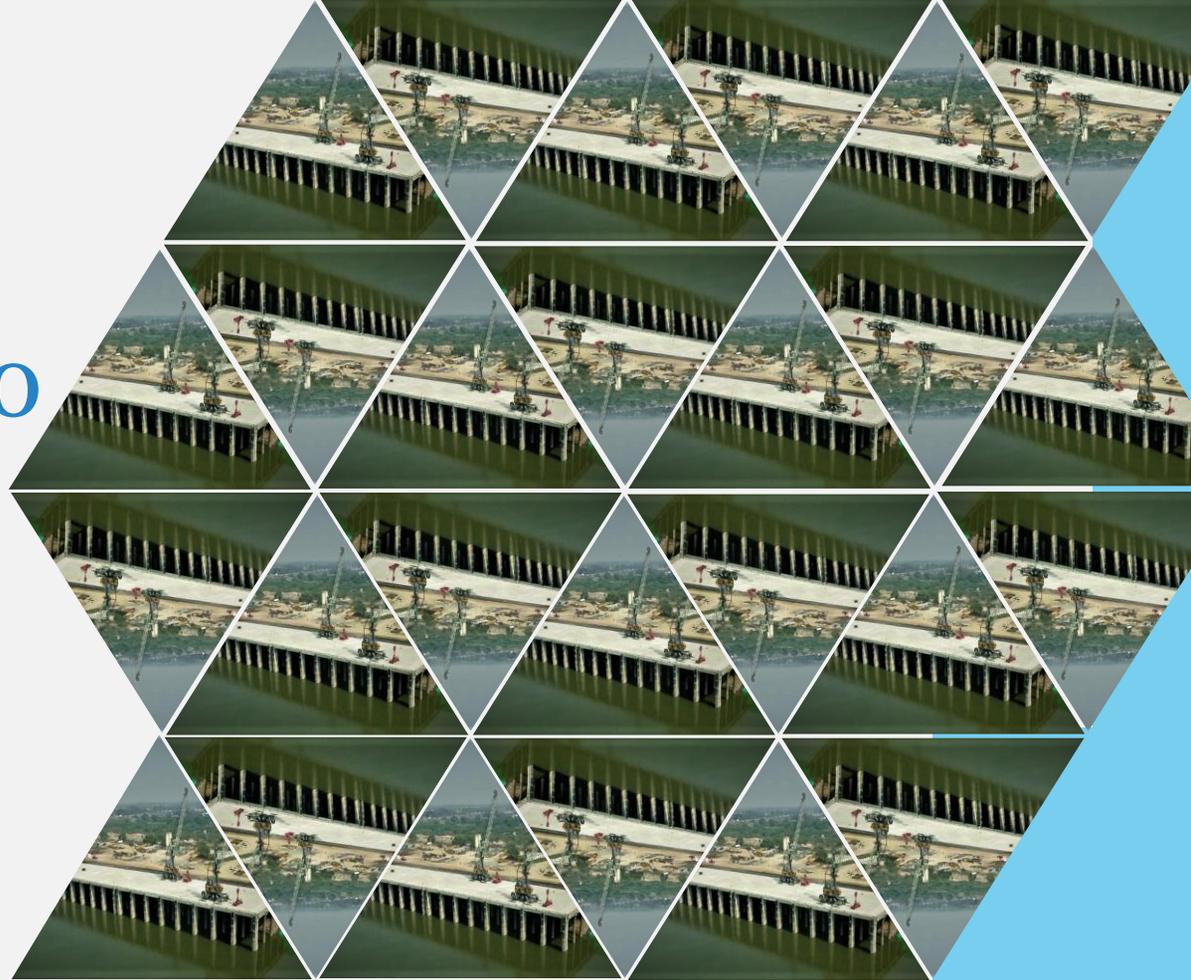
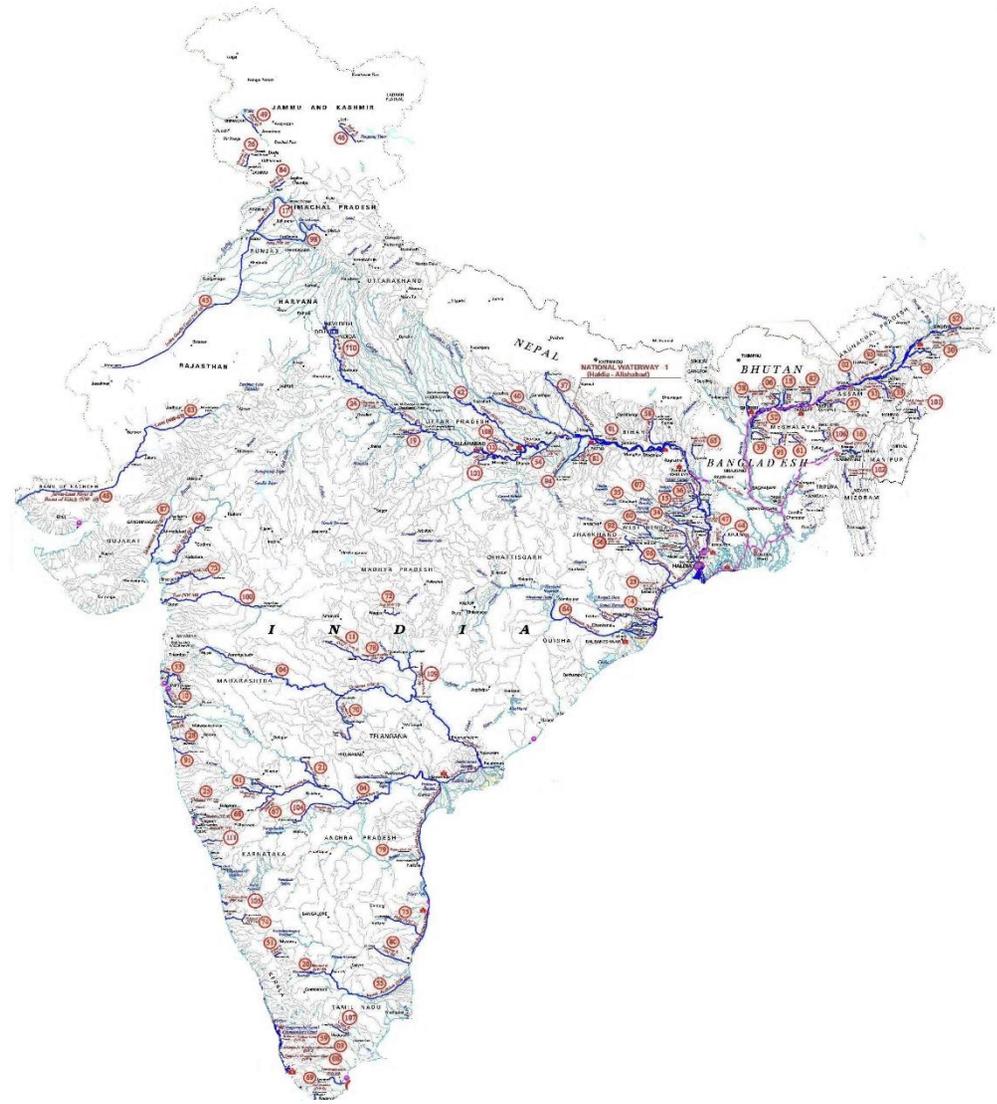
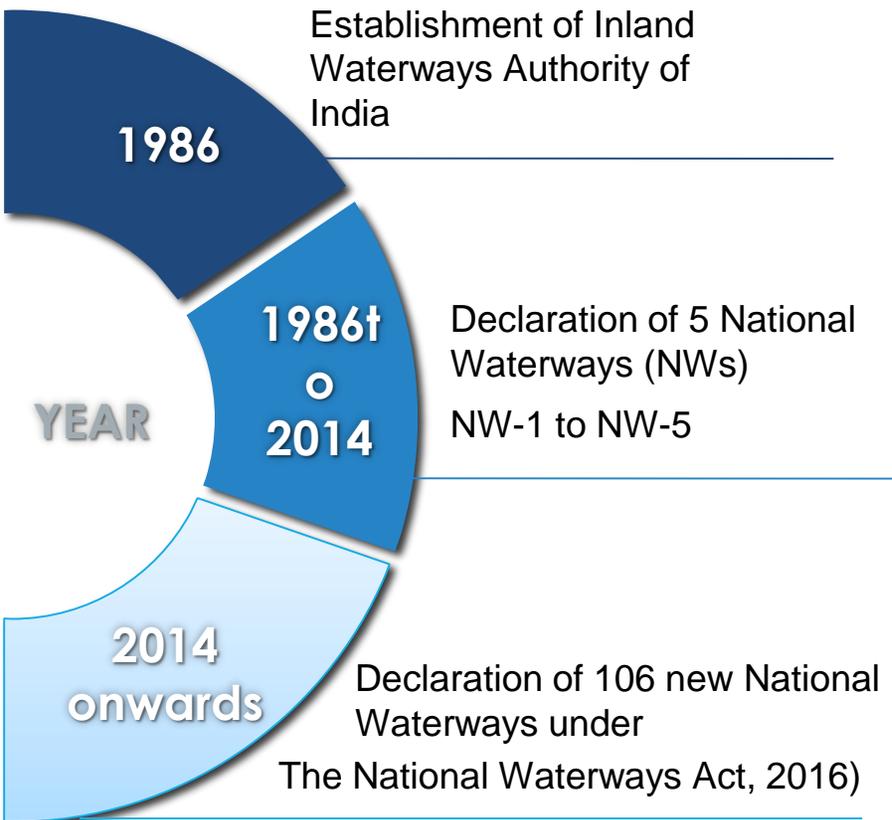


Inland Water Transport Scenario in India



Quantum Jump from 5 to 111 National Waterways

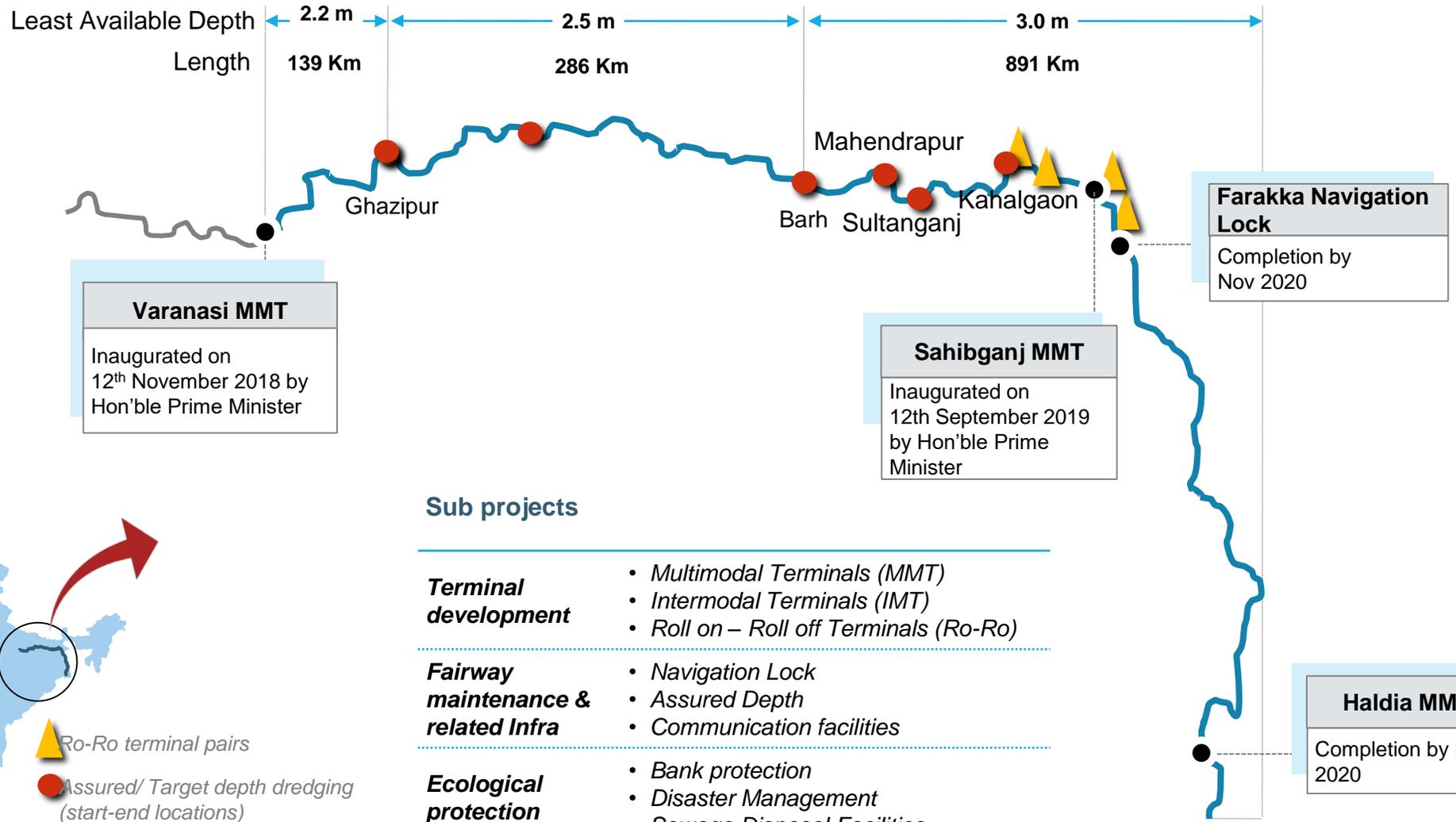


Overarching scheme for next 5 years



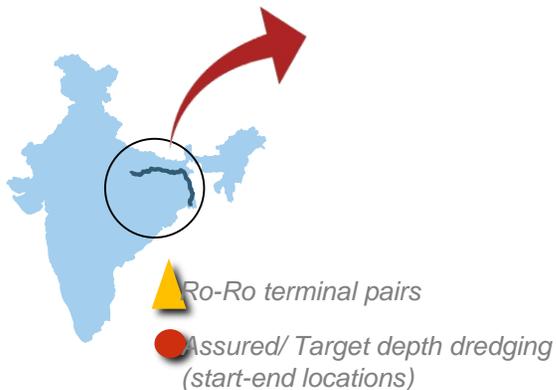
Projects/ Schemes	Cost (USD Million)	Target completion
Jal Marg Vikas Project , NW-1 (Ganga)	800	Dec 2023
NW-2 (Brahmaputra)	26.16	Mar 2022
NW-16 (Barak)	4.36	Mar 2022
NW-37 (Gandak)	2.46	Mar 2021
NW-40 (Ghaghra)	1.89	Mar 2021
NW-58 (Kosi)	2.30	Mar 2021
NW-8 & 9 (Kerala waterways)	0.50	Mar 2021
NW-86 (Rupnarayan)	10.46	Mar 2021
NW-98 (Sundarbans)	9.45	Mar 2021
Goa Waterways (NW-27, NW-68, NW-111)	2.57	Mar 2021

Jal Marg Vikas Project



Sub projects

- | | |
|--|--|
| Terminal development | <ul style="list-style-type: none"> • Multimodal Terminals (MMT) • Intermodal Terminals (IMT) • Roll on – Roll off Terminals (Ro-Ro) |
| Fairway maintenance & related Infra | <ul style="list-style-type: none"> • Navigation Lock • Assured Depth • Communication facilities |
| Ecological protection | <ul style="list-style-type: none"> • Bank protection • Disaster Management • Sewage Disposal Facilities |



Major Interventions under JMVP – Works status (1/4)

Varanasi Multimodal Terminal

- Project Cost: USD 29.8 Million
- Capacity: 1.26 MTPA
- Status: Completed
- Major commodities – Container cargo, construction material, food grain & fertilizer etc.
- Business model: Operations, Management & Development (OMD) on PPP mode
- Signing of concession agreement by 1st January 2020



Major Interventions under JMVP – Works status (2/4)

Sahibganj Multimodal Terminal

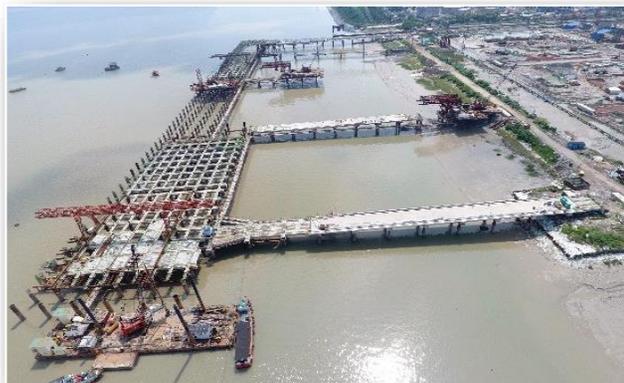
- Project Cost: USD 40.6 Million
- Capacity: 3.03 MTPA
- Status: Completed
- Major commodities – Coal, stone chips, silica sand, china clay, food grains, edible oil etc.
- Target Completion: May 2019
- Business model: Operations, Management & Development (OMD) on PPP mode
- Signing of concession agreement by 2nd March 2020



Major Interventions under JMVP – Works status (3/4)

Haldia Multimodal Terminal

- Project Cost: USD 74.7 Million
- Capacity: 3.18 MTPA
- Status: 67% completed
- Major commodities – Fly ash, fertilizer, edible oil
- Target Completion: February 2020



Major Interventions under JMVP – Works status (4/4)

Farakka Navigation Lock

- Project Cost: USD 51.9 Million
- Status: 41% completed
- Target operation time per vessel: 38 minutes
- Target Completion: November 2020



Standardization of IWT vessel design (1/2)

#	Vessel type	Length (M)	Breadth (M)	Draught Max (M)	Payload at Tmax	Depth from main deck (M)	Number of propellers	Propeller diameter (M)	Diesel Marine Engine in rating (KW)	Del. Total Powers (KW)	Speed in open water with a water depth $h > 5.0$ M at a draft of 2.5 M (Km/h)
1	Dry Bulk	80	12	2.5	1522	3.7	2	1.45	500	900	14
2	Dry Bulk	110	12	2.8	2515	4.3	2	1.45	500	900	13
3	Dry Bulk	92	12	2.8	2105	3.7	2	1.45	500	900	14
4	Tanker	110	12	2.8	2400	3.7	2	1.45	500	900	13.5
5	Tanker	80	12	2.5	1400	3.4	2	1.45	500	900	14
6	Ro-Ro Vessel	70	15.54	1.7	720	2.8	2	1.44	500	900	16
7	Container	80	12	2.5	1500	3.4	2	1.45	500	900	14
8	Container	110	12	2.6	2100	4.3	2	1.45	500	900	13.5
9	LNG Barge	90	14.5	2.3	1590	4.2	2	1.45	500	900	14
10	LNG Barge	92	12	2.1	600	3.7	2	1.45	500	900	13.5
11	Push Boat	26	12	1.65	60	2.4	2	1.44	500	900	12 (with 4 dumb Barges & loads of 585 tons capacity each)
12	Dumb Barge	42	8	2.5	550	2.8					
13	Car Carrier	90	14.5	1.8	1050	3.1	2	1.45	500	900	16
14	Dry Bulk _ LNG fueled	110	12	2.8	242	4.3	2	1.45	500	900	13.5

Standardization of IWT vessel design (2/2)

Traditional Approach

- High draft requirement for big size vessels
- Groundings due to dynamic water level and frequent vessel damage at acute bends
- High fuel consumption due to traditional engines
- Diesel engines leading to carbon & GHG emissions

Modern Approach

- Modern vessels designed on European concept to ply on shallow drafts
- Better maneuverability & speed characteristics in Indian river conditions
- Optimized hull forms and reduced weight will reduce the fuel consumption
- New vessels type shall also have LNG propelled vessels to reduce carbon & GHG emissions significantly

- Designed by M/s DST, Germany
- Designs finalised & model testing completed

Green Initiatives of IWAI

01

**Innovative energy
efficient vessels with zero
discharge**



02

**Green Terminal
Buildings**



03

**Minimum Land
acquisition**

04

**Oil Spill contingency
Plan**

Green Initiatives of IWAI

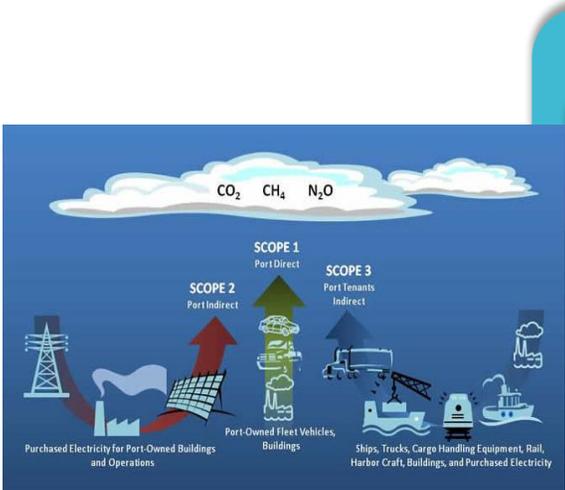
05

Minimal impact on aquatic life



06

On/offshore renewable power supply



07

Minimum emission of GHGs & minimum fuel consumption

08

LNG fueled vessels



Monetization of benefits of Inland Water Transport

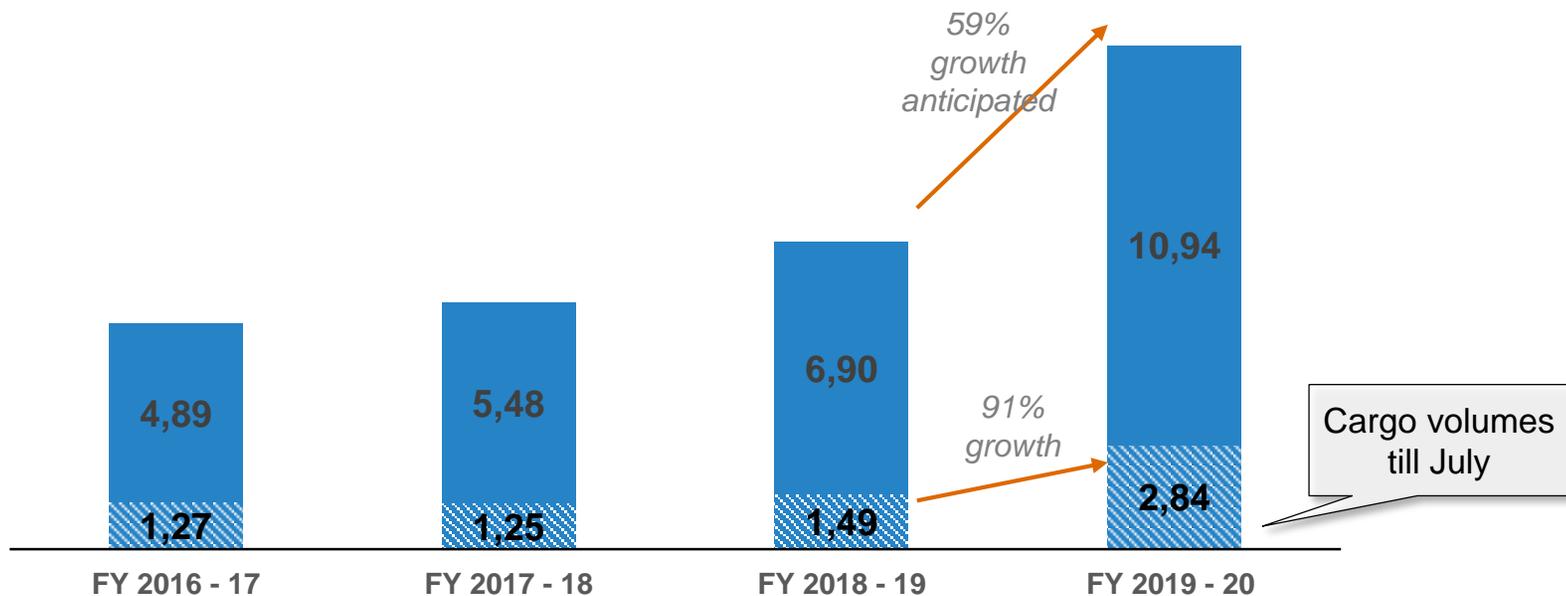
Factor(s) Considered	Waterways	Roadways	Railways	Source
Air Pollution	0.03	0.202	0.0366	Planning Commission (Govt. of India): Total Transport Study
Noise Pollution	Negligible	0.0032	0.0012	Permanent International Association of Navigation Congresses (PIANC)
Soil & Water Pollution	Negligible	0.005	NIL	PIANC
Emission of GHGs	0.0006	0.0031	0.0006	12 th Five Year Plan of Planning Commission (Govt. of India)
Surface Occupation	Negligible	0.0002	0.0001	PIANC
Accidents	Negligible	0.0620	0.0010	Planning Commission (Govt. of India): Total Transport Study

INR/t-km

Cargo projections on National Waterway - 1

- Total cargo traffic on National Waterway -1 reached ~7 million tonnes in FY 2018-19, an increase of ~30% over previous year
- Cargo volumes have almost doubled for current FY 2019-20 (till July), compared to previous year

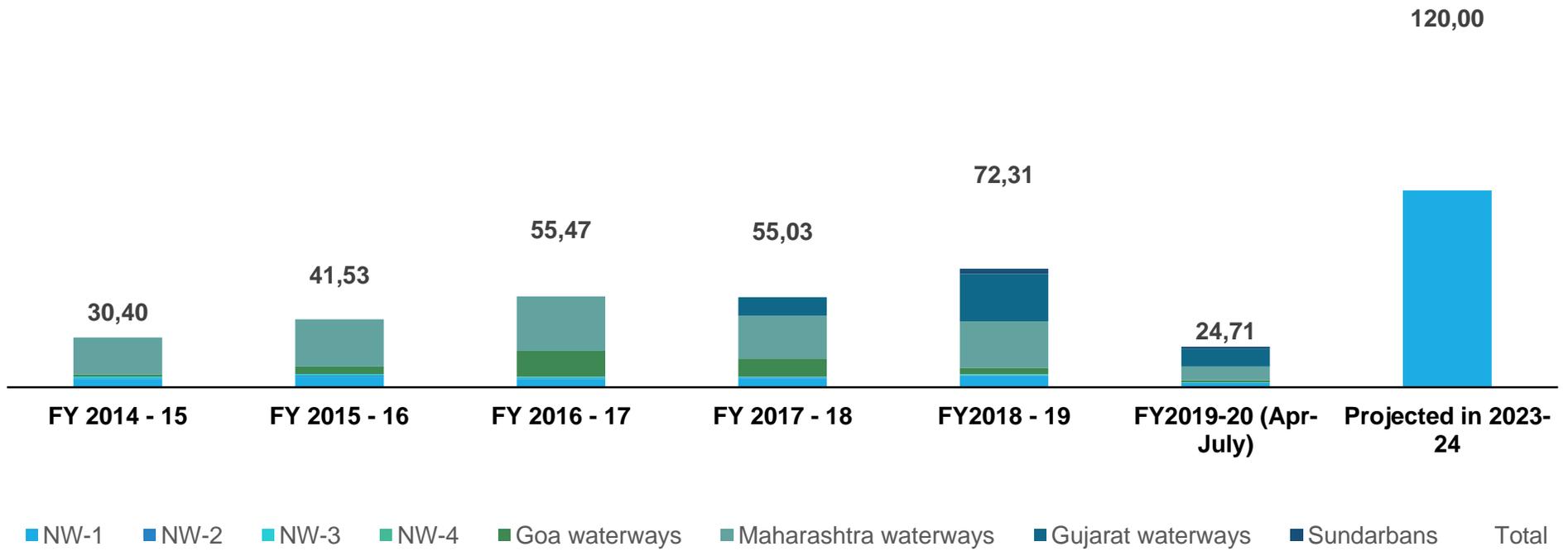
Cargo traffic on National Waterway-1
(MTPA)



Overall Cargo projections

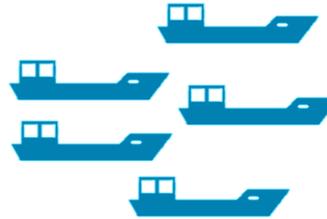
- IWT traffic is expected to grow to 120 MTPA in next 5 years

Cargo traffic on National Waterways (in MTPA)



Vessel requirements by next 5 years

The vessel requirement on all the waterways is expected to be in the range of ~1,500 – 1,800 vessels by FY23-24



NW-1	~800 - 850	Dry Bulk, Break bulk & Container barges
NW-2	~100 - 150	Dry Bulk, Break bulk & Container barges
Goa	~200 - 250	Dry Bulk barges
Maharashtra	~100 - 150	Dry Bulk & break bulk barges
Gujarat	~200 - 250	Dry Bulk & break bulk barges
Recently operational and planned waterways	~100 - 150	Dry Bulk , break bulk & Ro- Ro barges

Q & A...

