by Road.

- IWT can provide optimal modal mix by integrating river transport with other modes thereby reducing total logistics cost.
- It eases congestion on Road and Rail networks.
- IWT requires very little land acquisition as compared to Road and Rail modes.
- Caters to the needs of the relatively under developed hinterland.

#### Business Opportunities

The development works being undertaken by IWAI provide business opportunities to players involved in waterways in the fields of:

- Cargo Movement
- Dredging Works
- Construction, Operation and Maintenance of Terminals
- Barge Construction and Operations
- Navigation Aids
- Hydrographic Surveys
- Manpower Supply for Vessels and Terminals. Training of Vessel Crews
- Stevedoring and Forwarding
- Cruise Operations
- Consultancy Services for Techno-Economic Feasibility, Environmental and Social Impact and Market Analysis Studies, Preparation of DPRs.
- Project Management Consultancy
- Construction Supervision
- Proof Checking of Design
- Model Studies.


stretch of river Ganga. This will ensure seamless and safe movement of vessels.

In the past, IWAI has provided similar facilities of ferrying pilgrims and channel marking at Ganga Sagar Mela in West Bengal and Prakash Parv at Patna.

## Promoting River Tourism

International publication 'Condé Nast Traveller' listed Ganga cruise as one of the 'six river cruises to take in 2017'

It placed the luxury cruise vessel Ganges Voyager II which sails on the Ganga from Kolkata to Varanasi, in the league of cruises on Mekong and Yangtze in China, Amazon in South America, Volga in Russia and Irrawaddy in Myanmar. Conde Nast's endorsement of Ganga as a cruise destination is a shot in the arm for river tourism in the country.

IWAI facilitates cruise operations on NW-1 (river Ganga) from Kolkata to Varanasi in collaboration with private cruise operators. The facilities provided by IWAI include navigation aids like night navigation facility, embarking and disembarking at designated locations, facilitating expeditious crossing of Farakka Navigation Lock, pilotage, and assistance in distress.

In addition to becoming one of the principal cargo movement routes in India, this stretch on NW-1 has good potential for river cruise tourism.

## Other National Waterways:

### National Waterway-2

River Brahmaputra from Bangladesh Border to Sadiya (891 km) was declared as National Waterway -2 in 1988. The waterway is being developed and operationalized with fairway, navigational aids, terminals with mechanized handling facilities for cargo vessels.

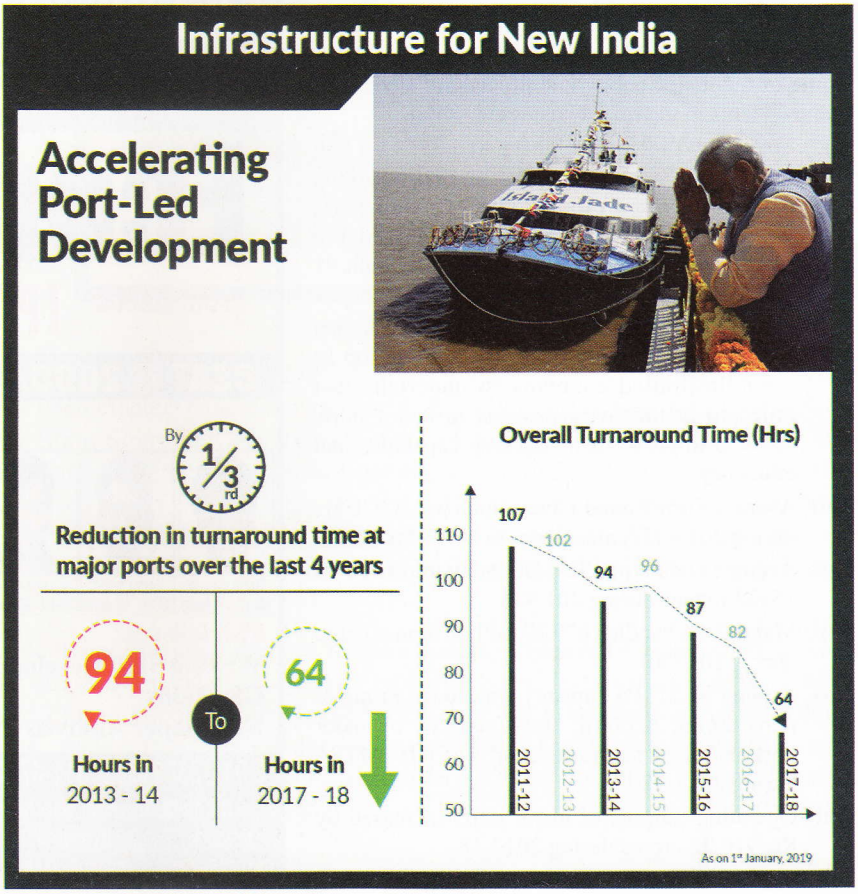
### Indo-Bangladesh Protocol Route

Day to day protocol permissions are issued by IWAI to barges to sail in the designated port of calls in India and Bangladesh. This Protocol is for mutually beneficial arrangement for the use of waterways for commerce and passage of goods between two places in one country through the territory of the other. The Protocol was first signed in 1972 and is presently valid up to 05th June 2020.

NW-3 has been fully developed for commercial navigation, while NW-4 and NW-5 are being developed with infrastructure of Inland Waterways.

Development of 8 new National Waterways taken up during 2017-18 as:

- Gandak River with a length of 277 km has been declared as National Waterway – 37. It is located from Bhaisaslotal Barrage near Triveni Ghat to Hajipur in Bihar and Uttar Pradesh.



- Rupnarayan River with a length of 72 km has been declared as National Waterway – 86. It is located from Pratappur to Geonkhali in West Bengal.
- Alappuzha – Kottayam – Athirampuzha Canal with a length of 38 km has been declared as National Waterway – 9. It is located from Boat jetty, Alappuzha to Athirampuzha market in Kerala.
- Sundarbans Waterways with a length of 201 km has been declared as National Waterway – 97 in West Bengal.
- Key cargo commodities on Barak River NW 16 are Construction material, Rice, Coal, Paper and Goods. The project cost is INR 76.01 Cr.
- Cumberjua Canal (NW27) – 17 km: Confluence of Cumberjua and Zuari rivers near Cortalim ferry terminal to confluence of Cumberjua and Mandovi rivers near Sao Martias Vidhan Parishad.
- Mandovi River (NW68) – 41 km: Bridge at Usgaon to confluence of Mandovi River with Arabian Sea at Reis Magos.
- Zuari River (NW111) – 50 km: Sanvordem Bridge to Mormogao Port. ❑

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## Achievements of Major Ports

The Government is regularly monitoring the port projects for development/expansion of the major Ports. Some of the major policy and procedural steps and achievements in the recent past are:

(i) To bring the major ports at par with the International standards, a study on Benchmarking of efficiency and productivity of major ports was carried out. The study has identified 116 port-wise action points/initiatives, of which 91 initiatives have already been completed.

(ii) A new Special Purpose Vehicle, namely Indian Port Rail Corporation Ltd. has been set up as a public limited company to undertake last mile rail connectivity projects in major ports so as to improve their handling capacities and efficiency.

(iii) Average Turn-Round Time, which was 82.28 hrs during 2016-17, came down to 64.43 hrs.

(iv) Average Output per Ship Berthday improved to 15333 tonnes during 2017-18.

(v) Major Ports handled 679.37 million tonnes cargo during 2017-18

(vi) Around 92 MTPA capacity was added in major ports during 2017-18. Total capacity of major ports reached to the level of 1451.19 MTPA during 2017-18.

(vii) Operating Surplus of major ports increased by Rs. 916.22 crores during 2017-18