

# **Sustainable Inland Waterway Transport Development**

**Opportunities with Inland Waterways and the Way Forward**

**8<sup>th</sup> June 2024**

**Presented by:**

**Ajay Kumar Bansal**

**Director(Traffic & Logistics)**

**Inland Waterways Authority of  
India**

**Ajay Pal Singh Sirohi**

**Director-Inland Water Transport**

**Ministry of Ports Shipping and  
Waterways**

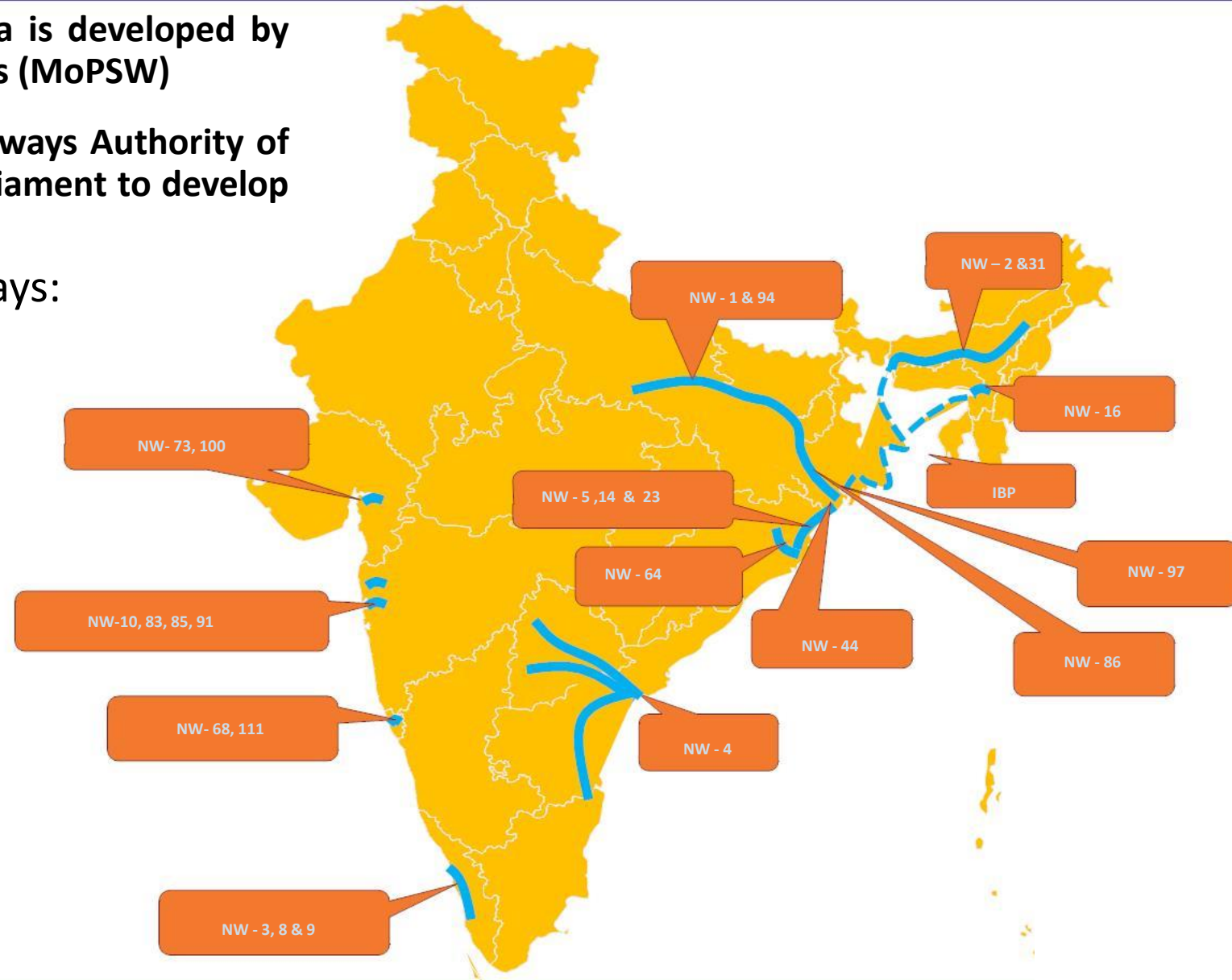


## Presentation Structure

- Inland Waterways Transport in India: Overview
- IWAI – Key Functions
- Vision
- Benefits of Inland Waterways Transport (IWT)
- IWT Sector: Modal Share
- Cargo Traffic Trend on National Waterways in India
- Passenger Movement
- Kochi Water Metro
- River Cruise journey on Inland Waterways
- Regional Connectivity with neighboring countries
- Green Shipping initiatives
- Standardization of vessels
- Ease-of-Doing Business
- Challenges
- Solutions and Future Outlook

## Inland Waterways In India - Overview

- The Inland Waterways Transport in India is developed by Ministry of Ports Shipping and Waterways (MoPSW)
- A dedicated nodal Agency (Inland Waterways Authority of India) has been created by an Act of Parliament to develop National Waterways in the country
- Total Number of National Waterways:  
**111 (Length 20,186 KM)**
- Operational Waterways: **24**  
**(Length 4,862 KM)**
- Cargo Increased  
**@ CAGR 22.10% since 2013-14**
- Modal Share of Cargo Increased  
from **0.5% to 2%**



# Inland Waterways Authority of India (IWAI) – Key Functions

## Infrastructure Development

- Maintenance & Development of fairways;
- Terminals & allied infrastructure;
- Aids to Navigation

## Technical studies

- Feasibility & Navigational/ Cargo movement Studies
- Detailed Project Report (DPR) for potential projects

## Advise & Assistance

- Advise to Central/ State Governments in IWT sector development
- Nodal agency for Inland Waterway Development Council

## Promotion of IWT

- Advocacy, public outreach and communications
- Stakeholder's engagements to promote Inland Water Transport
- Livelihood support/ Community jetties

## Training & Development

- National Inland Navigation Institute (NINI)
- Maritime Skill Development Centre
- Logistics, Communication & Waterways

## IBP Route

- Facilitation of Cargo/Passenger movement on Indo Bangladesh Protocol Routes

## Inland Waterways Transport– Vision

***Developing Inland Waterways as a credible and viable means of transport***

### Maritime India Vision @ 2030 for Inland

**Target movement of >200 MTPA cargo volume**

**Target of 23+ operational waterways**

**Capacity Augmentation of Inland Water Transport Sector**

**Enhancing share of IWT 2% to 5% of total traffic volume by 2030**

### Maritime Amrit Kaal Vision @ 2047 for Inland Waterways

**Target movement of >500 MTPA cargo volume**

**Target of 50+ operational waterways**

**Capacity Augmentation of Inland Water Transport Sector**

**Enhancing share of IWT 7% of total traffic volume by 2047**

# Inland Waterways - An eco-friendly and sustainable transport mode

- Encourages **multimodal transportation** and reduces reliance on a single mode of transportation
- Environment-friendly** and **congestion-free** means of freight transportation
- IWT can support over-burdened railways and congested roadways by **sharing cargo burden**
- IWT best suited to carry **heavy/ bulk cargo** such as ores, Over Dimensional Cargo, coal, fly ash, stone aggregates, liquid bulk, etc.
- In addition to cargo movement, waterways also facilitate carriage of vehicles (Roll-on-Roll-off) and most importantly River Cruise Tourism

*IWT sector has been in the forefront for creating an eco-friendly and sustainable transport mode and contribute to the nation's ambitious target of achieving Net Zero emissions*

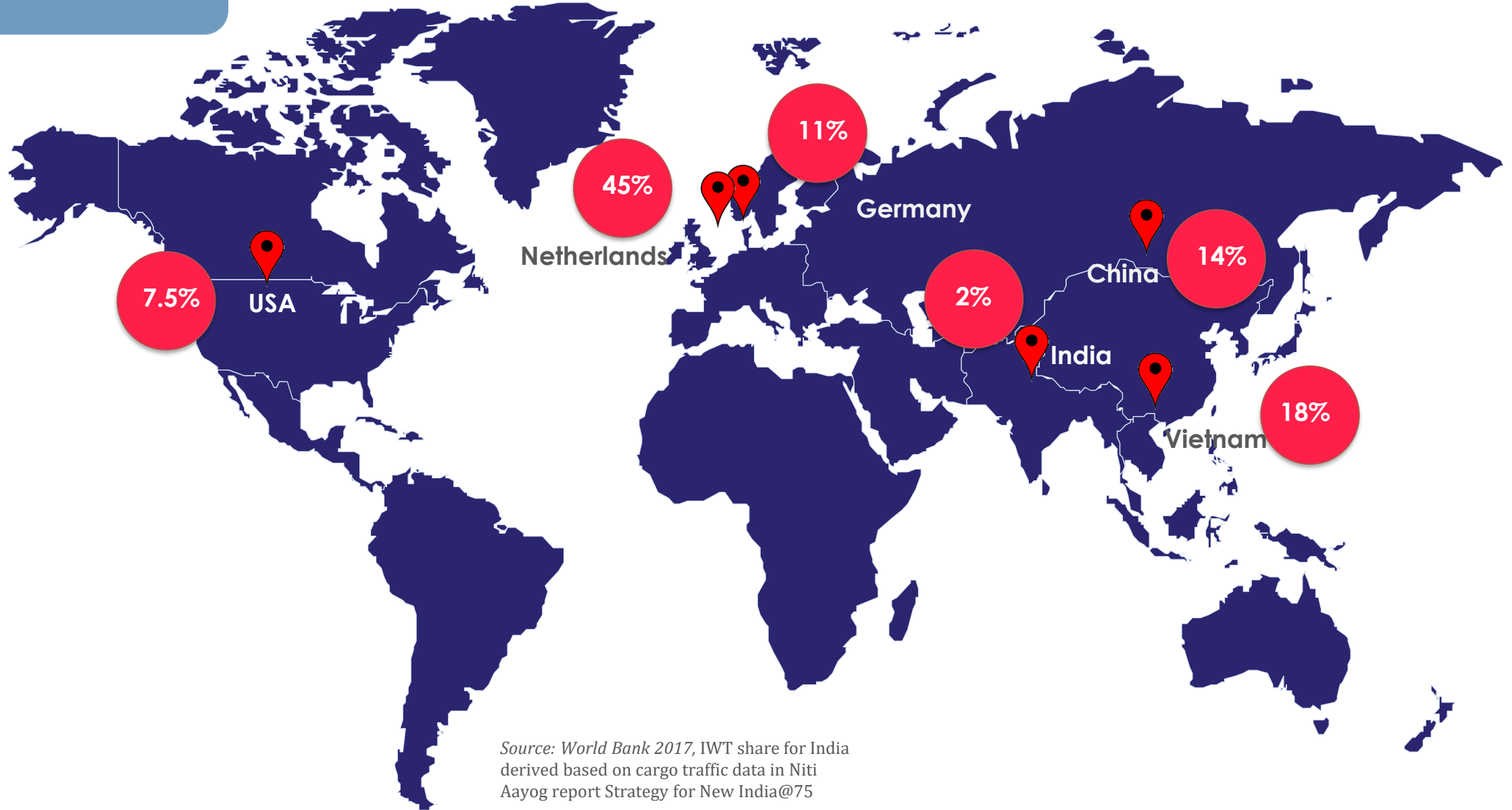
## Carrying capacity



## Operating cost



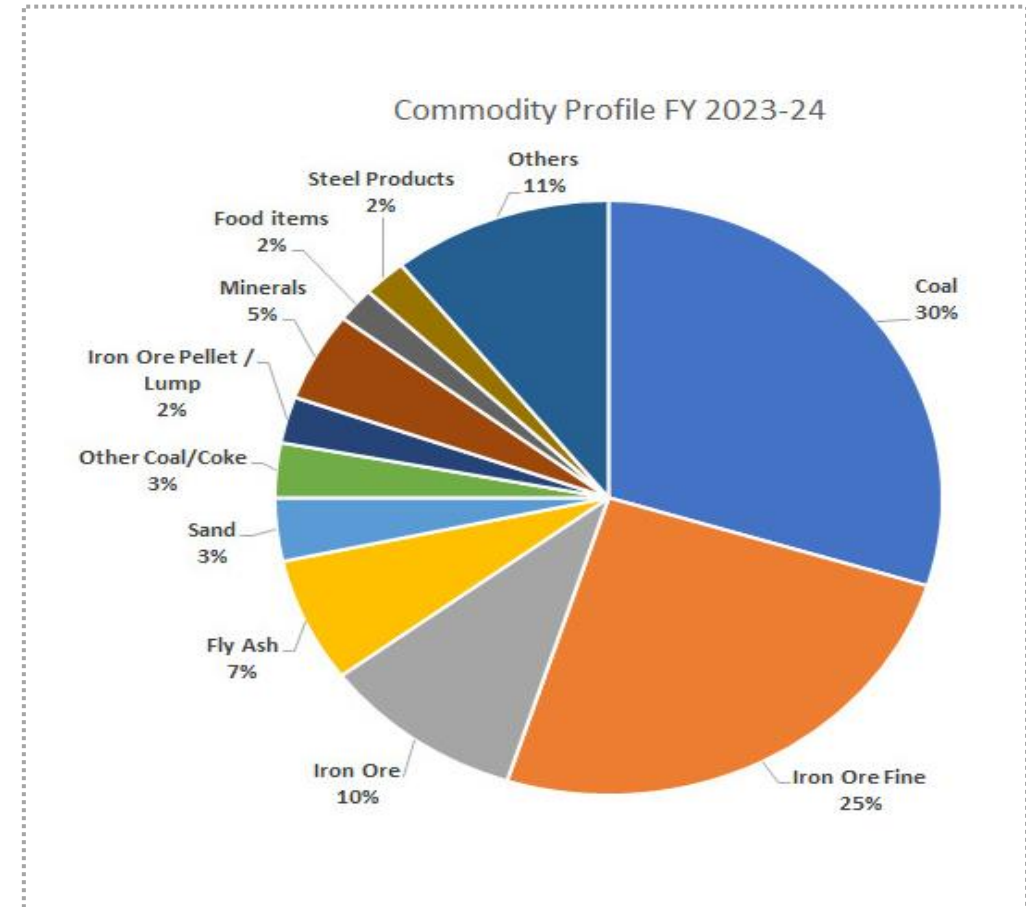
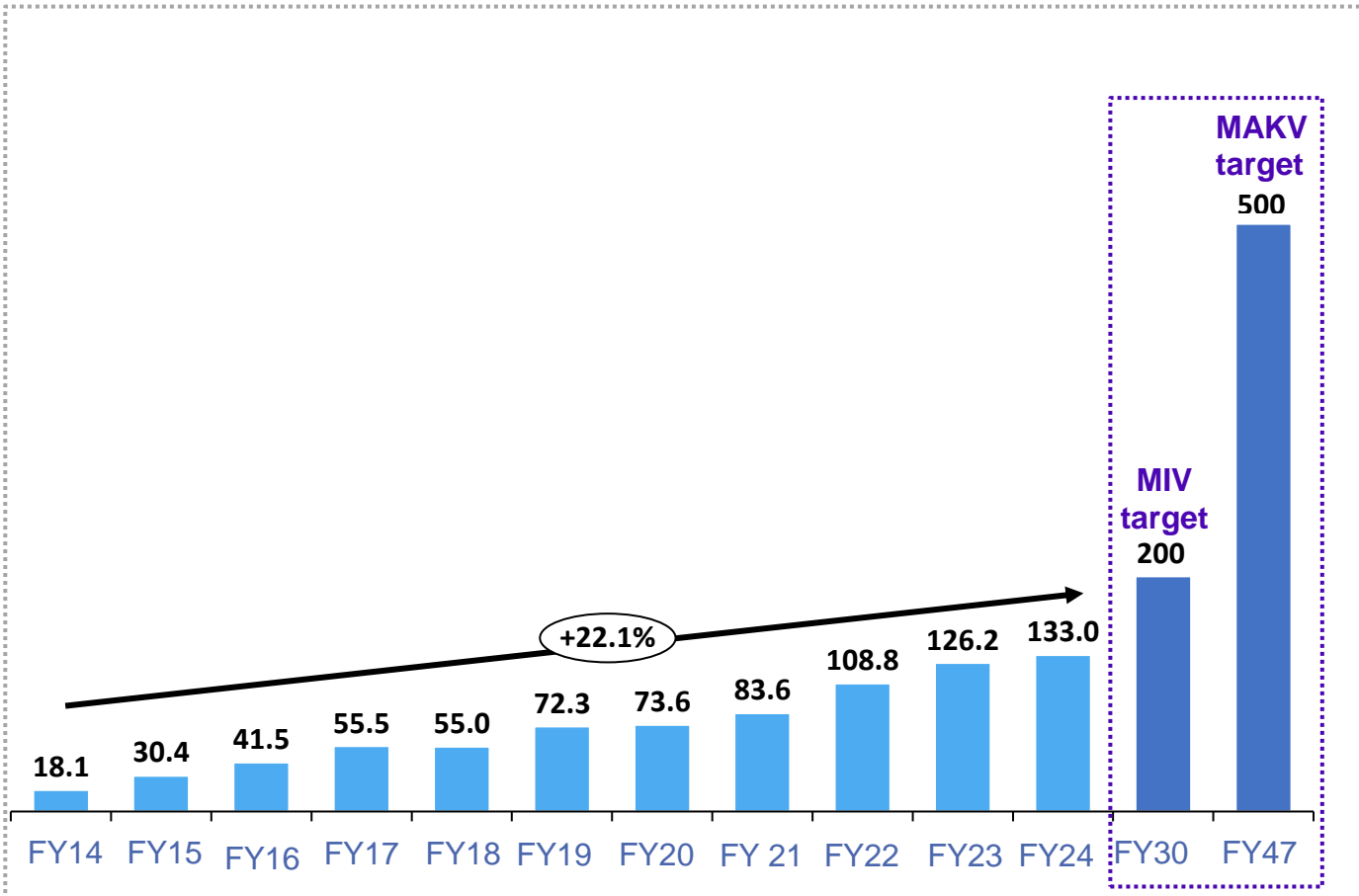
# Modal share of Inland Water Transport globally



Source: World Bank 2017, IWT share for India derived based on cargo traffic data in Niti Aayog report Strategy for New India@75

# Cargo Traffic Trend on National Waterways in India

The cargo movement on Waterways has increased significantly to 133.03 million-ton recording a CAGR growth of 22.1% from FY2014 to FY 2024





# Passenger Movement

Key Performance Indicator	Current Status	MIV 2030
Operational waterways for cargo and ferry movement	20	23
Ferry Passengers	8 Cr	16 Cr

01

## Key Challenges

- Limited infrastructure – land side infra
- Availability of financing
- Limited availability of vessels
- Proactive policy reforms
- Dedicated Institution
- Poor last mile connectivity
- Training and capacity building
- Passenger safety and security

02

## Solutions being implemented

- Operationalization of new ferry circuits
- Launch of Harit Nauka-Inland Vessel Green Transition Guidelines
- Regulatory reforms for facilitating private sector participation
- Development of world class terminals Kochi water metro
- Central and state government have made regulations more stringent

03

## Way Forward/Envisaged Solutions

- Detailing of coastal cities with dire need of supplementary mode of transport for infra development
- Identifying the potential business modalities, feasible options like, Viability Gap Funding, Annuity for balanced mix of govt. support and private operations in water transport
- Development of ferry information system

# Kochi water metro project aims to reduce pollution and traffic congestions

14

**Eboats - electrically propelled hybrid ferries plying**

~45

**Kilometer of distance**

5 +

**Routes**

10 +

**Terminals**



**Vision is to develop a socially inclusive transport system with focus on improved livelihoods through commercial property development and tourism-based initiatives**

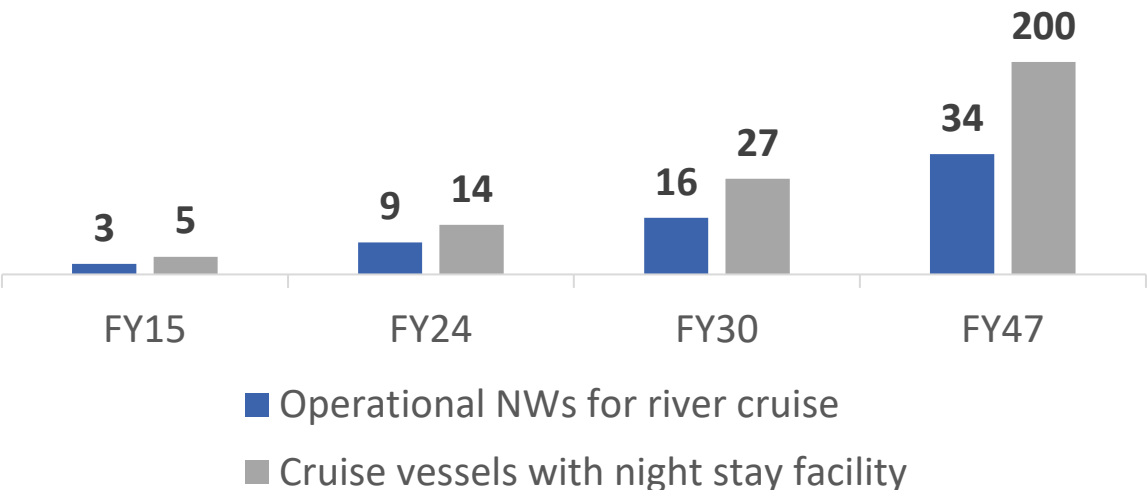
# River Cruise journey on Inland Waterways

## World's longest cruise journey completed in India

- The world's longest River Cruise was launched by Government of India with MV Ganga Vilas from Varanasi to Dibrugarh via Bangladesh (IBP Route) on 13<sup>th</sup> January, 2023
- Luxury cruise covered distance of more than 3200 kilometre across 27 river systems in 5 states in India and Bangladesh in 51 days



## River Cruise Operations



**Government of India plan to boost cruise tourism**

- ~INR 35,000 crores for Cruise Vessels and
- ~INR 10,000 crores for development of Cruise Terminal Infrastructure

# River Cruise Tourism

Key targets  
in Vision  
2047

Key River Cruise Performance Indicator	Current Status	Vision@2047
Operational waterways for River Cruise Tourism	9	34
Number of Cruise Circuits with night stays	4	20
Number of Ferry Tourism Circuits without night stays	9	34
Cruise Tourism Traffic with night stays	11,000	1,20,000

01

## Key Challenges

- Limited infrastructure for circuit development
- Complex regulations
- Limited awareness among domestic and international travelers
- Environmental concerns
- Multiple stakeholders for ecosystem development
- Stiff market competition from other tourism

02

## Solutions being implemented

- Infrastructure creation and circuit development
- Streamlining of regulations
- Marketing and Promotion
- Community involvement
- River Cruise Tourism Roadmap 2047 launched highlights 30+ possible routes and tourist circuits

03

## Way Forward/Envisaged Solutions

Standard MoU for agreement amongst:

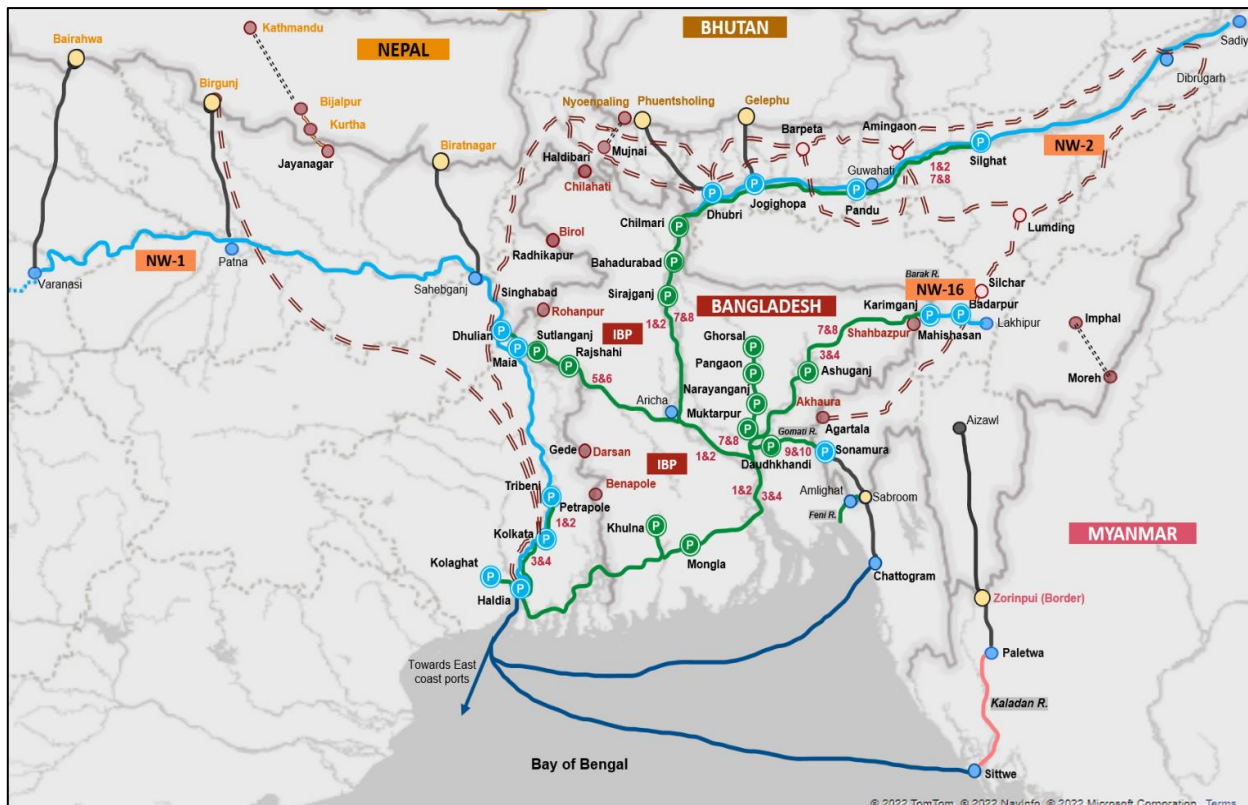
- MoPSW & IWAI : Policy, Strategy & Monitoring, Infrastructure Support & Technical Resources
- Ministry of Tourism: Coordination & promotion
- State Govt: Infrastructure & Circuit Development

# Regional Connectivity with neighboring countries

IWAI is implementing Regional Waterway Grid (RWG) project which involves **development of waterways based multi-modal linkages** amongst the regional countries with the Indian subcontinent, namely Bangladesh, Nepal, Bhutan, and Myanmar.

## International Connectivity under Act East Policy

- **Bangladesh:** Connectivity with Bangladesh & North east India via Indo-Bangladesh Protocol (IBP) route
- **Myanmar:** Connectivity with Mizoram through Myanmar via Kaladan project
- **Nepal:** Connectivity with Nepal- Kalughat terminal and in development via NW-37 (Gandak River) & NW-58 ( Kherkari River)



# India's Green initiatives – NHM, Harit Nauka, Harit Sagar, GTTP

## National Hydrogen Mission

Launched in 2021, NHM aims to make India a '**global hub**' for using, producing and exporting **green hydrogen**



1. At least 5MMT GH2 annual production
2. 60-100 GW electrolyzer capacity
3. 125 GW RE capacity for GH2 generation and associated transmission

## Green Tug Transition Programme

Launched in 2023, aims to convert tugboats used in ports to 'green tugs' that run on **non-fossil fuels** such as **methanol, hydrogen or ammonia**



1. At least half of all the tugs are to be converted into **Green Tugs**

## Harit Sagar: The Green Port Guidelines

Launched in 2023, aimed at reducing carbon intensity in major ports through adoption of alternative fuels like **green hydrogen** and **green ammonia**



1. Achieve **zero carbon emission goal**
2. Promote **environmental-friendly practices** across all ports

## Harit Nauka Initiative

Launched in 2024, aims to transform the maritime landscape by adopting **green vessels** and establish operationalization of **green ecosystem**



1. Attain 50% utilization of **green fuels** in inland passenger fleets by 2034
2. Attain 100% utilization by 2047

## Green Shipping initiatives

**Two Hybrid Electric Catamaran** built by CSL & deployed in Varanasi and Ayodhya, on National Waterway -1 (River Ganga)

Six more such vessels to be completed in 2024

**One** Indigenous 50 Pax **Hydrogen ferry** built by Cochin Shipyard Limited in India shall be deployed in Varanasi and 4 more Hydrogen fuelled vessels are planned to be constructed

Harit Nauka Scheme to Promote Green Passenger Ecosystem in the country



Hybrid Electric Catamaran Vessel



Hydrogen fuelled vessels

**Target : Increase the share of LNG in the Energy Basket from 6.7% to 15% till 2030**

## **Indian Register Shipping (IRS) Rules**

Indian Register Shipping (IRS) prepared rules for LNG fuelled vessels for coastal and inland waterways.

Oil Industry Safety Directorate (OISD) developed new standards on “Safety for LNG bunkering facilities at Ports, Large Ships, Coastal Shipping and Inland Water Transport terminals.

## **Oil Industry Safety Directorate (OISD) Standards**

## **I.V. Act, 2021: Design and Construction Rule**

Framed under the provisions contained in the Inland Vessels Act, 2021 in the Gazette of India, Extraordinary, Part II, Section 3, Sub-Section (i)



# Benefits of LNG as Fuel in IWT Vessels

## *Reduces Greenhouse Gas Emissions*

*Emits ~30% less CO2 than conventional fuel oil engines*

*Methane Slip Mitigation*

## *Provides Regulatory Compliance*

*Complies with International Maritime Organization's (IMO) emission regulations*

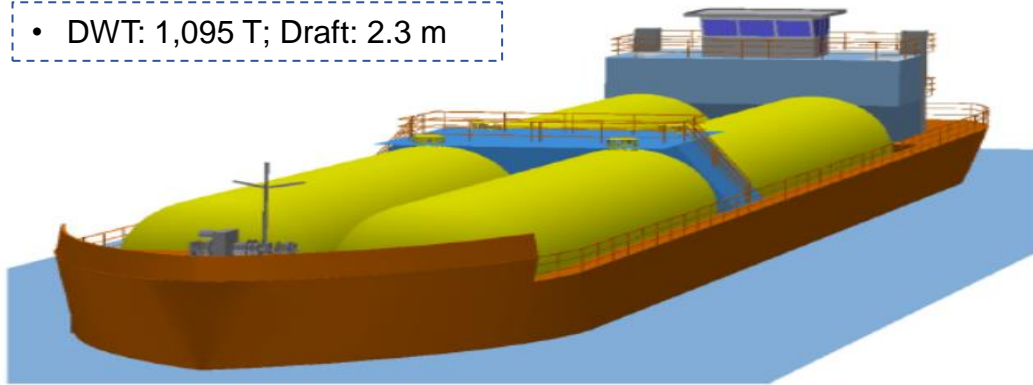
*Cleaner and sustainable shipping practices*

## *Reduces Air, Water & Noise Pollution*

- Nitrogen Oxides (Nox) emission can be reduced upto 85%
- Contains negligible amounts of Sulphur, results in eliminating Sulphur Oxide (SOx)
- Almost Zero Particular Matter (PM) emissions.
- Lower risk of Oil Spills reduces the risk of long-term harm to aquatic ecosystem
- Produces fewer engine deposits and requires less lubricants, reduces the risk of contaminants entering waterways.
- Operates more quietly than traditional diesel engines
- 2.4 times more energy density than CNG and 40% lower volumetric density as compared to diesel.

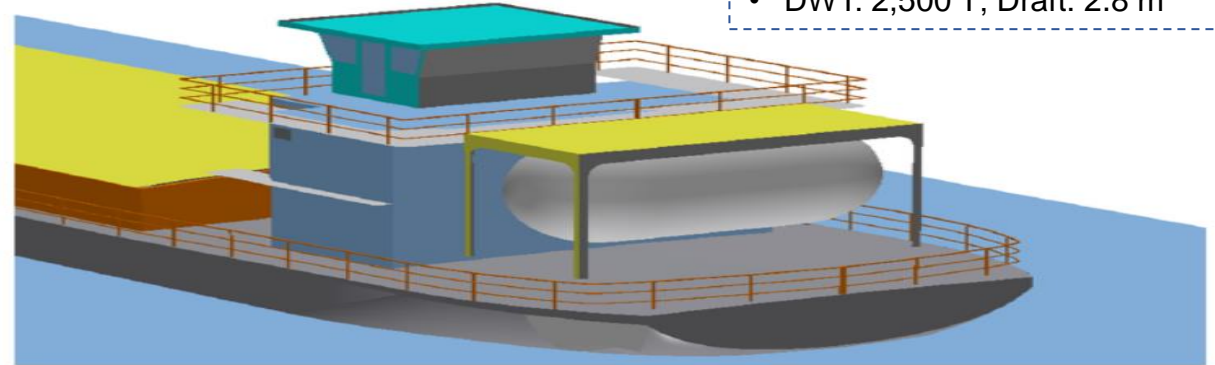
## Vessel designs for LNG carrier & LNG Powered Bulk carrier

• DWT: 1,095 T; Draft: 2.3 m



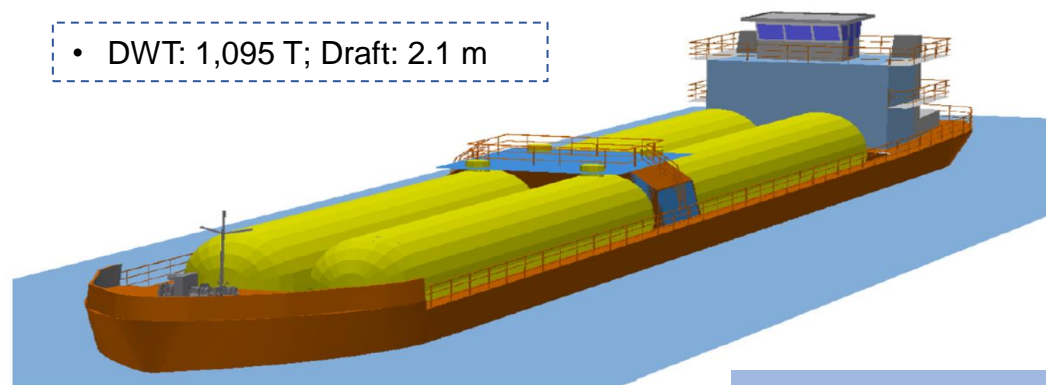
LNG Carrier 1

• DWT: 2,500 T; Draft: 2.8 m



LNG Powered Bulk Carrier

• DWT: 1,095 T; Draft: 2.1 m



LNG Carrier 2

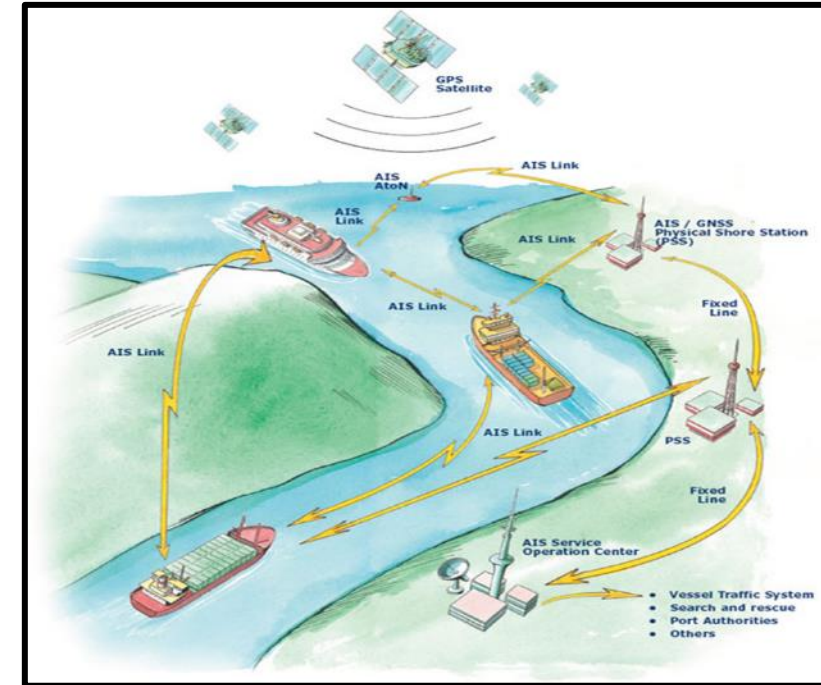
# Ease-of-Doing Business

**CAR-D Features**

- Single point for data on NWs**  
Car-D portal will be a single point for latest traffic on NWs of India including Cargo traffic and Cruise passenger traffic. It will provide information of traffic data of all NWs in India. Data includes traffic on NWs, traffic of terminals including cargo type and commodity breakup over the years.
- Transparency of Traffic Data**  
Car-D provides full transparency of traffic data on NWs to give total view of traffic handled on NWs of India. This will appraise the capability of Inland Water Transport in India.
- Interactive Dashboard**  
Car-D shows traffic data of multiple financial years in the form of interactive dashboard having combination of multiple graphs and graphs having multiple filters to see analysed data as per the requirement.

**Ship Repair Facilities**

- Chainage: 195
- Location: Shibpur, Howrah
- Operator name: M/s. A.C. Roy
- Type: Dry dock & ship repair
- Contact details: 033-2252-3593
- Charge: Decided by yard in case to case basis
- Other facilities: General repairs in afloat condition, Mechanical, electrical, wooden, electronics, GEM specific jobs
- Last update: 06-10-2020



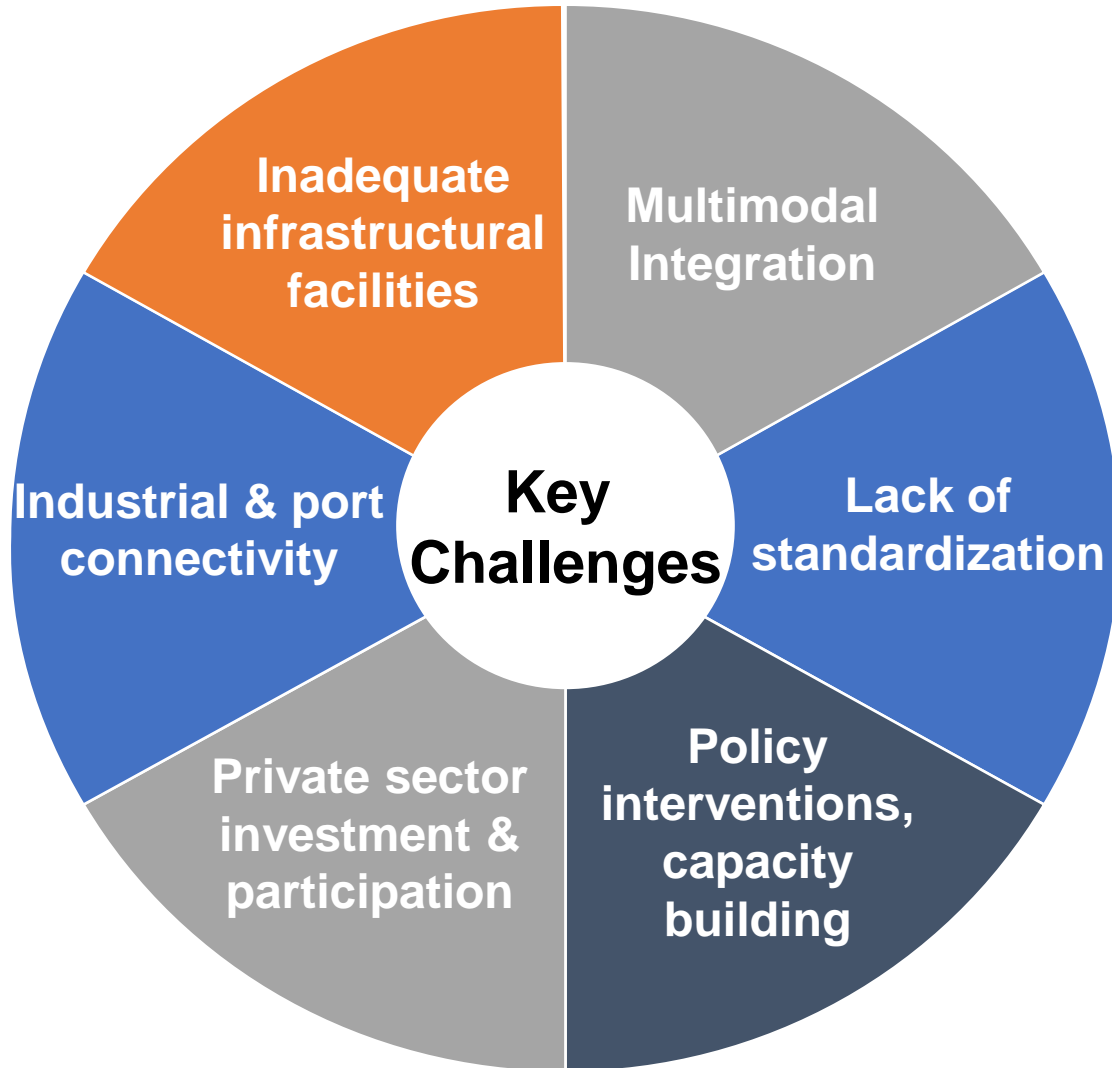
CAR-D (CARGO DATA): For Collection & compilation, Analysis and dissemination of information on traffic movement and near real time capturing of traffic, with the help of terminal operators and regional offices

PANI (Portal For Assets And Navigational Information): PANI is an Integrated solution bringing river navigation and Infrastructure information on a single platform, giving detailed information on various features of the National Waterways (NWs).

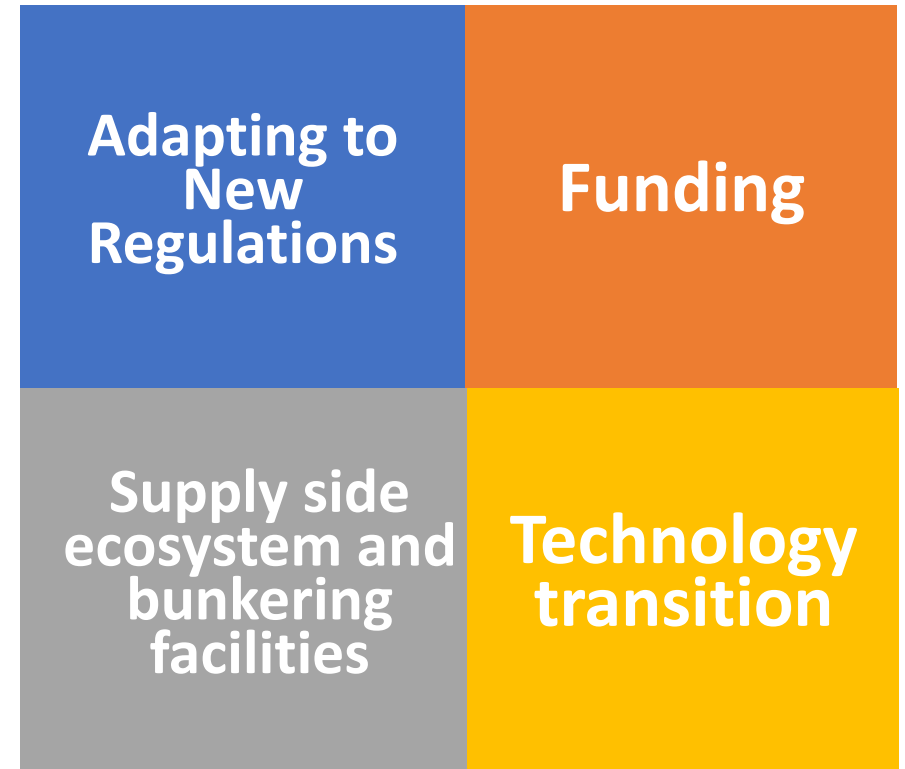
River Information Services (RIS) are combination of sensors like Automatic Identification System (AIS), Radar, Meteorological & Hydrological equipment along with information technology (IT) related services designed to optimize traffic and transport processes in inland navigation.

# Challenges in IWT Sector

## Challenges faced in cargo growth



## Challenges in green transition



# Solutions Underway and Future Outlook

## Solutions :

- Infrastructure creation - terminals, vessels.
- Fairway development and maintenance
- Implementation of physical & digital navigational aids/system solutions
- IWT awareness/promotion amongst cargo players

## Way Forward

- IWT & coastal cargo promotion scheme
- Demand aggregation and IWT transportation for identified O-D pair-based cargo movements
- Viability support - opex subsidy,
- Intermodal facilities
- Capacity and capability building
- Promotion of industrial clusters

## Policy Support for transitioning to Green

- Launch of Harit Nauka-Inland Vessel Green Transition Guidelines
- The Scheme endeavors greening of 1000+ IVs
- Wholistic Green IWT ecosystem creation (shore-sides and support infra, terminal, bunkering, capacity building)
- Green water metro across 10 cities

## Pilot movements:

- 15 electric IVs operating across Kochi, Varanasi, Ayodhya and 66 under manufacturing
- 1st fully indigenized hydrogen vessel to be deployed in Varanasi.
- Plans to sanction and support deployment of 15-20 Green Vessels across 10 cities
- Discussions with key enablers - MoPNG, OMCs, PESO, MoRTH, MHI, IRS, NTPC to facilitate green ecosystem development



*Thank You*



***Follow us:***



**iwai.nic.in**



**@IWAI\_ShipMin**



**iwai\_shipmin\_india**



**IWAI\_ShipMin**



**IWAI**



**@IWAI\_ShipMin**