Integration of Waterways for Multi-Modal Transportation

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ABSTRACT: Multi-modal transport is the carriage of goods by at least two different modes of transport on the basis of one multimodal transport contract from one country to a different country.The E.U released its first "white paper on the future development of the common transport policy",one ofthe implementations of this was the PACT programme offering more than 62billion$ to companies that were enhancing competition of combined transport by inland waterway.Integration of waterways is crucial and if no actions were taken,road freight transport would increase by around 50% by 2020, leading to road infrastructure costs,increased number of accidents,and increased local and global pollution.

KEYWORDS: E.U-European Union**,** PACT-Pilot actions for combined transport**,** IWT – Inland water transport

1. Integration of Waterways for Multi-Modal Transportation

2. What exactly is a waterway?

A waterway is any navigable body of water. Waterways are the cheapest form of transport suitable for carrying heavy and bulky loads.It is a fuel efficient and environment friendly means of transport. A shipping route consists of one or several waterways.Waterways can include rivers,seas,oceans and canals.In order for a waterway to be navigable,it must meet several criteria

1.The waterway must be deep enough to allow the draft depth of the vessels using it.

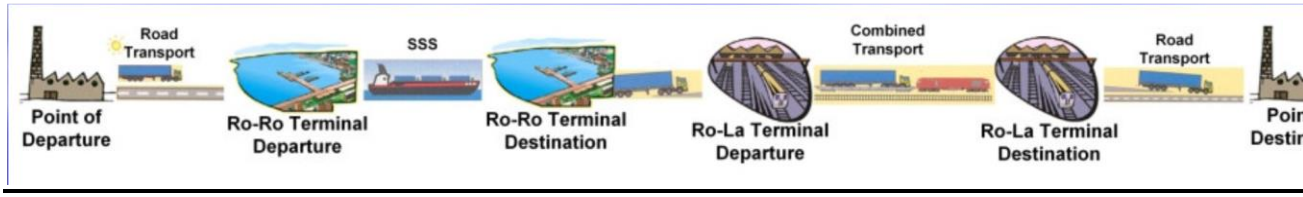
2.The waterway must be wide enough to allow passage for the beam width of the vessels using it.

3.The waterway must be free of barriers to navigation such as waterfalls and rapids,or have a way around them (such as canal locks,boat lifts,etc.)

4.The current of the waterway must be mild enough to allow vessels to make headway.

5.Vessels using waterways vary from small animal drawn barges to immense ocean tankers and ocean liners such as cruise ships.

What is multi-modal transport?

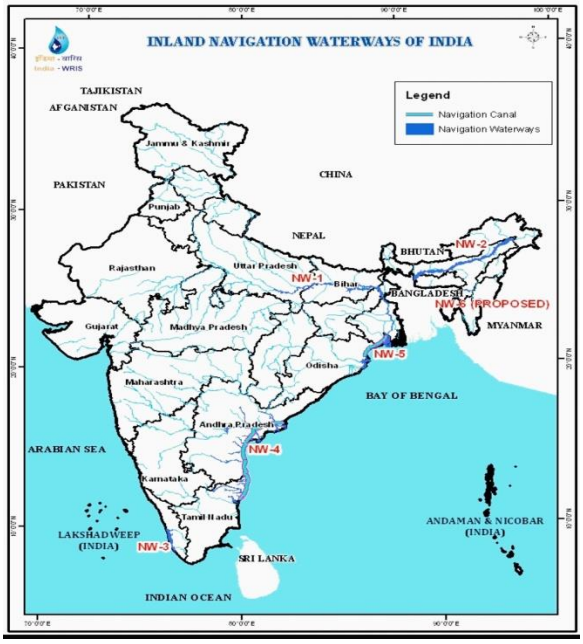


The definition jointly given by the united nations convention on International Multimodal transport of goods (1980), The United Nations Economic Commission for Europe(ECE) and the European conference of ministers of transport(ECMT) is: "***The carriage of goods by two or more modes of transport under one transport contract***."

More detailed the definition reads as follows:
"International multi modal transport is the carriage of goods by at least two different modes of transport on the basis of one multimodal transport contract from a place in one country at which the goods are taken in charge by the multi modal transport operator to a place designated for delivery situated in a different country."

3. Inland waterways in India

Since time immemorial India has been well known for its sea faring activities.India is blessed with 7,551km of coastline and about 14,500km of navigable inland waterways.Most of the rivers in peninsular India are seasonal, so the Ganga and Brahmaputra are only two rivers which are navigable.Of the navigable inland waterways, 4,503km are national waterways,the development and maintenance of which is the responsibilityof theIndian government,while the responsibility for the rest lies with the state governments where they are located.



India has six national waterways:

1.) Allahabad-Haldia stretch of the Ganga river(running through Uttar Pradesh and West Bengal).

2.) Dhubri –Sadiya stretch of the Brahmaputra (Assam).

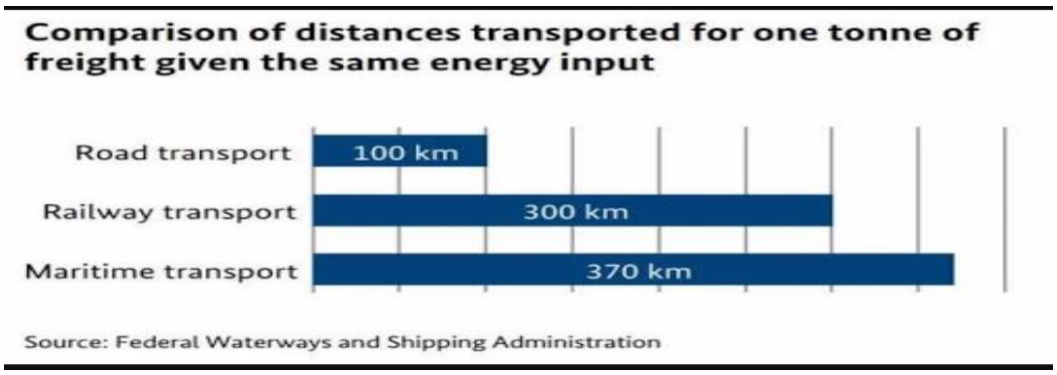
3.) Kottappuram-Kollam stretch of the West Coast canal along with the Udyogamandal and Champakkara canals (Kerala).

4.) Kakinada –Puducherry stretch along with the designated stretches of the Godavari and Krishna rivers(Andhra Pradesh,Puducherry) .

5.) Designated coasts of the East Coast canal,The Brahmani river and the Mahanadi delta (Odisha)

6.) Lakhipur –Bhanga stretch of the Barak River (southern Assam).

Need for Integration of Waterways for Multi-ModalTransportation



The need for integration of waterways for multi-modal transportation has increased gradually with universal acceptance that transportation through waterways,both coastal and inland, is fuel efficient, environment friendly and more economical than rail, road and air.

The above figure compares the distances transported by each mode of transport for the same energy input.

The cost of developing an inland waterway is 5-10% of the cost developing an equivalent railway or a four-lane expressway.

4. History of Inland water transportation in India

In India, a number of central and state agencies play a role in the regulation, operation and sustenance of inland water transport. Their smooth functioning is required for IWT to be viable. This is a complex issue and needs to be addressed in the remaining part of this research. Some of the actors in this sector are given below.

- IWAI
- CIWTC and other operators
- Customers
- State governments
- Port authorities
- Transport development agencies

1. IWT in India has gradually declined due to various reasons, lack of investment for creation of infrastructural facilities and lack of efficient IWT operators being major contributory factors.

2. CIWTC has been a loss making organization since its inception in May 1967. Only 59 of the 101 vessels of its River Service Division are reported to be in working condition. Due to various reasons, the productivity by CIWTC vessels has not been improving.
3. Performance of Rajabagan dockyard and Deep Sea Repair Division too had not been satisfactory and these Divisions contributed to the CIWTC becoming a regular loss making organization.
4. A restructuring and revival plan of CIWTC has been formulated by M/s AF Ferguson.
5. IWAI is an autonomous organization constituted in October 1986. IWAI has shown reasonable improvement in terms of expenditures. This expenditure was incurred mainly on provision/maintenance of fairway, terminals and navigational aids on three National Waterways, Techno-economic feasibility studies on other waterway systems, loan assistance, etc.
6. This improved financial performance has not resulted in a substantial improvement in infrastructure on National Waterways or in a proportional increase in utilization of inland waterways mode in terms of cargo moved by IWT mode.
7. By increasing its staff strength and by restructuring it with a view to make it goal oriented, further enhancement in its performance can be expected.
8. The private sector involvement for development of this mode and operation of cargo vessels was not at all satisfactory.

Excepting for Goa, cargo carried through IWT in other riverine States is not significant. Data compiled on the basis of the reports of cargo movement by IWT received from

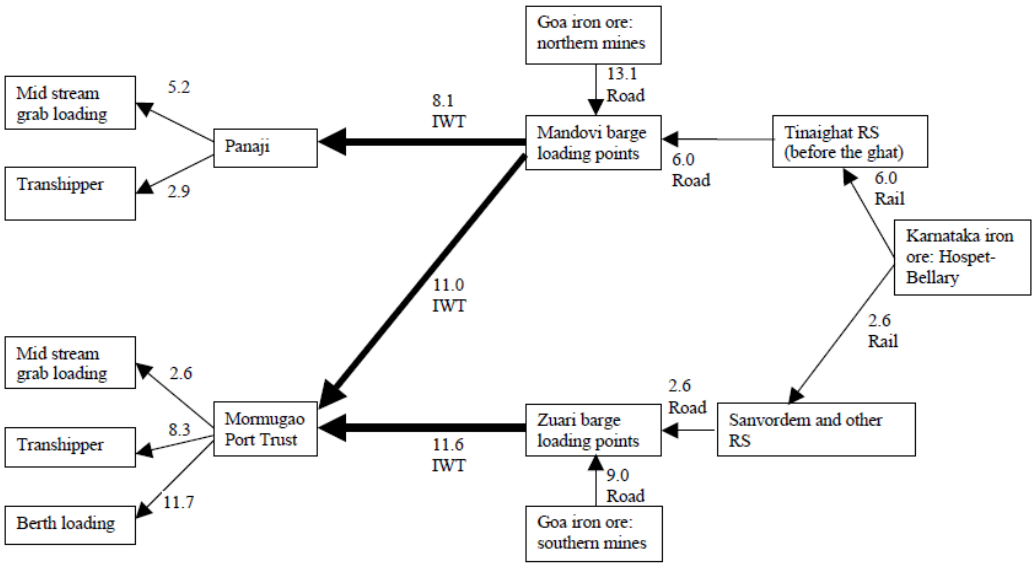
Mormugao Port Trust reveals that about 15.69 million tons of cargo constituting mainly Iron Ore was moved during 2000-01 as compared to 14.87 million tonnes in 1999-2000. In addition 71 lakh passengers also used IWT in 2000-01 as against 69 lakh passengers in 1999-2000.

West Bengal and Kerala are the other two important states where IWT operations take place. According to the data received from IWT Directorate, Govt. of West Bengal, for 1999-2000, about 56 million passengers and 1.04 million tons of cargo were moved by mechanized vessels deployed for movement of cargo and passengers. The major operations (based in West Bengal) are CIWTC (Govt. of India undertaking), Vivada Inland Waterways Ltd., and Eastern Navigation Ltd. etc. Of the total passengers moved through Inland Waterways, more than 42% were carried by Hooghly NadiJalpathParibahanSarmabayaSamity. This was followed by West Bengal Surface Transport Corporation (a Govt. of West Bengal agency) Indo-Swiss Trading Corporation Co. Ltd. Details have been brought out in Section 4.
In Kerala State, the cargo movement is through NW-3 in addition to other water stretches. Cargo handled on NW-3 has marginally decreased from 1.11 million tones (1999-00) to 1.09 million tones (2000-01). Some of the major IWT operators on NW-3 are KSINC, ABC & Sons Ltd., South India Company and Amrok Shipping. The commodities carried include Bulk Raw Material, POL, LDO/FO etc. Kerala Shipping & Inland Navigation Corporation Ltd.

5. Measures taken so far to develop IWT

1. Various developmental activities to improve inland water transport system are being carried out:
• In National Waterway 1, navigable depth of 2 meters is maintained on the stretch from Haldia - Farakka - Patna (1020 km) for about 330 days in a year.
• In National Waterway 2, depth of 2 meters is maintained between Dhubri and Pandu (260 km) for about 330 days a year.
• In National Waterway 3, capital dredging is in progress after completion of which depth can be maintained.
2. Inland water transport has been accorded the status of infrastructure so as to enable it to avail itself of concessions applicable to other infrastructure sectors.
3. An outlay of Rs 408 crores was provided in the 9th Plan.
4. CIWTC, Kolkata, a public sector undertaking, is the principal inland water operator.
5. Work on setting up a National Inland Navigation Institute in Patna for training manpower is in progress.

Example of integration of waterways in multi-modal transportation



Iron Ore Movement by Inland Water Transport in Goa

6. Effective Integration of Inland Waterway in Multi-Modal Transport

Effective Integration of Inland Waterway Transport in Multi Modal,inter modal and combined transport requires:
A. that an adequate waterway, port and vessel infrastructure is in place.
B. that the latest technologies are used and constantly updated.
C. that the interchange of transport modes is facilitated by adequateregulations, and
D. that strong promotion is made for Inland Waterway Transport in the Multi Modal transport world.

7. Infrastructure planning of inland waterway transport for multi-modal operations.

Inland water transport requires three basic elements ofInfrastructure: Waterways, Terminals and Vessels.

1.)Waterway requirements.
A.)Standard requirements for the carriageof containers are the width and depth of the fairway (at low water level) and thevertical clearance under bridges (at highwater level).
B.)Where needed, locks or ship elevatorsshould be constructed.
C.)And finally, harmonised and state-of-the-artaids to navigation should enhance safetyand make night navigation possible.

2.)Terminal requirements.
A.) A bi-modal terminal links river operations to a hinterland, served exclusivelybyroad.
B.) But as a general rule, terminals should be tri-modal, having rail, water androad access, where road transport should be limited to serve the immediate

Neighbourhood, and which also should be service and logistics centres.
C.)And finally there are dry ports, serving road and /or rail, which also shouldbe organised as Inland Clearance Depots (ICD) and should be located not toofar from or even inside the ports.

3.)Vessel requirements.
Supporting the shipyard and ship repair industry to meet the demands of a modern fleet concerning new construction and propulsion technologies is of utmost importance.

Latest Technology to connect Inland Waterway Transport to other Transport modes.

1.)In the past, IWT has not been very strong in reliability and "just-in-time" delivery, with delays caused by fog, night, rain, draught, etc. Today, state-ofthe-art aids to navigation, on-board radar and VTS assistance enabled IWT to fully integrate in the "just-in-time" processes.

2.)Moreover, thanks to the Global PositioningSystem (GPS) and Global Navigation SatelliteSystem (GNSS), positioning and tracing isbecoming much easier. The AutomaticIdentification System (AIS) and ElectronicCharting System (ECS) are applicationsproviding essential data for operators, clients,port authorities and other public and private services.

3.) Handling equipment: In Europe the main inland container terminals use the same state-of-the-art equipment as seaports, such as barge gantries, tri-modal gantries, straddle-carriers and reach-stackers, because a faster turnaround is boosting multi and inter modal transport.

Facilitation measures between inland waterway transport and other transport modes

8. IWT should be included in all transport legislation

1.)Usually, laws governing transport undertakings are uni-modal oriented.
General transport legislation should encourage cost efficient andEnvironment friendly modes (restrictions on trucking, tonnage limitationson trucking, taxes for road use, "polluter pay approach", etc.).
Multi Modal legislation should authorise and encourage the transformationof the status of an Inland Waterway Transport operator to a Multi ModalTransport operator (MTO) by adequate regulations.

2.)The needs of multi modal IWT should be included in infrastructure planningand construction such as:
- Vertical clearance of road and rail bridges;
- Through-passage structures or locks at barrages and power dams;

- Waterway classification and missing links between waterway networks;
- Location and layout of inland container depots (bi-modal or tri-modal).

3.)Simplification and harmonisation of documents, customs procedures andinformation exchange.
- Minimise the problems of issuing multiple documentation and otherformalities connected with each segment of the transport chain;
- Standardise and computerise all kinds of documents;
- Encourage the use of Automated Systems for Customs Data (ASYCUDA);
- Encourage the use of a single Multi Modal Transport Document (MTD);
- Make use of intelligent transport technology systems for toll collection.

9. Measures taken by the Indian Government

1.) Multimodal Transport Act ,1993

2.) Private freight Terminals(PFT)Policy.

3.) Draft coastal shipping Policy.

4.) Cabotage Policy.

5.) Policy to permit Operators to move container trains on Indian Railways.

6.) Impact of GST.

7.) Foreign Direct Investment.

Inland water transport, or IWT,accounts for less than a 1% share of goods transported within India through various modes such as rail,road and water,much less than countries like Germany and Bangladesh with 20% and 30% share respectively.

On 31stJuly2011,the Directorate General of Shipping (DGS) granted further exemptions from provisions of the Merchant Shipping Act to Indian ships exclusively carrying cargo on local routes.

Ships that can travel seamlessly through sea and river channels were first freed from a few provisions of the merchant shipping Act in 2011.
This relaxation is now being significantly expanded to cover more ships.

10. Application of the measures by the Inland Waterways Authority of India

The first instance of the change in rules being seen to work came in 2011,when NTPC Ltd,India’s biggest power utility,awarded a seven year contract after a public tender to Jindal ITF Ltd for transporting 3 million tonnes of imported coal a year from sandheads(Bay of Bengal)to the thermal power plant located at Farakka through the Haldia-Farraka waterway.

NTPC has floated a second tender for a 10 year contract to haul 3 million tonnes of imported coal a year through inland waterways to its power project at Barh in Bihar.

It will seek a similar arrangement to transport 1.5mt of imported coal a year to its thermal power station at Bongaigaon in Assam.

Efforts are being made by the Government to get long-term cargo commitments from fertilizer companies,Food Corp. of India Ltd,Oil and Natural Gas Corp. Ltd, Oil India Ltd and Container Corporation of India Ltd. for transportation through waterways.

Possible driving cargo for the future are:

- Bulk for export or import through ports (Mormugao, Cochin, Haldia, Kolkata)
- Coal to Bangladesh
- Coal to and fly-ash from thermal power plants
- Construction material for the North East (dams and other large projects)
- Agri exports

11. Observations in the last decade

There is an insufficient use of key waterways.
- There is a further need to encourage and promote the development of multimodal transport and integrated transport logistics.
- There is a need to promote the development and expansion of the Inland Clearance Depot (ICD) concept.
- Greater use of rail transport (partly through the ICD concept) should beencouraged.
- Better cross-border co-operation and transport co-ordination is needed.
- The use of a single combined transport or multimodal transport document should be expanded.

12. Conclusions

To enhance multi modal, intermodal and combined transport, attention has to be paid to following needs:
- Development of the infrastructure, nodal points and connections, including the Inland Clearance Depot (ICD) concept;

- Simplification and standardisation of customs procedures and data exchange;

- Harmonisation and integration of legislation and regulatory framework;

- Encouragement of human resources development in freight forwarding, multi modal transport and logistics management.

To integrate inland waterway transport in the multi modal transport system, attention has to be paid to following needs:
- Development of an adequate infrastructure (elimination of bottlenecks and missing links);

- Use and constant update of the latest technologies;

- Facilitation of the interchange of IWT with other transport modes by adequate regulations;

- Strong promotion and incentives for IWT in the multi modal transport world as most efficient and environmental friendly transport mode.

ALL THIS MEANS THAT THERE IS STILL A LOT OF WORK TO DO……..BUT…..

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