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India’s quest for a robust Inland Waterway Transport Network

Inland water transport is not only environmentally beneficial and fuel-efficient, but it is also cost-effective. It has the potential to ease the burden on the overburdened rail system and congested highways. Aside from cargo movement, IWT might boost a location's tourism sector.

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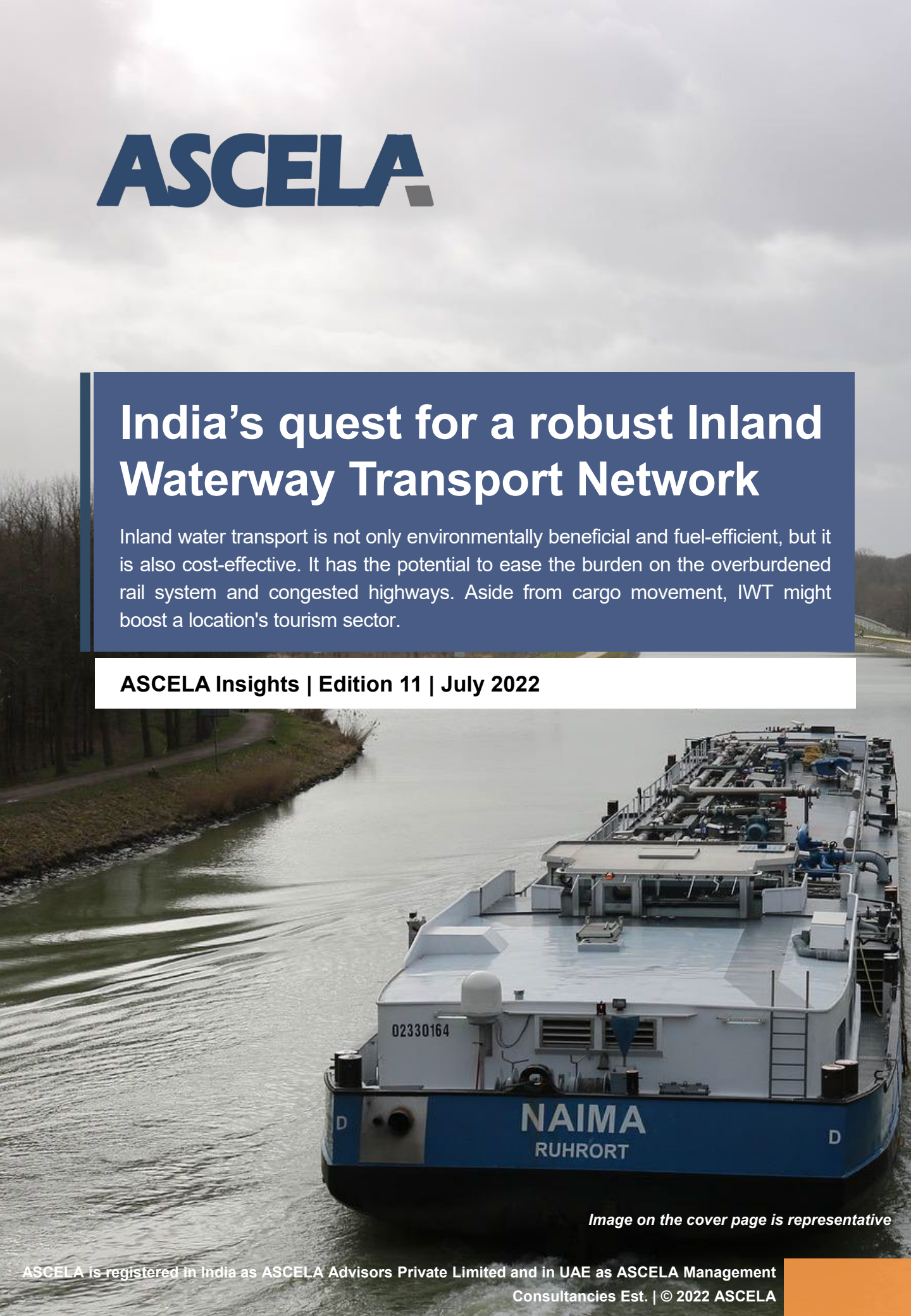

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Inland Waterways have been accorded a central role in maritime development in India. A well-coordinated Inland Waterways network could bring fundamental alteration in the logistics scenario of the country.

Inland waterways have vast potential to act as an alternate and supplementary mode of transportation for handling certain bulk commodities and containers in India. For years it was a huge opportunity lost as the waterways were poorly maintained and there was a lack of infrastructure supporting the IWT. This paper highlights the overview of the IWT system in India and various steps/initiatives taken to change the scenario of Inland Waterways in the country.

India is often referred to as the "land of rivers", and ancient cultures have long used rivers for transportation. The utilization of waterways has decreased as new forms of transportation have been introduced over time.

The present government, however, is taking steps to promote transportation across inland waterways.

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Inland Water Transport

Abstract: To improve the unutilized potential of Inland Water Transport, the Government of India, along with its various Ministries and Authorities, are working towards diverse steps and have established different projects which would likely increase the mode share of waterways in Inland Transport.

In recent years, 106 new waterways were added to the existing waterways, and development was initiated along the prominent National Waterways. Renewed protocol with Bangladesh has resulted in a stronger bond with the neighboring country and projects like Sagarmala and PM Gati-Shakti are also encouraging developments along the waterways of India. In addition to this, Inland Water Transport may gain from CONCOR's privatization.

Why is Inland Water Transport (IWT) important?

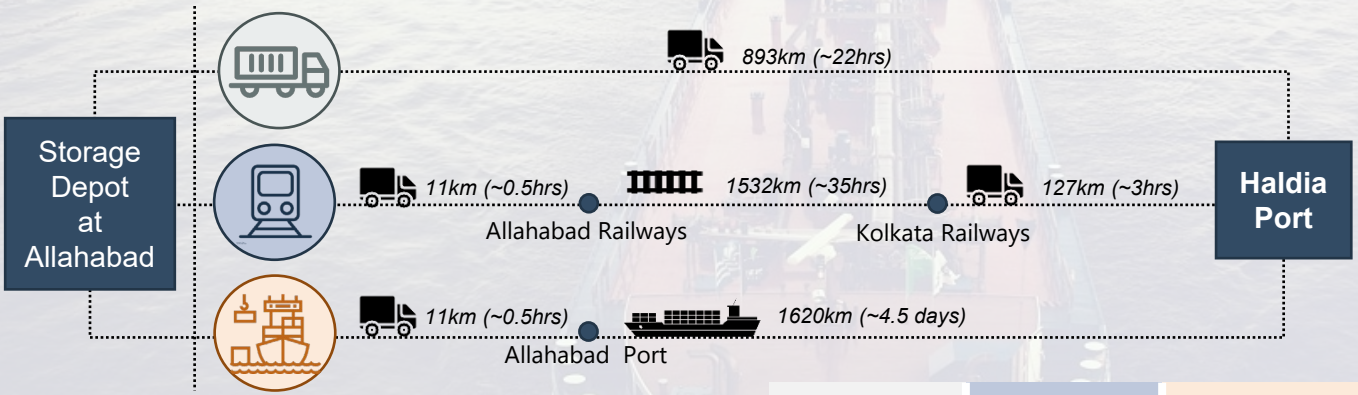
India's hinterland connectivity is mainly based on surface transport i.e. road and rail, wherein, domestic waterways (coastal shipping and inland waterways) play a very limited role. Moreover, only natural gas, refined petroleum products, and crude oil are typically transported via pipelines.

Smooth port accessibility should be crucial in India because the majority of the country's freight production centers are located internally rather than along the coast. The vast distances raise logistics costs and the range of delivery times for the goods. Now if IWT is used to its full potential it will greatly reduce the logistics cost and time and on the brighter side, it will be eco-friendly.

India's Freight Movement	**65%** by road	**27%** by rail	**0.5%** by waterways
Cost to transport 1 tonne of freight over 1km	**₹3.6**	**₹1.6**	**₹1.05**
1 liter of fuel can move	**24 tonne-km**	**85 tonne-km**	**105 tonne-kmn**

Source: World Bank

Total Logistics Cost: Case Study- Allahabad to Haldia



	Roadways	Railways	Waterways
Total duration	**~22 hrs**	**~38.5 hrs**	**~4.5 days**
Total Cost (in INR) per tonne from Allahabad to Haldia	**3,215**	**2,105**	**1,725**

Source: Consultant's Assessment

> ***"From Allahabad to Haldia via NW-1, waterways turn out to be the most affordable mode of transportation. The vessel's speed is the only limitation, which results in excessive travel time."***

Existing National waterways of India

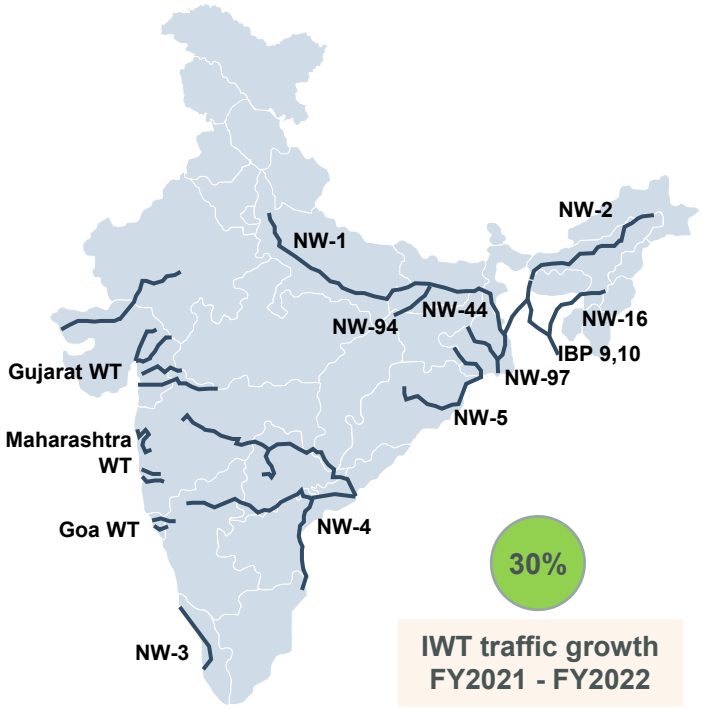
India features a vast network of Inland Waterways (IWs), including rivers, canals, backwaters, and creeks. Mechanized vessels can theoretically use 17,980 km of the river and 2,256 km of canals out of a total navigable length of 20,236 km. Compared to other countries in the world, these IWs are unutilized.

On the instructions of the Ministry of Shipping, Government of India, Inland Waterway Authority of India (IWAI) under the National Waterways (NW) Act, 2016 proposed 106 additional national waterways to five national waterways declared earlier for phased development. Based on the outcome of techno-economic feasibility and Detailed Project Reports of NWs, 25 NWs have been found viable by IWAI for cargo/passenger movement. Developmental activities have been initiated in 13 NWs.

Existing National Waterways	Additional 106 New National Waterways added in 2016		
	Category 1	Category 2	Category 3
5	8 viable waterways	DPR Prepared of 46 NWs of which 18 found unviable	52 NWs being assessed

Operational National Waterways

Source: Inland Waterways Authority of India (IWAI), GoI



30%

IWT traffic growth FY2021 - FY2022

NW	States	Length (Km)
NW-1	UP, Bihar, Jharkhand, W.B	1,620
NW-2	Assam	891
NW-16	Assam	524 (India)
NW-3	Kerala	205
NW-4	A.P	1,078
NW-5	Odisha	588
NW-8	Kerala	28
NW-9	Kerala	38
NW-27	Goa	17
NW-68	Goa	41
NW-86	West Bengal	72
NW-97	West Bengal	654
NW-111	Goa	50

Operational under State Maritime Board only

NW	States	River
NW-28	Maharashtra	Dabhol Creek Vasisti River
NW-73	Maharashtra & Gujarat	Narmada River
NW-85	Maharashtra	Revadanda Creek - Kundalika River
NW-94	Bihar	Sone River
NW-100	Maharashtra & Gujarat	Tapi River

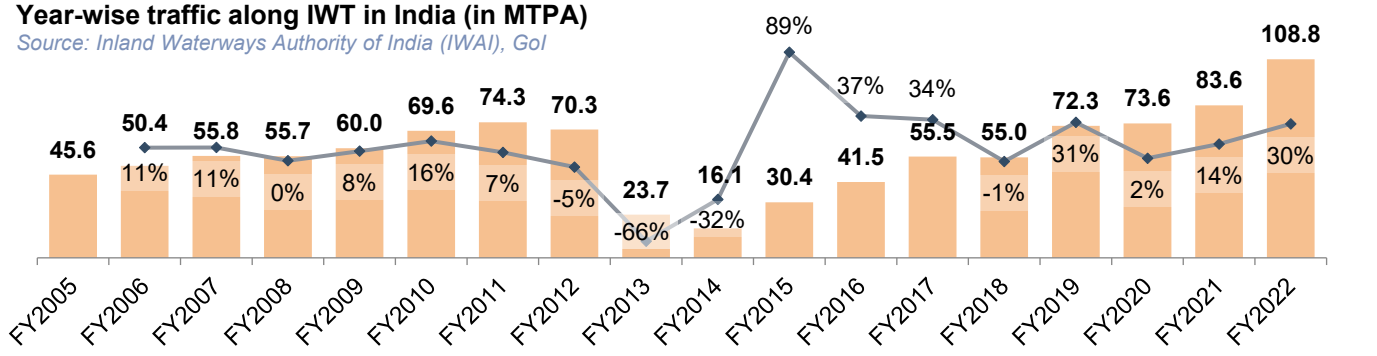
Projects at Appraisal Stage

NW	States	River
NW-10	Maharashtra	Amba River
NW-40	Bihar	Ghagra River
NW-44	West Bengal	Ichamati River
NW-52	Karnataka	Kali River
NW-57	Assam	Kopili River
NW-25	Goa	Chapora River
NW-37	Bihar	Gandak River

Cargo Traffic handled in India

Year-wise traffic along IWT in India (in MTPA)

Source: Inland Waterways Authority of India (IWAI), GoI



It is estimated that about 125 MMTPA of cargo is expected to be moved via inland waterways by 2025. -Sagarmala

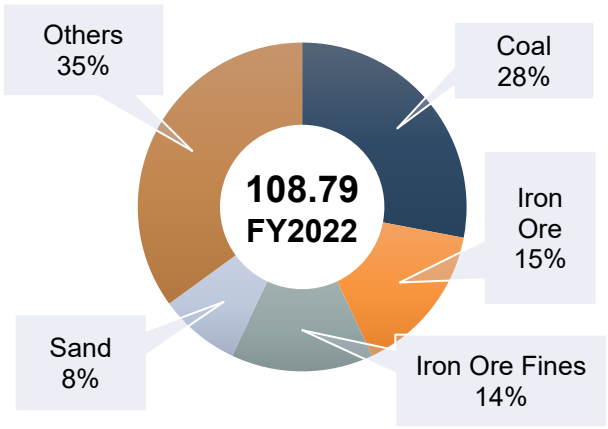
The total freight movement on NWs in FY2022 was recorded as 108.8 MTPA, against 83.6 MTPA in FY2021, thereby registering a 30% year-on-year growth in freight traffic. The average year-on-year growth of IWT traffic between FY2005 and FY2022 was 11%.

The volume of cargo handled between FY2012 and FY2016 has significantly decreased. Bulk cargo like coal, fly-ash and iron ore are found economical and cost-effective for movement through IWT than Rail and Road. The Supreme Court's restriction on the mining and export of coal and iron ore in Goa and Maharashtra is likely to be a contributing factor in reduced traffic along IWT.

Cargo Type Traded

Commodity/Cargo Type on NWs (in MTPA)

Source: Cargo data portal, IWAI.



Bulk commodities such as coal, iron ore and iron ore fines, and sand are mostly transported by IWT. In FY2022, they accounted for more than 65% of overall IWT traffic in India.

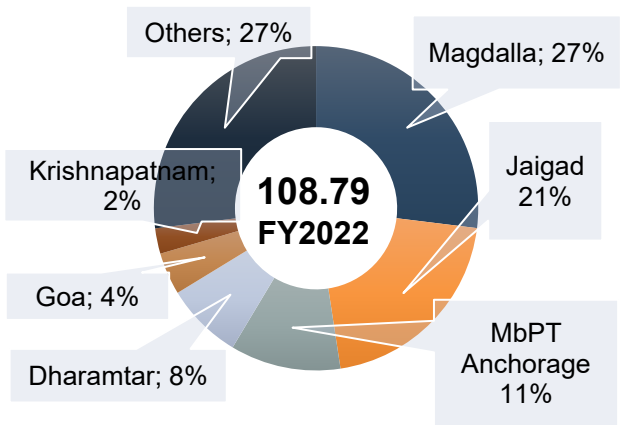
There is a decrease in the percentage of coal and iron ore handled compared to previous years wherein 29% of the total traffic handled was coal and 19% was iron ore.

The share of other components has increased by 3%. This is likely due to the ban on illegal mining of coal and iron ore in the states of Maharashtra and Goa between 2013-18 and the subsequent disruptions in the supply chain movement of these commodities from the other Indian States.

Cargo Trading Jetties

Jetty-wise Major Cargo Handled (in MTPA)

Source: Cargo data portal,IWAI.



The states of Maharashtra and Gujarat handle the majority of the Cargo carried on IWT.

Almost 60% of the IWT cargo is traded via jetties located at Magdalla (27%), Jaigad (21%), and Mumbai Anchorage (11%) which are located in the states of Gujarat and Maharashtra.

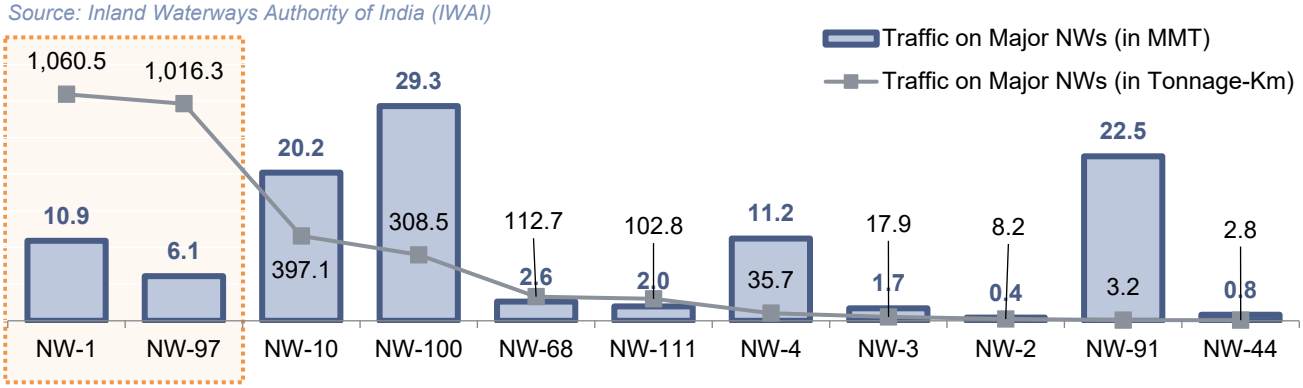
The most utilized waterways are NW-100, NW-91, and NW-10 with a share of 27%, 21%, and 19% of the total cargo handled on IWTs in FY2022 on rivers Tapi, Shastri, and Amba in the states of Maharashtra and Gujarat.

Some of the key OD pairs on which cargo was exchanged in FY2022 were Magdalla-Vizag, Jaigad-Dharamtar, and Magdalla-Paradip.

Developments along NW-1 and NW-97

Cargo handled at different waterways (FY 2022)

Source: Inland Waterways Authority of India (IWAI)



Why are NW-1 and NW-97 Important?

Sunder bans Waterways (NW1 and NW97) have been identified by the IWAI as one of the major routes in India. Various developments are proposed along the routes as it provides crucial connection options such as with Nepal, Bhutan, and Bangladesh. Even though the traffic on NW-10 and NW-100 is the most among all the inland waterways, the tonnage handled per Km is highest for NW-1 and NW-97.

National Waterway 1 (NW-1)

States: UP, Bihar, Jharkhand, West Bengal

Key Ports: Sahibganj and Varanasi MMLP

Existing/upcoming MMLPs: Varanasi, Ghazipur, Kalughat, Sahibgunj, and Triveni

Other facilities:

- Roll On-Roll Off (RO-RO) crossings at various sites
- Vessel repair facility in Doriganj
- Navigation Infrastructure
- River Information System (RIS)

Key Commodity Handled: Stone Chips, Coal/coke, goods, Fly Ash (contributing to 39% of total cargo handled, FY2022)

National Waterway 97 (NW-97)

States: West Bengal

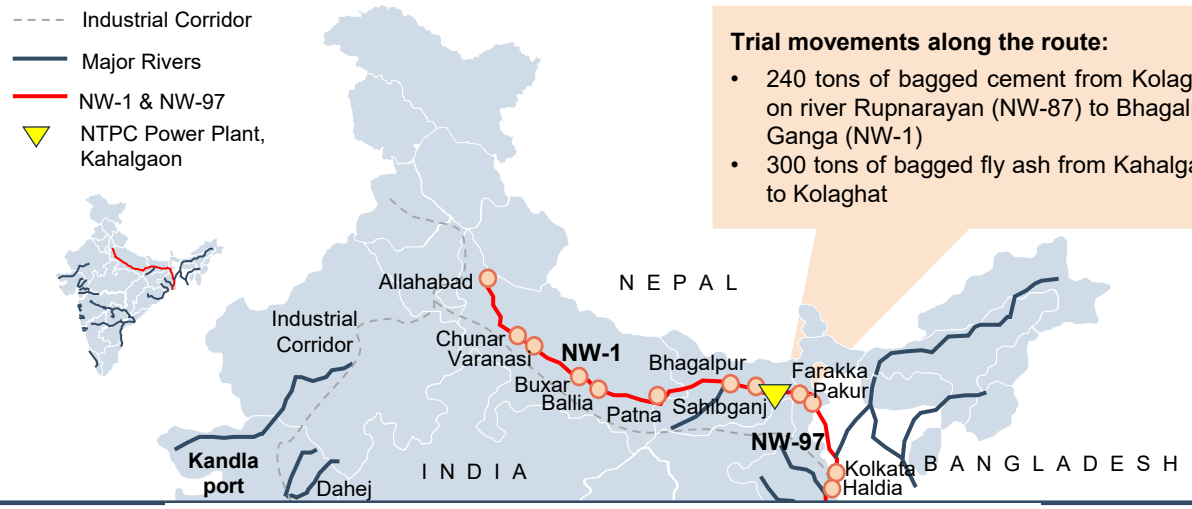
Key Ports: Kolkata Port (KoPT), Haldia Port.

Existing/upcoming MMLPs: Haldia

Upcoming Facilities:

- Loading and unloading terminals
- Shore protection measures
- River training
- Fairway design
- Navigational aids and communication facilities

Key Commodity Handled: Wheat, Rice, Bricks, Fly Ash (contributing to 70% of total cargo handled, FY2022)



Trial movements along the route:

- 240 tons of bagged cement from Kolaghat located on river Rupnarayan (NW-87) to Bhagalpur on river Ganga (NW-1)
- 300 tons of bagged fly ash from Kahalgaon (NW-1) to Kolaghat

Cross-Nation Inland Waterways Developments

Indo-Bangladesh Protocol is an Inland water transit and trade protocol that exists between India and Bangladesh, under which inland vessels of one country can transit through the specified routes of the other country. Inland Waterways Authority of India (IWAI), along with the Ministry of Shipping, and the Government of India, has been working on improving the connectivity with Bangladesh, and Nepal. Some of the recent developments are discussed below:

New Stretches: Indo-Bangladesh Protocol (IBP) Route

IBP Route: Established in 1972 as part of the Protocol on Inland Water Transit and Trade (PIWT&T) between India and Bangladesh

Renewal: Renewed in 2015 for five years with a provision of auto-renewal for another 5 years.

New Stretches: To improve navigability, two stretches of IBP routes, i.e., Sirajganj-Daikhowa and Ashuganj-Zakiganj are being developed at a cost of Rs. 305.84 crore on an 80:20 share basis (80% being borne by India and 20% by Bangladesh) as of 2022. The contracts for dredging on the two stretches for providing and maintaining requisite depth for a period of seven years (from 2019 to 2026) are underway.

The auto-renewal of the protocol and recent investments is expected to provide seamless navigation to NER via the IBP route.

The Maiden pilot run on selected routes of IBP

- A pilot run was completed in March 2022, when food grains (200MT) were transported for the first time through the IBP line from Patna to Pandu (Guwahati).
- IWAI intends to launch a fixed-schedule sailing between NW1 and NW2 based on its performance, ushering in a new era of inland water transportation for Assam and the Northeast of India.
- Given that the vessel has travelled 2350 kilometers in this journey, the approach has the potential to completely change how cargo is moved.

A blue MMLP Quadrilateral in the Bangladesh, Bhutan, India and Nepal (BBIN) Subregion

- India's neighboring countries are also focusing on regional integration with a special focus on multi-modal connectivity. Under the BBIN initiative, various agreements have been signed to enhance the use of water connectivity. A set of four MMLPs connected majorly via waterways would be a sustainable way to boost BBIN trade.
- Jogighopa in Assam, expected to be completed by 2023, would be India's first MMLP. The MMLP would likely divert cargo from roadways to waterways in the region, which would significantly decongest the Siliguri corridor.

Bhutan and Nepal rely significantly on India for international transit and this quadrilateral will ease management and smoothen the transport process.

Initiatives for Inland Water Development

01 | Sagarmala Project

The Sagarmala program is the Ministry of Shipping's flagship initiative, which aims to promote port-led direct and indirect development. The project focuses on enhanced connectivity of main economic centers and beyond, through expansion of road and rail services, **inland water transport, and** coastal Shipping.

Benefits of Sagarmala for IWT

IWT remains a small niche within the project as Sagarmala concentrates on a much wider range of transportation. However, following are some developments which will be impacting IWT in a positive way:

- Development of new lines of linkages of transport including rail, road & inland waterways
- Setting up of logistics hubs and MMLPs
- Establishment of industries and manufacturing centres to be served by ports in EXIM trade
- Simplifying procedures used at port for cargo movement.
- Usage of electronic channels for information exchange leading to seamless cargo movement.

Sagarmala Master Plan

Under the Sagarmala Project, the use of Inland Water Transport is proposed to be enhanced through a mix of infrastructure enhancement and policy initiatives.

02 | CONCOR and a step towards privatization

CONCOR is a Navratna company under the Ministry of Railways that transports containers by road, rail, and sea. It presently operates its own terminals in 82 distinct sites across India. CONCOR has begun moving FCI consignments along the coastal route and is willing to provide logistical support for freight transportation to several North-Eastern states via inland waterways.

Destressing of Ports

Having access to good quality facilities for the global trading activity will help alleviate stress on ports. Making sure cargo movement is smooth and efficient

Safety and services

ICDs also provide clear customs and related documentation reducing congestion form the ports. Apart from this, It offers safety and security of the cargo

Infrastructure Support

A strong network of ICDs acts as a feeder infrastructure for the ports and offer streamlined movement of goods. It also lowers cost by providing temporary warehouse facility

CONCOR aims to develop a strong network of logistics parks, Terminals, and ICDs to manage the growing container demand in India.

03 | Gati-Shakti National Master Plan

The Gati Shakti – National Master Plan for Multi-modal Connectivity was unveiled in October 2021 by the prime minister. A digital platform called Gati Shakti would unite 16 Ministries, including those for roads and railways, to plan and carry out infrastructure connectivity projects in a coordinated manner.

"The multi-modal connectivity will provide integrated and seamless connectivity for the movement of people, goods and services from one mode of transport to another. It will facilitate the last mile connectivity of infrastructure and also reduce travel time for people."

- Ministry of Port, Shipping and Waterways

Targets upto **2024-25** for the Shipping Sector under Gati Shakti

1. Increase in Cargo capacity at the ports to 1,759 MMTPA from 1,282 MMTPA in 2020
2. Cargo movement on all NW will be 95 million MT from 74 million MT in 2020.
3. Cargo movement on Ganga to be increased from 9 to 29 million MT.

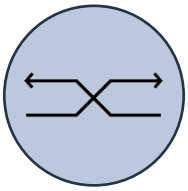
04 | Inland Vessels Bill, 2021

The replacement of the Vessels act, 1917 with "Inland Vessels Bill,2021" is one of the crucial steps going forward to making changes in the legislative framework of Inland Water Transport. The change will mark the beginning of a new era in Inland Water Transport along with promoting ease of doing business. The Inland Vessels Act, 1917 despite going through various amendments had limited applicability and hence the Bill was a necessity for IWT in India.

Keys Benefits for Inland Water Transport

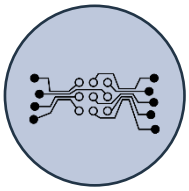
New Standards for Classification

Establishing new standards for classification & categorizing of mechanically propelled vessels, criteria and procedures for vessel registration, standards for identifying and coding special category vessels, etc.



Healthier trade practices

For better trading practices, the creation of a welfare fund, the administration's transparency and accountability, and the development of a competent and efficient skilled workforce has been taken up.



Technological Advancements

Technological advancements in vessel construction and usage. Also, provisions for E-Portal for registration imbibing the spirit of the Digital India Campaign.

One of the key features of the Bill is unified law for the country, instead of separate rules framed by the States. The certificate of registration granted under the proposed law will be deemed to be valid in all States and Union territories, and there will be no need to seek separate permissions from States.

The Bill provides for a central database for recording the details of the vessels and their crew on an electronic portal. It will promote economical and safe cargo transportation in the inland water and bring uniformity in the application of the law relating to inland waterways and navigation in the country.

ASCELA's Viewpoints

Over the years, the Inland waterways of India have not been utilized to their full potential, which was a huge loss since it's the most economic mode of transportation. As a result, the load was bored by railways and roads.

But, Inland water transportation has a bright future ahead of it if we look at all the recent steps and actions taken by the Indian government. It is fair to say that the government has been taking initiatives to accomplish the following:

1 Integration among various ministries under Gati Shakti

With a specialized focus on the movement of goods under Gati Shakti and especially through multi-mode channels, it is likely there will be a boost in the exploration of inland waterways as a cheaper and environment-friendly mode.

2 Stronger bond with neighboring nations with MMLP Quadrilateral

Relations with the neighboring countries of Bhutan, Nepal, and Bangladesh will open up opportunities for the movement of traffic, especially in the North-Eastern States. The easternmost states of India are only connected via road and often faced traffic and subsequent delays in the movement of goods. In the case of perishable goods, there was often a loss due to delay.

3 Privatization of CONCOR

With the privatization of CONCOR, the organization will be able to enjoy the benefits of privatization and increase flexibility in decision-making. CONCOR if develops terminals along IWT, there will be a push to freight forwarders to consider NWs as a transportation mode.

4 Community development under Sagarmala

Under the Sagarmala Program, the development of coastal communities through marine sector-related industries including fishing, maritime tourism, and associated skill development will draw attraction towards the possibility of exploring water channels as means of livelihood and regional development. This may encourage local governments to initiate further infrastructure projects.

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About ASCELA

ASCELA is a professional service company, providing advisory services to organizations to help them enhance efficiency through analysis of market potential, competitive landscape, operational, financial, economic, technical, and strategic challenges. The firm was established in the year 2018 with a vision to provide independent strategic insights into Infrastructure and build environments.

ASCELA is headquartered in India and has offices in India and United Arab Emirates (UAE). The firm is registered in India as ASCELA ADVISORS PRIVATE LIMITED (CIN- U74999HR2018PTC072828). In India ASCELA is recognised by the Department for Promotion of Industry and Internal Trade (erstwhile DIPP), Ministry of Commerce and Industry, Government of India, under Startup India initiative (Recognition ID - DIPP17959).

ASCELA is operating in UAE as a registered entity ASCELA Management Consultancies Est. (Professional License no 1000645).

About ASCELA Infrastructure Advisory

ASCELA's Infrastructure Advisory practice helps clients develop and leverage core competencies to deliver sustainable and tangible returns. We define strategies that help clients in gaining market share, enter new markets, regions, and products, improve bottom-line and reconfigure organizational/ operational structures. ASCELA is well placed to provide strategic inputs and analysis for assessing potential development opportunities in Infrastructure design and development space. Our in-depth knowledge of our focus transportation sectors, backed by intensive research and analysis into our clients' specific contexts, helps define superior strategies, framework, and implementable action plans.