Inland Water Transport: Opportunity Beckons!!!!

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Players of Inland Water Transport

Cargo
- Importers
- Exporters
- Traders
- PSU's etc.

Waterways
- IWAI, IWT Dept. State
- Dredge Owners
- Surveyors

Terminals
- Facility owner (cranes etc)
- Stevedores (cargo handling)
- Intermodal Connectivity

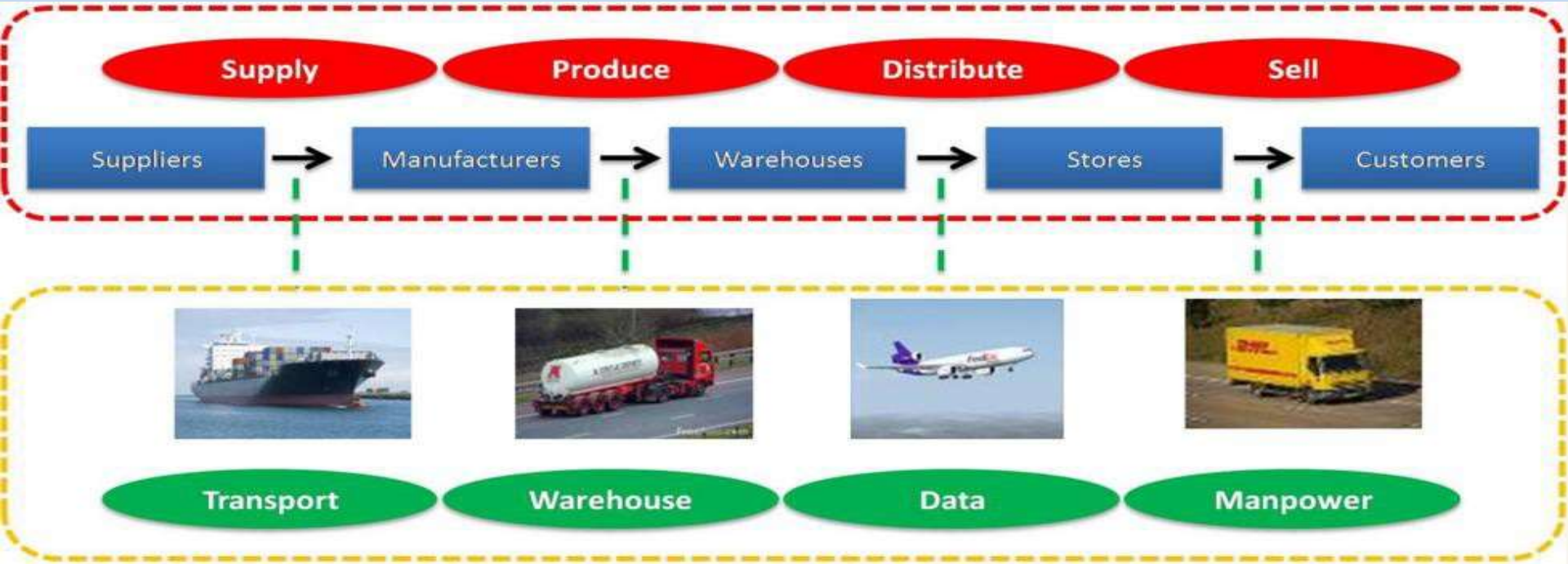
Vessels
- Owners
- Charterers
- Ship Management

Facilitators
- Regulators (State IWT)
- Class. Society (IRS,BNV)
- Shipyards & Repair Yards
- Financers
- Customs

Logistics

- Logistics is fundamental to the performance of economy
- Logistics cost in India is around 13% of the GDP,

in comparison in USA/EU/Japan it is about 8%



Transportation cost constitutes about 35% of the Logistics cost

Supply Chain Management

Logistics Management

Transport for Sustainable Development

The challenge of developing transport policies for sustainable development is to orient the sector towards a compromise that **maximises the economic and social benefits of transport** and **minimises associated environmental, social and economic costs.**

IWT: supplement, decongest, environment, capital cost and societal welfare

Comparison: Social

Tab. 3.12 Estimates of average external costs of transport (EU17)

Passenger (Euro/1000 pkm)

	Car	Motorcycle	Bus	Rail	Aviation
Accidents	36.0	250.0	3.1	0.9	0.6
Noise	5.7	17.0	1.3	3.9	3.6
Air pollution	17.3	7.9	19.6	4.9	1.6
Climate change	15.9	13.8	8.9	5.3	35.2

Freight (Euro/1000 tonkm)

	LDV*	HDV**	Rail	Aviation	Waterborne
Accidents	100.0	6.8	11.5		
Noise	35.7	5.1	3.5	19.3	
Air pollution	131.0	32.4	4.0	2.6	9.7
Climate change	134.0	15.1	4.7	153.0	4.2

IWT Locational Economy

	Containers	Dry and liquid bulk
'water' link both O-D on water	20-40 km	20-40 km
Pre or end-haul other transport mode	60-100 km	80-120 km
Pre and end-haul other transport mode	225-250 km	180-200 km

Source: NEA & Springs

IWT Sector- ?


Government Policy
Return on Investment
Growth in Demand
Drivers For Change
Niche Segment
Supply Gap
Capacity to Grow

Government Policy and thrust

- World Bank funded projects – NW-1, W.B. Assam, Bangladesh
- Increased budget of IWAI
- Development of additional National waterways
- Inland Vessel Act 2021, Waterway bill 2016
- Incentives, No GST on IWT, ship building, IV Corridor
- IBP route, Bhutan and Nepal cargoes
- Sagarmala Project, AMRUT (Atal Mission for Rejuvenation and Urban Transformation)

Maritime India Vision 2030

- **Promoting cargo movement on Inland Waterways and multi-modal shift**
- Operationalize 23 waterways by 2030 by enhancing infrastructure of terminal and allied infrastructure, fairway development, navigational aids and RIS provisioning
- Capitalize additional cargo and ferry potential by building multi-modal connectivity with 4 neighboring countries
- Leverage private participation for terminal development and operations- Ro-Ro ; Ferry and Inter-modal/Multi-modal terminals

- **Enhancing river cruise tourism**
- Development of Terminal infrastructure and creation of concrete/Steel and floating pontoon jetties across the identified circuits for cruise operations

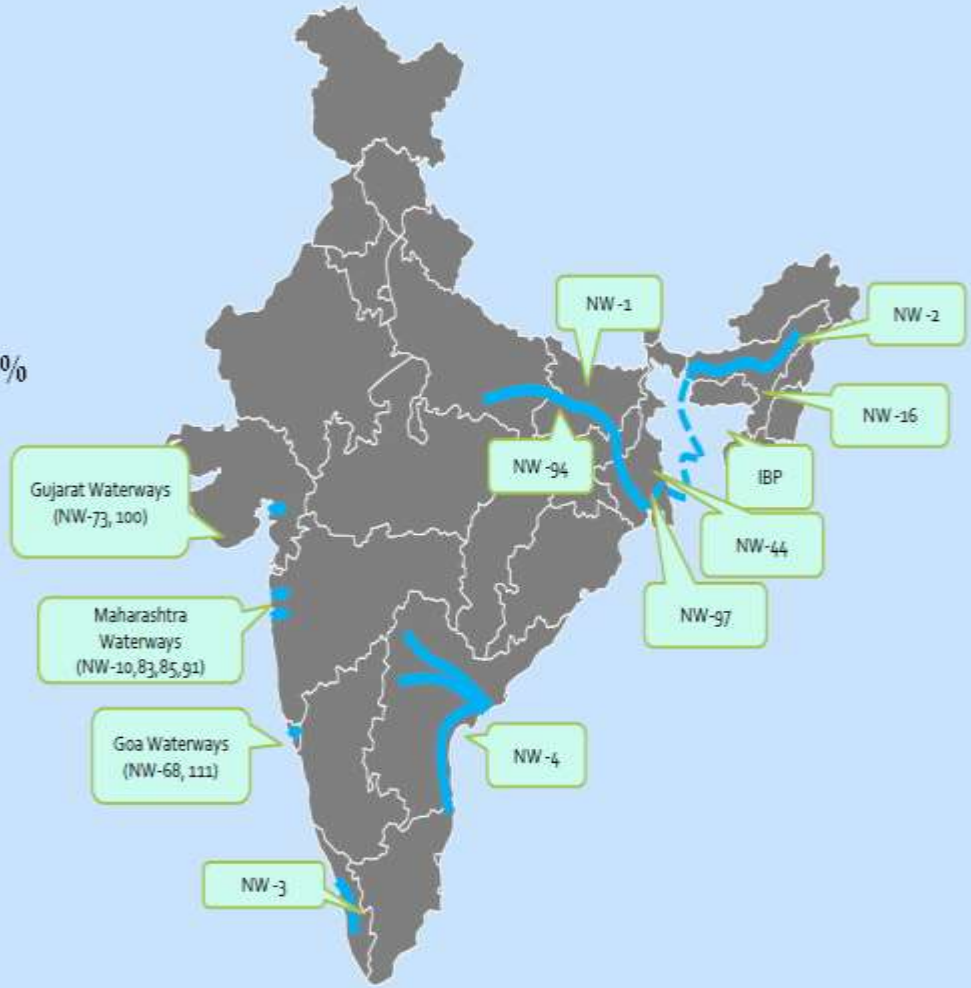
- **Developing urban water transport systems on inland waterways**
- Develop 10+ Ro-Ro terminals in partnership with State government
- Develop Ferry terminals across 60+ locations in partnership with State government on Arth Ganga model

- **Growth by 2030; 140 MMTPA - with 14,000 KM waterways**
- There is ample opportunity

Inland Water Transport (IWT) Sector Overview

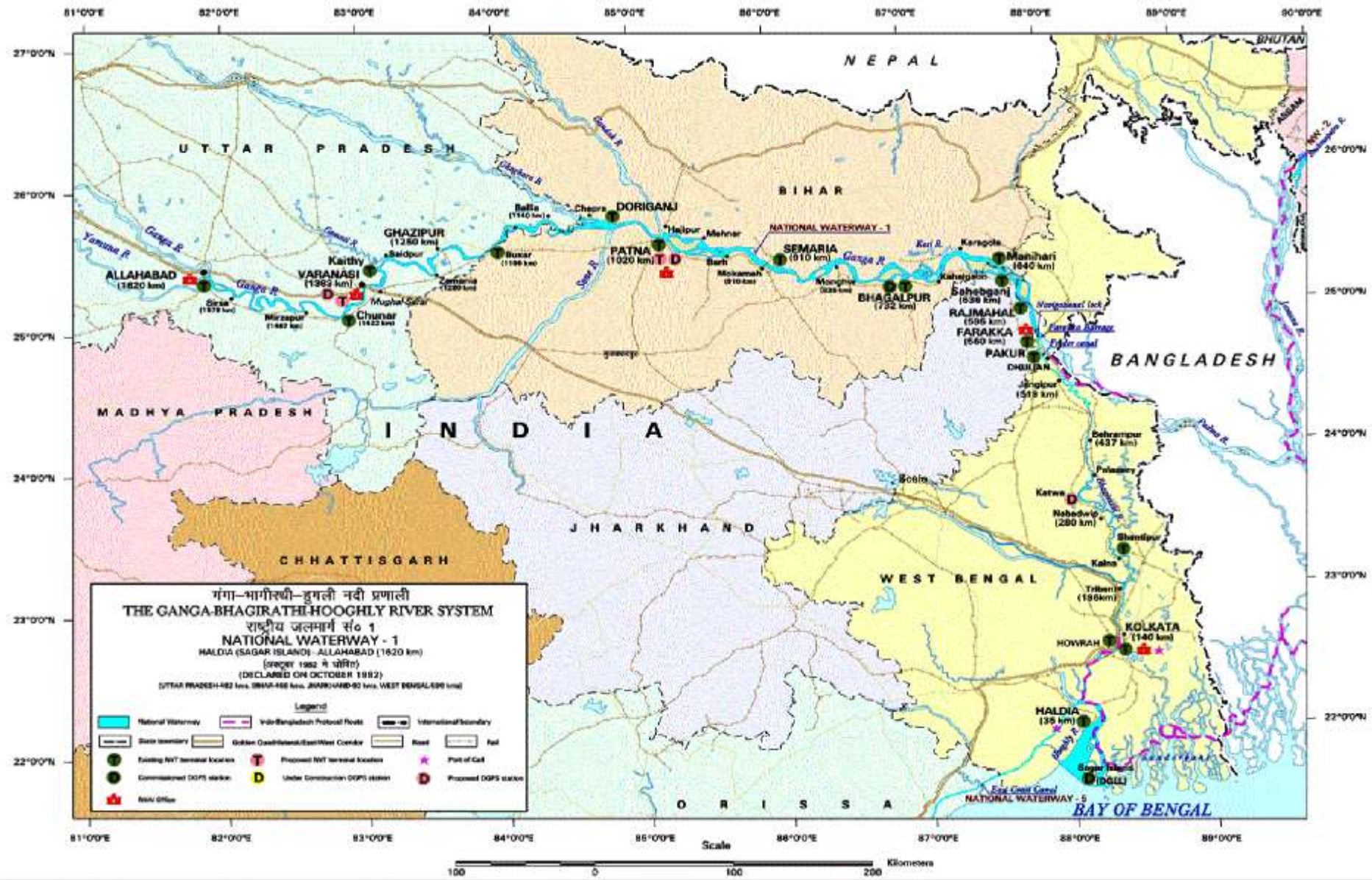
- **111** National Waterways, **23** (5200 km) have been identified with potential for mechanized crafts, **17** are currently operational. Three categories of Waterways (A) with Traffic & Passengers, (B) Only Passengers; and (C) Others
- **Over 100** MMT of cargo moved in 2021 and growth of **11%**
- Currently **2%** Modal share of IWT against global share of 8% to 15% in other continents. Bangladesh almost 30% share
- MIV **2030**

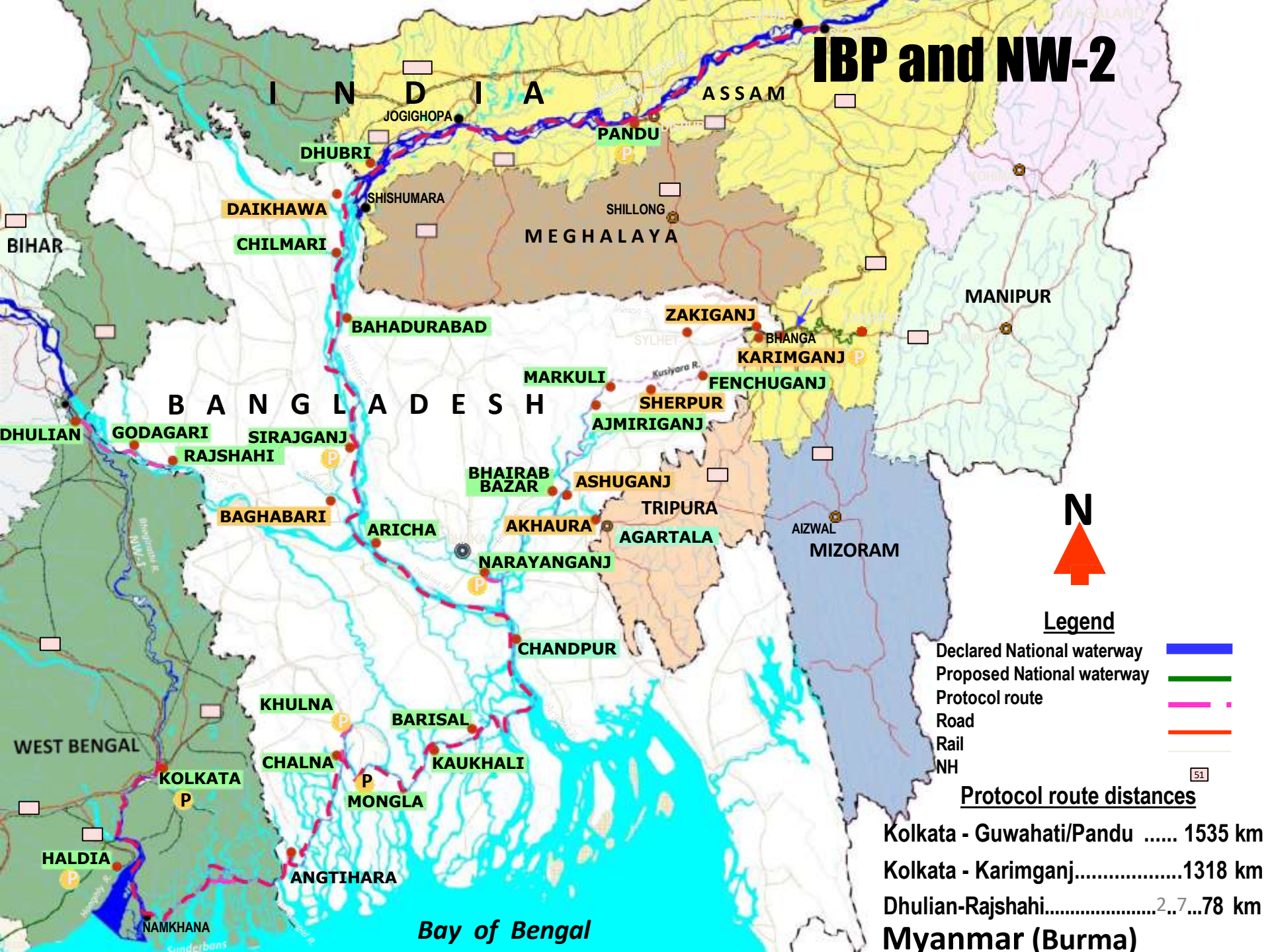
  (a) Growth by 2030; **140** MMTPA
  (b) Urban Water Transport Potential
  (c) River Cruises



Inland Waterways Authority of India (IWAI)

National Waterway-1




IBP and NW-2
I N D I A
ASSAM
JOGIGHOPA
PANDU
DHUBRI
SHISHUMARA
DAIKHAWA
CHILMARI
SHILLONG
MEGHALAYA
BIHAR
MANIPUR
ZAKIGANJ
BHANGA
KARIMGANJ
BAHADURABAD
MARKULI
FENCHUGANJ
SHERPUR
AJMIRIGANJ
B A N G L A D E S H
DHULIAN
GODAGARI
SIRAJGANJ
RAJSHAHI
BHAIRAB BAZAR
ASHUGANJ
TRIPURA
BAGHABARI
ARICHA
AKHAURA
AGARTALA
AIZWAL
MIZORAM
NARAYANGANJ
CHANDPUR
KHULNA
BARISAL
WEST BENGAL
CHALNA
KAUKHALI
KOLKATA
MONGLA
HALDIA
ANGTIHARA
NAMKHANA
Bay of Bengal
N
Legend
Declared National waterway
Proposed National waterway
Protocol route
Road
Rail
NH
51
Protocol route distances
Kolkata - Guwahati/Pandu ..... 1535 km
Kolkata - Karimganj.....1318 km
Dhulian-Rajshahi.....2..7...78 km
Myanmar (Burma)

Requirements

Capital Costs for the following:

- **Dredging and river training to maintain Least Available depth,**
- **Construction of Terminals and Jetties**
- **Provision of Infrastructure at Terminals for cargo handling, warehousing etc.**
- **Construction of Shallow Water Barges, pusher tugs and Self Propelled Vessels**
- **Construction of Fuel efficiency of vessels and use of green fuels**

Inland Vessels

- Very few Inland Vessels and Barges
- Average age of vessels is over 15 years
- Average Size of Vessels for IWT
- Most vessels operate on MDO

Training and Manpower

Training Institute	Location	Management
National Inland Navigation Institute (NINI)	Patna	IWAI, MoS, GOI
Maritme School Britona	Goa	Capt. of Ports, Goa
Crew Training Institute (CTI)	Chandbali	IWT, Govt. of Odisha
Crew Training Centre Assa	Guwahati	IWT, Assam
KSINCO, Training Centre	Kochi	KSINCO, Govt. of Kerala

Total Training Capacity: 480
Required Human Resource for Manning of Vessels and the Eco System

Training and Manpower

- Development of Waterways
- Dredging
- Construction of Terminals (Fixed and Floating)
- Construction of Vessels
- Operations of Vessels and Ferries
- Management of Terminals
- Surveys
- Vessel repairs and that of ancillaries
- Manning of RIS and Aids to Navigation
- Training & Research

Opportunities – IWT Sector

- **Vessels**
  - 1500mt to 2000mt
  - 200~250 Vessels
  - Cost about Rs. 10Cr. each = Rs. 2000~2500 Cr.
  - IRR 15%
- **Civil Contractors & Engineers**
  - River Training etc.
  - Construction of Barrages, Jetties
  - Terminal Construction
  - Road & Rail Connectivity
- **Dredge Owners & operators**
  - Capital Dredging
  - Maintenance Dredging

Opportunities – IWT Sector

- **Original Equipment Manufacturers**
  - Cargo Lifting Gear Cranes etc.
  - Cranes, forklift, Conveyor belt etc.
  - Fenders & mooring gear etc.
  - Vessel Equipment
  - Navigation Aids
- **Shipyards & Repair Yards**
  - Self Propelled Vessels
  - Tugs, Barges, & Pontoons
  - Ferries
  - Dredgers

Opportunities – IWT Sector

- **Waterway Management**
  - Bathymetric Survey
  - Navigation Aids
  - RIS
- **Terminal Operations**
  - Vessel Pilotage
  - Vessel Mooring
  - Cargo Handling
  - Other Services
- **Vessel Operations**
  - Commercial
  - Technical
  - Running

Opportunities – IWT Sector

- **Consultancy**
  - Cargo Chartering & brokerage
  - Cargo handling & Management
  - Surveying
  - Vessel Design & Construction
  - Other Service Garbage, Pollution and Supply etc.
  - Logistics and Supply Chain management

Opportunities – IWT Sector

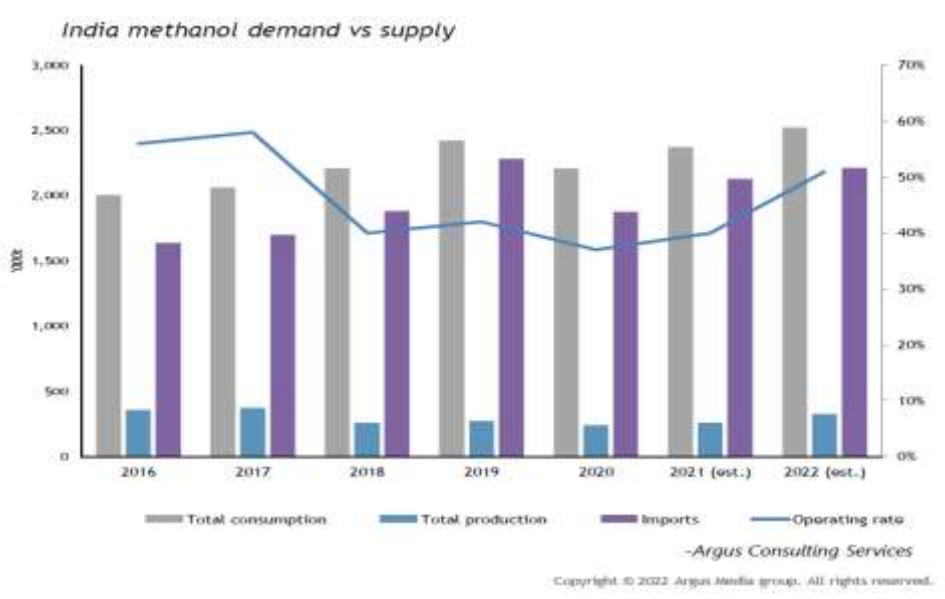
- **Human Resource Development**
  - Waterways, Aids to Navigation, River Conservancy works, River Pilots, Terminal, Vessels, Cargo
  - Training Institutes
  - Training on the Job
  - Value Addition

IWT as Logistics Solution for Ethanol and Methanol Supply Chain?

IWT Sector Logistics for Bio Fuel

- **Methanol as vehicular fuel**
  - Driven by ARAI and IOCL. Ashok Leyland developing Methanol driven trucks.
- **Methanol as cooking fuel (Canister Based)**
  - Implemented by Assam Petrochemicals Limited and Standards under preparation by BIS
- **Methanol as Marine Fuel**
  - Deccan Leap, Pune is collaborating with Scandinos, Sweden to build facility for converting diesel engines on boats/vessels to run on methanol.
- **Methanol for e-Mobility**
  - Thermax Ltd. has developed Methanol reformer based fuel cell which can be mounted on bus/truck for methanol driven e-mobility
- **Methanol for Power Generation**
  - Kirloskar and Ashok Leyland is working on methanol based power gensets.

IWT Sector Logistics for Ethanol and Methanol



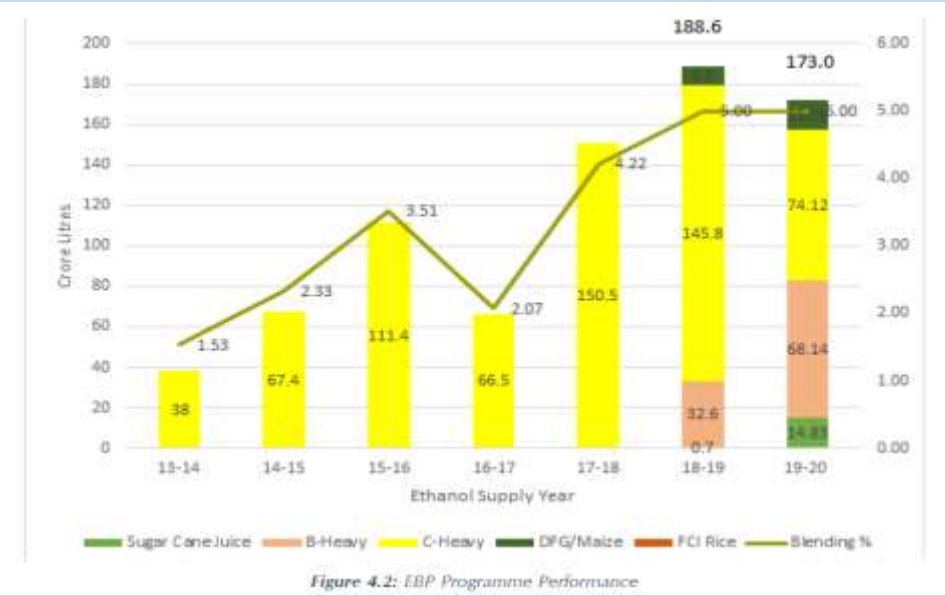


Figure 4.2: EBP Programme Performance

- **Ethanol and Methanol Policy NITI AAYOG**
- **Ethanol Policy promulgated by each state:**
- **10% from April 2022**
- **20% from April 2023**
- **Methanol for Coastal Shipping and IWT sector**
- **98% fossil and 2% bio fuel**
- **Supply 200cr. Ltrs**
- **332 cr. Ltrs 2021**
- **685cr. Ltrs in 2025**

Demand of Ethanol

Ethanol demand projection

Ethanol Supply Year	Projected Petrol Sale (MMT)	Projected Petrol Sale (Cr. litres)	Blending (in %)	Requirement of ethanol for blending in Petrol (Cr. litres)**
A	B	B1=B X 141.1	C	D=B1*C %
2019-20	24.1 (Actual)	3413 (Actual)	5	173
2020-21	27.7	3908	8.5	332
2021-22	31	4374	10	437
2022-23	32	4515	12	542
2023-24	33	4656	15	698
2024-25*	35	4939	20	988
2025-26*	36	5080	20	1016

* The petrol projections may undergo revision due various factors like penetration of EVs, etc.

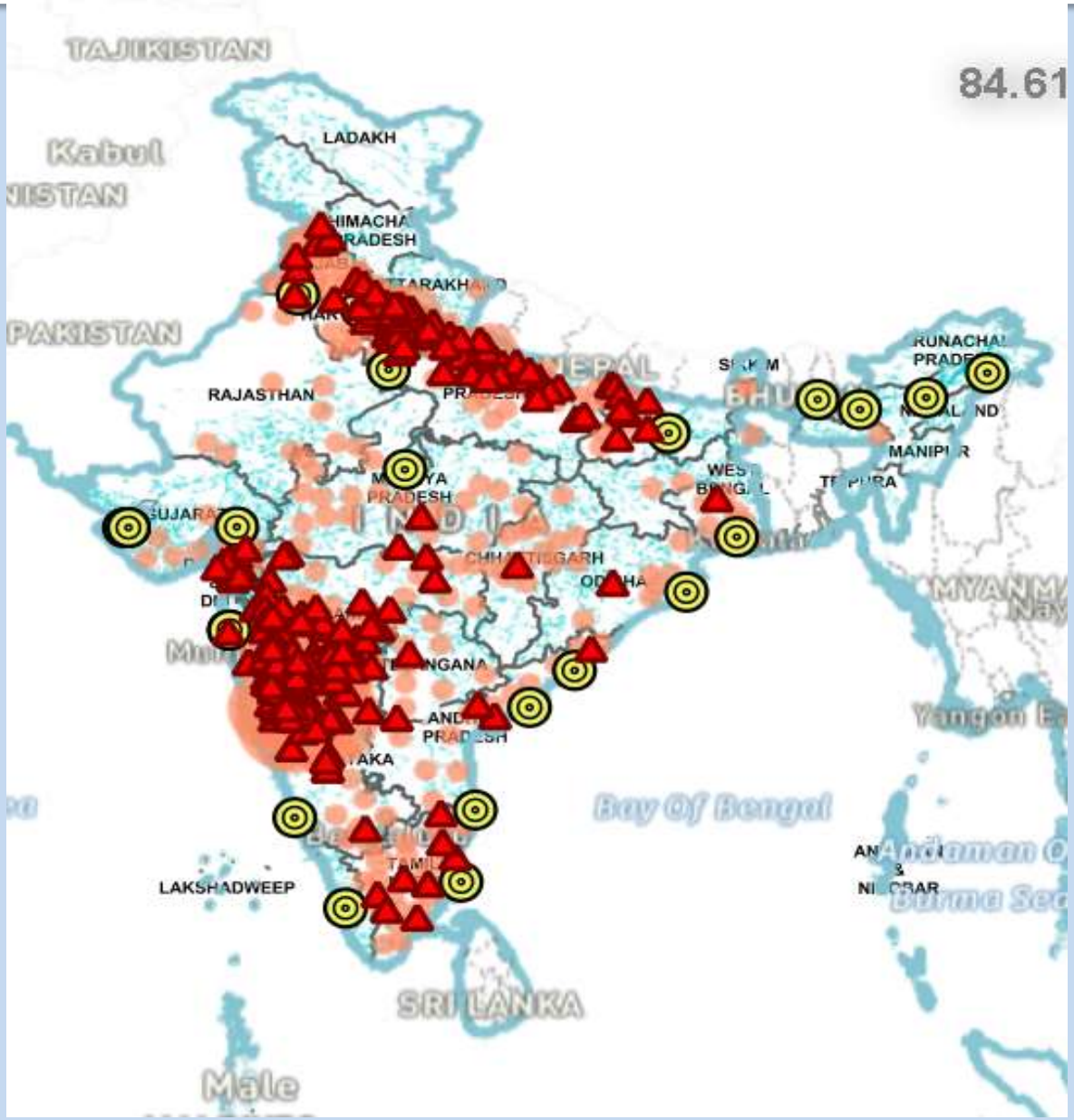
** The figures are optimistic, as the E20 fuel will be consumed by new vehicles from April 2023 only. The demand for ethanol will, however, increase due to penetration of E100 two wheelers, which are now being manufactured in the country.

Demand of Ethanol Logistics

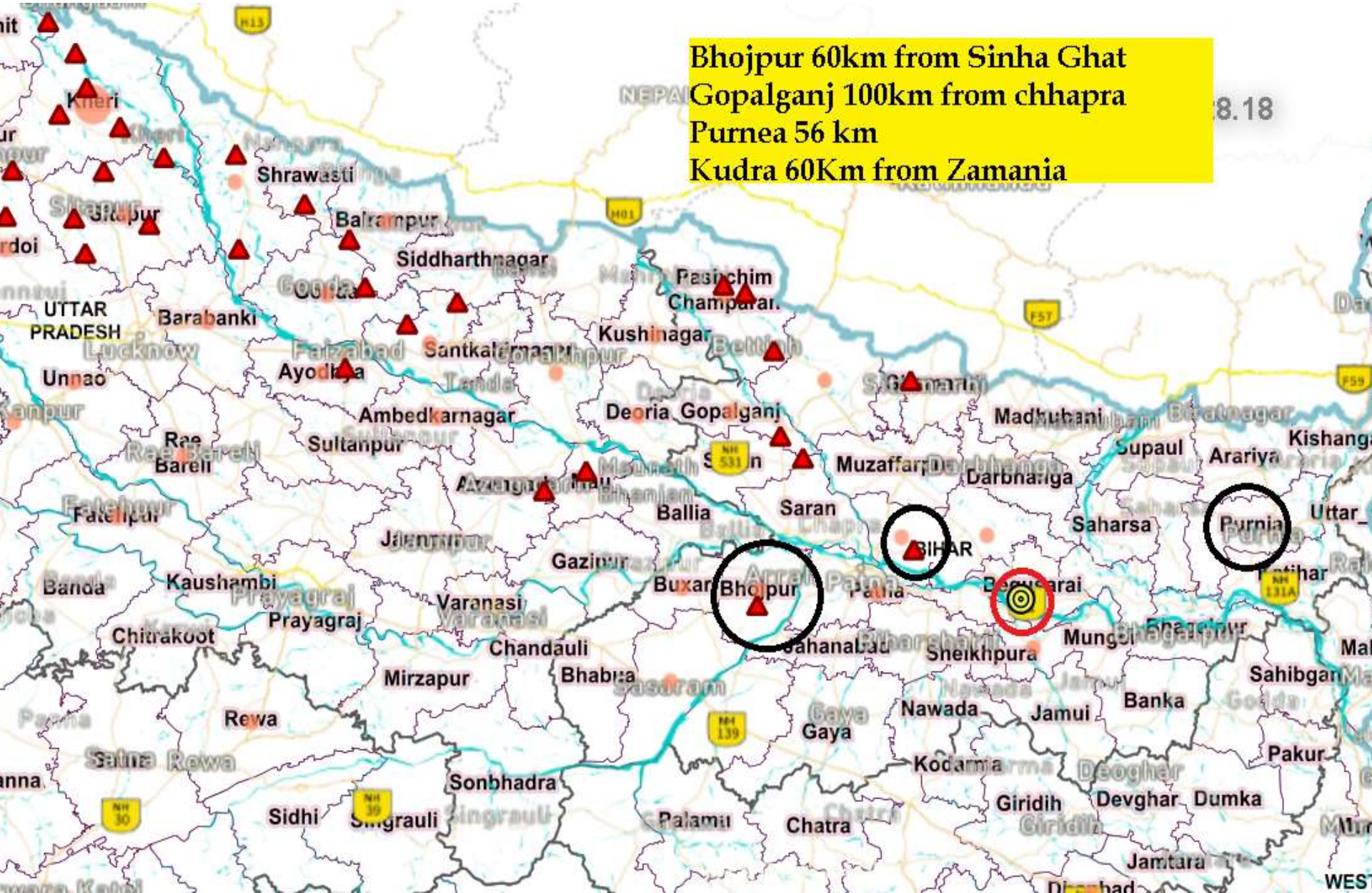
Per 100KLD unit		Tons per annum
Input	Grain	90000
Input	Rice Husk	50000
Input	Water	198000
Output	Ethanol	33000
Output	Cattle feed	12000
Output	Fly Ash	36000

To meet the demands of ethanol supply 33000Ltrs per annum 1 barge on merry go round for 500km distance will be required.

Demand of Ethanol Logistics



Production of Ethanol



Requirement for Logistic of Ethanol

- **Terminals for handling, storage and distribution of ethanol**
- **Infrastructure at Terminals: Tankage, Pipeline etc.**
- **Specialised barges for transportation of methanol**
- **First mile and last mile connectivity**
- **Trained manpower for Inland vessels**
- **Trained manpower for Terminals**

Requirement for Logistic of Ethanol

- **Regulations for Inland vessel construction**
- **Peso approval of Terminals**
- **Course module for handling of methanol and ethanol**

Dry cargo Barge Costing (2000MT Dwt)

- **Time Charter cost: 15lakhs per month**
- **Fuel for 1000kms: 6000ltrs cost 6lakhs**
- **Round trip: 5 days but normally take 10days for the trip**
- **About Rs0.80/tkm**

Thank you