पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
Ministry of Ports, Shipping and Waterways
Government of India

Maritime India Vision 2030

Presentation

2021

Indian Maritime sector | Highlights

Ports

- 2 ports (JNPT - 33, Mundra - 37) in top 40 container ports
- 54% of total Indian cargo handled at 12 Major Ports
- 65%+ capacity added in Major Ports (last 5 years)

Shipping

- Top 5 in trained manpower- 17% growth in 3 years
- 2nd in ship recycling globally
- 21st in ship building with rapid capability expansion

Waterways

- Modal share of cargo from 0.5% to 2% in last 5 years
- 19% annual growth - cargo volumes over last 5 years
- 5,000+ km of NW under development

Recap from last meeting

MIV 2030: Guiding principles

- Analyze challenges
- Utilize latest technology
- Time-bound action plan
- Benchmarking best in class practices
- Address capability building and human resources
- “Waste to Wealth”

Maritime India Vision 2030

14
Topic specific groups

350+
Private and public sector stakeholders consulted

250+
Brainstorming sessions

100+
Global benchmarks

50+
Acts & policies reviewed (including state & environmental)

Maritime India Vision 2030

150+ initiatives identified across Ports, Shipping and Waterways

Ports

- **World-class port** infrastructure — 11
- **'Smart Ports'** to improve EoDB — 8
- Reducing **logistics cost** and enabling **multi-modal shift** — 18
- **Institutional, regulatory and legislative** reforms — 10
- **Safe, sustainable and green** maritime sector — [illegible]

Shipping

- Atmanirbhar in **ship building, repair & recycling** — 11
- Reforming **shipping policy and institutional framework** — 10
- Enhancing **India's global stature** — 8
- Ocean, coastal and island **cruise hub** — 15
- World-class **maritime research, education and training** — 29

Waterways

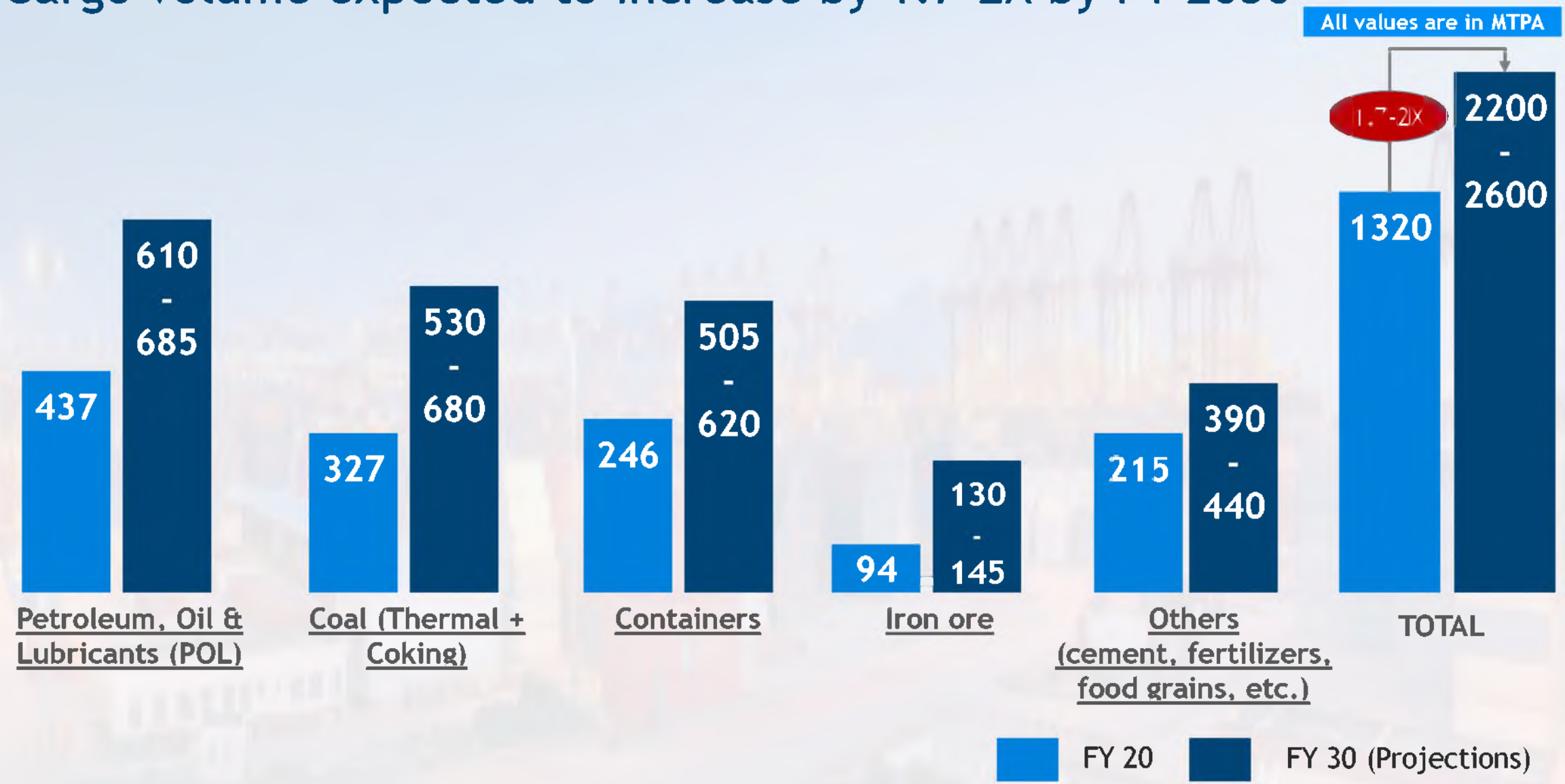
- Promoting **cargo movement** — [illegible]
  - Regional connectivity
  - Multi-modality
  - Coastal integration
- **River cruise** tourism — 5
- **Urban water transport** — 4

Number of initiatives

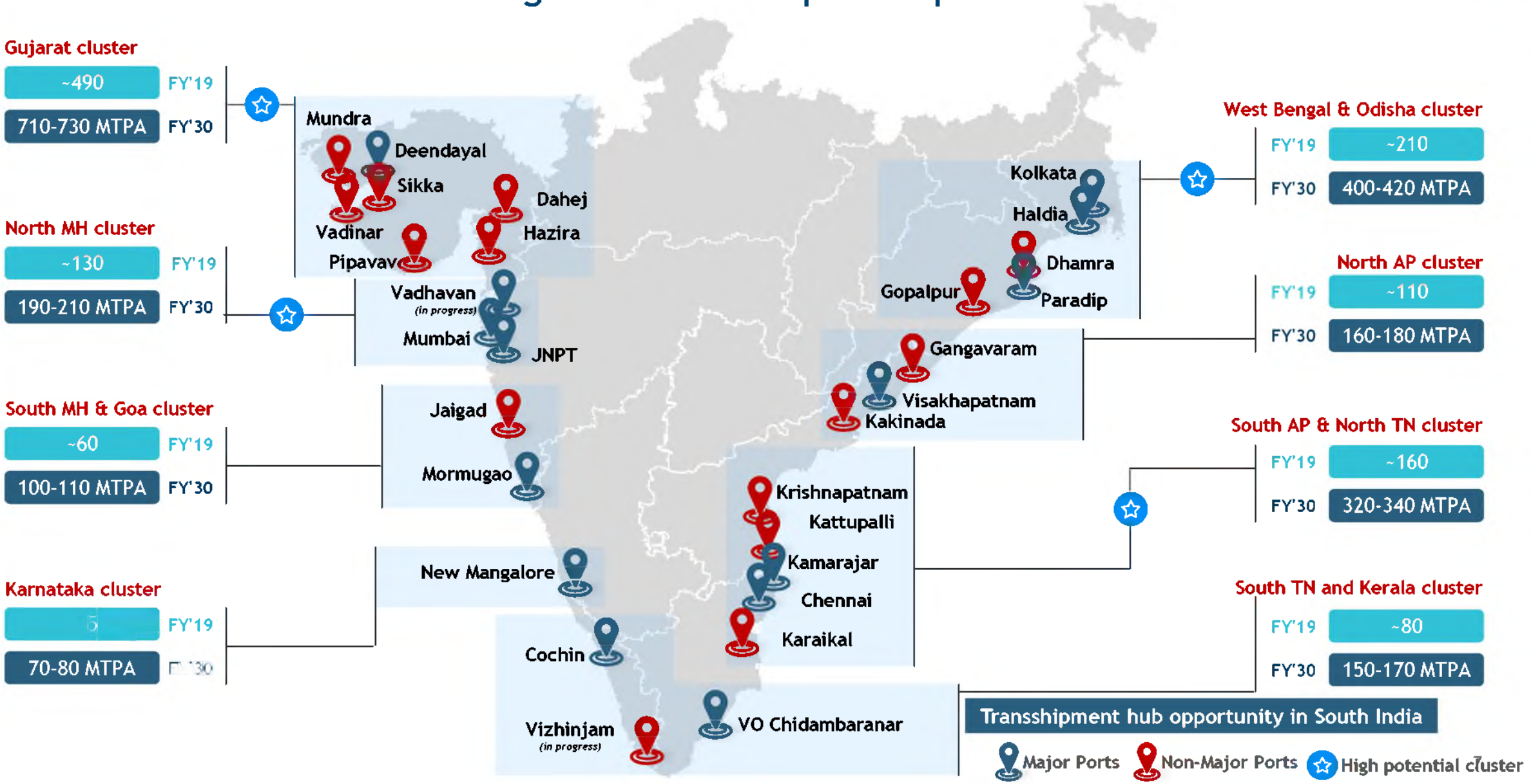
Ports

- Developing world-class ports infrastructure
- Developing 'Smart Ports' to improve Ease of Doing Business
- Reducing logistics cost and enabling multi-modal shift
- Institutional, regulatory and legislative reforms for ports
- Building safe, sustainable and green maritime sector

Cargo volume expected to increase by 1.7-2X by FY 2030



Enhance infrastructure in high and transshipment potential clusters



Priority initiatives

1.1 Develop Mega Ports with world-class infrastructure

- >300 MTPA: Vadhavan-JNPT cluster, Paradip and Deendayal (INR 80K Cr. investment) by 2027
- Plan setup of additional mega port on East coast - e.g. Kamarajar region by 2022

1.2 Develop Transshipment port in South India

- Operationalize Vizhinjam port in timebound manner by 2023
- Additional TS port in Kanyakumari region in a phased manner
- Additional TS port at Campbell Bay in a phased manner
- Enhance Transshipment volumes at Cochin Port

1.3 Move Major Ports to land-lord model

- 39 projects planned for PPP adoption by 2024

1.4 Increase draft at Major Ports

- Container: 18m+ draft at terminal with mainline calls; Minimum 1 berth with 16m+ draft
- Bulk: 18m+ draft for ports with Cape-size calls; Maximize berths with 14m+ draft

KPI targets and impact

Key Performance Indicator	Current (2020)	Target (2030)
1 Major Ports with >300 MTPA cargo handling capacity	-	3
2 % of Indian cargo transshipment handled by Indian ports	25%	>75%
3 % of cargo handled at Major Ports by PPP/ other operators	51%	>85%
4 Ports with 18m+ draft availability	5	9

INR 1,00,000 - 1,25,000 Cr. Investment

7,00,000 - 10,00,000 Additional jobs (Direct and in-direct)

INR 70,000 - 75,000 Cr. Revenue unlock for major ports

INR 6,000 - 7,000 Cr. Savings to EXIM stakeholders

Ports

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India's EXIM trade impacted by challenges of digitization

No single online platform- duplication of paperwork

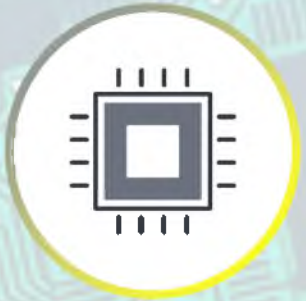
Limited technology & non-standardized ERP processes at ports

Lack of real time information with intermittent tracking of cargo

Lack of integration with international stakeholders

Initiatives undertaken to improve Ease of Doing Business

India's Trading across Borders ranking in EoDB improved from 146 in 2018 to 68 in 2020



Digitization of processes

Port Community System (PCS) 1X rollout with international integration

Automated gate processing enablement

E-delivery orders and online berthing

Promotion of Direct Port Delivery and Direct Port Entry

Tariff transparency enhancement for shipping lines

Participating Govt. Agency (PGA) labs on port premises to reduce dwell time

Priority initiatives

2.1 Develop integrated National Logistics Portal (NLP) Marine by 2022

- Implement 100% paperless processes including online payment
- Create open API stack for stakeholders to develop solutions and latch on NLP

2.2 Implement 50+ digital initiatives to transform Indian ports into 'Smart Ports' by 2025

- Establish standardized technology architecture (Data centres, servers, etc.) by 2021
- Collaborate with private terminal operators for digital solutions enablement

2.3 Implement Enterprise Business System (EBS) to simplify and digitize processes (from 1800+ to ~200 processes) across Major Ports by 2021

2.4 Implement unified ship e-registration portal for ease of vessel registration by 2021

KPI targets

	Key Performance Indicator	Current (2020)	Target (2030)
1	India's LPI ranking in 2 categories - International shipments and Tracking & tracing	40-45	Top 10
2	% of EXIM transactions through NLP platform	Platform doesn't exist	>90%
3	Adoption of 20 prioritized "Must-have" digital solutions at Major Ports	Limited adoption	100% (2022)
4	Standardized & digitized functional processes at Major Ports	1800+	<200 (Standardized)
5	% of e-registration for new vessels	-	100%

Ports

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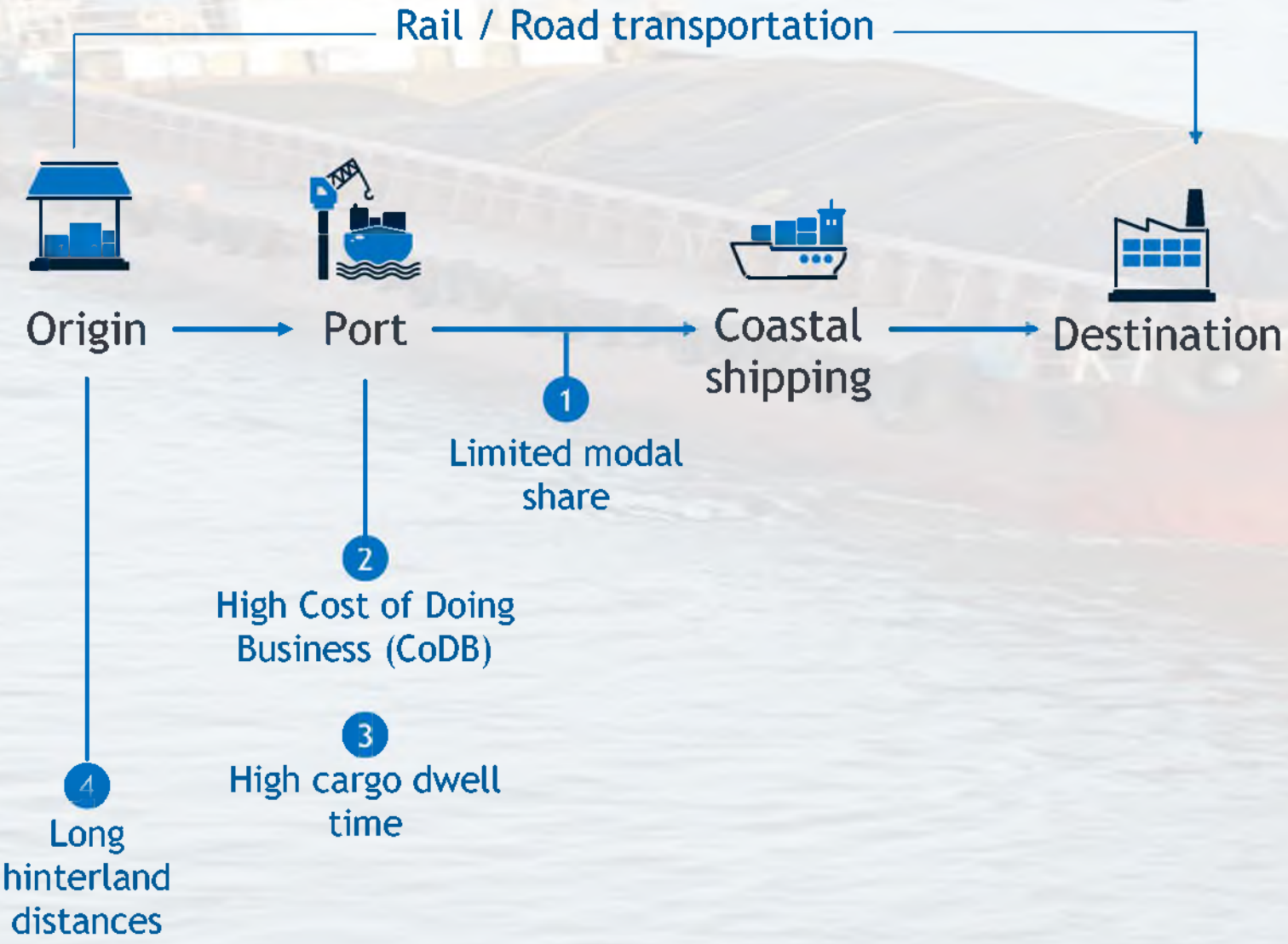
4 challenges resulting in high shipping logistics costs



Key focus areas

- Cargo modal-shift and growth of coastal shipping
- Reducing Cost of Doing Business (CoDB)
- Improving port productivity and evacuation efficiency
- Port-led Industrialization

Priority initiatives

3.1 Increase coastal shipping via commodity specific handling infra by 2023

- Setup Coastal & Inland Cargo Facilitation Centre for outreach & collaboration by 2022

3.2 Unlock additional port revenue to reduce Cost of Doing Business (CoDB) (E.g. VRC)

- Industrialize 6000+ acres of port land by 2023
- Monetize non-core port assets by 2023

3.3 Improve port productivity to reduce cargo dwell time by 2023

3.4 Improve port evacuation through 25+ multi-modal connectivity projects by 2025

3.5 Reducing other logistics costs (e.g. container related costs) in the value chain

KPI targets and impact

Key Performance Indicator	Current (2020)	Target (2030)
1 Indian ports in World top 10 in terms of productivity	-	2
2 VRC multiple at Major Ports compared to international ports	2X+	1X
3 Average vessel turnaround time (containers)	25 hours	< 20 hours
4 Average container dwell time	55 hours	< 40 hours
5 Average ship daily output (gross tonnage)	16,500	> 30,000

INR 45,000 Cr.+
Investment in port led industrialization

INR 10,000 Cr.+
Revenue from ports from industrialization

INR 17,000 - 20,000 Cr.
Reduction in inventory holding costs

INR 9,000 - 10,000 Cr.
Savings through modal shift to coastal

Ports

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- Developing 'Smart Ports' to improve Ease of Doing Business
- Reducing logistics cost and enabling multi-modal shift
- Institutional, regulatory and legislative reforms for ports
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Institutional coverage for ports to be enhanced

Area	Major Ports	Non-Major Ports
1 Macro - sector level planning	No centralized body today	
2 Port specific Planning	Major Port	State Maritime Board
3 Regulation	MoPSW, TAMP	State Maritime Board
4 Service provision	Major Port	Non-major port
5 Tariff fixation	TAMP	Non-major port

Initiatives underway

Major Port Authorities Act 2021: 'Service model' to 'Landlord model' in Major Ports

Indian Ports Act to provide a regulator for structured and sustainable growth in port sector

Priority initiatives

4.1 Major Port Authorities Act 2021 to enhance governance of Major Ports

4.2 Restructure existing 'Indian Ports Association' by 2022

- Drive nationally coordinated activities like project management, business development, large procurement, technical advisory and HR activities

4.3 Indian Ports Act for structured growth of port sector & investor confidence by 2021

4.4 Promote PPP through new (OMT and O&M) and strengthening existing MCAs by 2021

Ports

- Developing world-class ports infrastructure
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Current status

- Limited (<10%) renewable energy usage
- Small (<5%) area under green belt
- High dependency on diesel
- Accidents, injuries and health hazards at ports

Rotterdam

Singapore

Antwerp

- 100% electricity powered cranes
- Lithium ion batteries on container transporters

- Cleaner marine fuel with LNG bunker vessels

- Methanol plant setup for port operations
- LNG bunkering for barges, coastal vessels, etc.

Way forward

Increase usage of renewable energy

Reduce air emissions & improve green cover

Optimize water usage

Improve solid waste management

Dredging material recycling

"Zero accident" safety program

Centralized monitoring system

Priority initiatives

5.1 Make Indian Major Ports green & sustainable by increased usage of renewable energy

- Phase 1- Increase share of renewable energy at ports to 40% by 2025
- Phase 2- Increase share of renewable energy at ports to 60% by 2028

5.2 Improve air quality by using clean fuels and other measures

- Establish shore to ship electricity for vessels (tug-boats, coastal vessels and EXIM vessels) by 2030
- Establish LNG bunkering stations in line with fuel adoption trends by shipping lines by 2028
- Drive adoption of multi clean fuels (e.g. electric, CNG, LNG) for vehicles in port systems by 2030

5.3 Optimizing water, increasing green cover and improving SWM at Major ports by 2025

5.4 Sustainable dredging to reuse material promoting 'Waste to Wealth' by 2028

5.5 "Zero Accident" focus for safety at Major Ports by 2022

5.6 Real time monitoring program to track HSE KPIs by 2022

KPI targets – For Major Ports only

Key Performance Indicator	Current (2020)	Target (2030)
1 % share of renewable energy	<10%	>60%
2 % area under green belt	<10%	20%
3 % reduction in CO_2 emission / ton of cargo	-	30%
4 % reduction in fresh-water consumption / ton of cargo	-	20%
5 % reduction in accidents (Zero accident ports)	-	100% *(by 2023)*

Shipping

- Becoming Atmanirbhar in ship building, repair and recycling
- Reforming shipping policy and strengthening institutional framework
- Enhancing India's global stature to become a maritime power
- Developing ocean, coastal and island cruise hub in India
- Promoting world-class maritime research, education and training

Global ship building and ship repair market estimated to be $92 Bn

China, Korea and Japan account for 75%+ market

	Segment	Pre-Covid market size Size (2018)	Growth (5 yrs.)	India's Share	Top Countries (Combined Share)	Growth Forecast
	1 Ship Building	~$72 bn	-7%	<1%	South Korea China Japan (~85%)	Expected to rebound post COVID; Present focus on profitability
	2 Ship Repair	~$20 bn	4-6%	1-2%	China, Singapore UAE, Bahrain (~70%)	Expected to grow at 4-6% due to majority global aged fleet; unaffected by COVID
	3 Ship-Breaking/ Recyling	25-30M DWT[1]	-4%	25%	Bangladesh India Pakistan China (~80%)	Expected to rebound by 2021 (trough of scrapping wave)

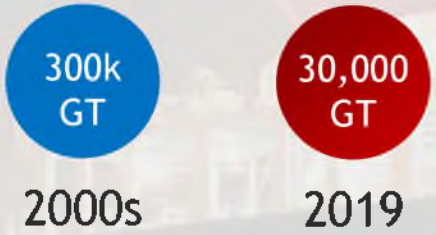
Note: Ancillary Units Industry is included in the ship-building market size
1. DWT: Dead Weight Tonnage
Source: Clarkson's Research, IHS Maritime, BCG Analysis

India has demonstrated strong shipbuilding capability in past

Presently Indian shipyards are struggling against Global downturn and protectionist competition

India built significant tonnage during early 2000s

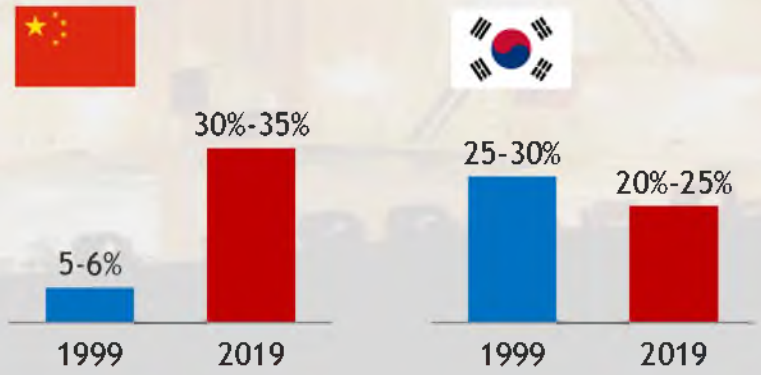
Annual tonnage produced in India



- In past, Indian shipyards thrived on export orders
- Global downturn drove 40% yards out of business (from 35+ in 2000s to 23 in 2020)

Currently facing strong global competition with protectionist measures

Global market share (%)



Regulatory support provided:

- Restrictions on importing ships
- Cabotage
- Financial assistance for new ships
- Subsidy for scrapping old ships

20-25% cost competitiveness critical to win back the tonnage

3 factors to focus on

- Higher material costs
- Limited automation
- Higher financing costs

Several shipyards in India have track record of delivering good quality vessels globally

35+ shipyards in India, 20+ shipyards currently operational

Strong experience of delivering vessels across segments

Offshore

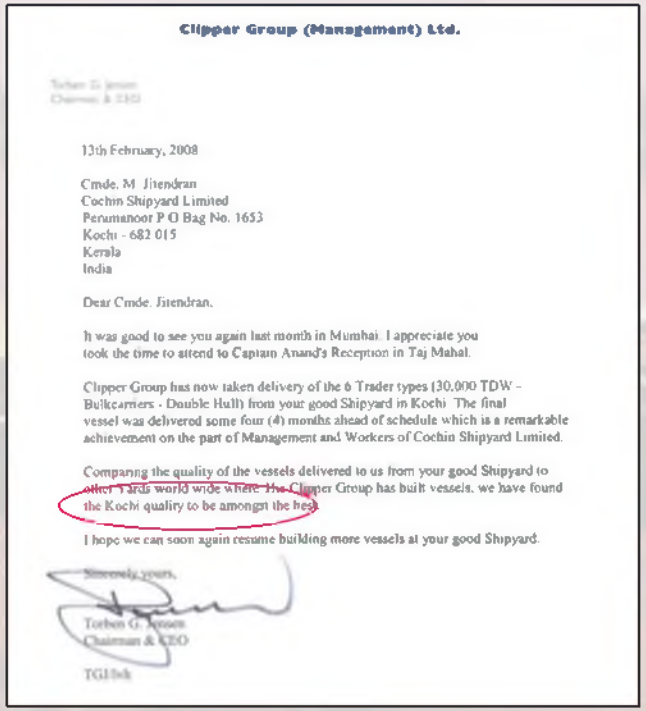
Bulk Carriers

Coastal vessels

Barges and Harbour tugs

Fishing vessel

Appreciated for the quality of vessels



Clipper Group (Management) Ltd.

13th February, 2008

Cmde. M. Jitendran
Cochin Shipyard Limited
Perumanoor P O Bag No. 1653
Kochi - 682 015
Kerala
India

Dear Cmde. Jitendran,

It was good to see you again last month in Mumbai. I appreciate you took the time to attend to Captain Anand's Reception in Taj Mahal.

Clipper Group has now taken delivery of the 6 Trader types (30,000 TDW - Bulkcarriers - Double Hull) from your good Shipyard in Kochi. The final vessel was delivered some four (4) months ahead of schedule which is a remarkable achievement on the part of Management and Workers of Cochin Shipyard Limited.

Comparing the quality of the vessels delivered to us from your good Shipyard to other Yards world wide where the Clipper Group has built vessels, we have found the Kochi quality to be amongst the best.

I hope we can soon again resume building more vessels at your good Shipyard.

Sincerely yours,

Torben G. Jensen
Chairman & CEO

TGJ/bk

"...the Kochi quality is amongst the best..."

Ship building | Core sector creating blue collar jobs
Govt. initiated several policy measures for turnaround

- Financial Assistance Policy on Shipbuilding (2016)
- Grant of Infrastructure Status (2016)
- Atmanirbhar Bharat Policy (Revised in 2020)
- SOP for chartering/procurement of tugs (2020)
- Pradhan Mantri Matsya Sampada Yojna (2020)

1.8-2

Lakh jobs generated (direct and indirect)

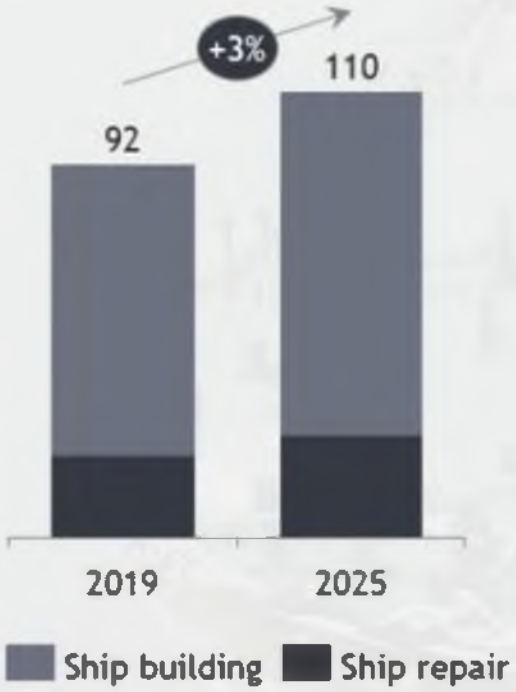
6-7X

One of the highest job multiplier

Future of ship building driven by Green Tech, Autonomous Vessels and Cost-efficient technologies

China, Korea and Japan focused on larger vessels - India has **significant opportunity** to build scale in short sea (mid-small) vessel segment

High growth potential in next 5-10 years



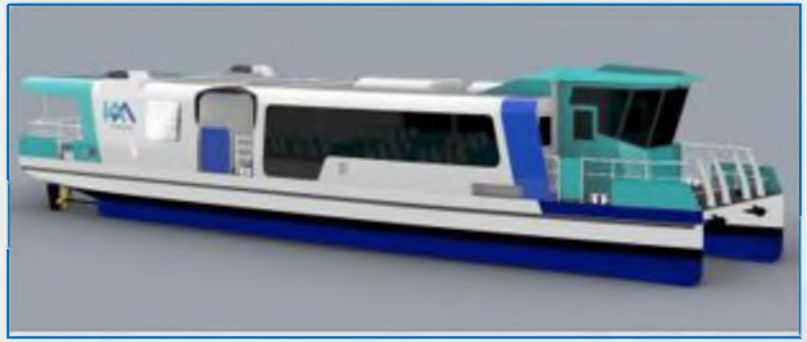
Green and autonomous technology likely to witness sharp growth

Technology area	Est. market (2025)
Drag reduction	$8-14Bn
Propulsion systems	$5-7Bn
Data analytics	$1-2Bn
Exhaust treatment	$2-4Bn
Other energy eff. tech.	$5-10Bn

Indian shipyard witnessing a 'Pull' already

Indian shipyards starting to turn the tide : Example, Cochin Shipyard

ASKO - First Autonomous Vessel for Norway, built in India



KMRL - Largest single order of 23 Hybrid-Electric boats in the World (New LTO battery technology)

IWAI - State of art Ro-Pax vessel (Shallow draught, all season vessel)

Rs3000 Cr+

Investments to augment the shipyard

50,000 GT

Capacity revived from NCLT

5

Centers for Ship Repair created
(Mumbai, Malpe, Cochin, Kolkata, Andaman)

Priority initiatives

6.1 Increase domestic ship building by 2025

- Atmanirbhar Bharat PPP provisions and Right of First Refusal (RoFR) rules
- Staggered increase in customs duty on small vessel import

6.2 Increase domestic Ship-repair market by 2025 through

- Atmanirbhar Bharat PPP provisions and Right of First Refusal (RoFR) rules
- Fiscal interventions to remove GST anomalies

6.3 Developing ship repair clusters along both coasts by 2022

6.4 Enhance domestic ship recycling promoting 'Waste to wealth' by 2022

6.5 Develop database of IRS pre-approved ship designs to drive 'Design in India' by 2023

KPI targets and impact

Key Performance Indicator
1 Gross tonnage of ships built in India
2 World ranking in ship repair
3 World ranking in ship recycling

INR 20,000+ Cr.
Investment

	Current (2020)	Target (2030)
	27,000 GT (Ranked 20+)	500,000 GT (Ranked Top 10)
	> 20	Top 10
	2	1

1,00,000 + Additional jobs

Shipping

- Becoming Atmanirbhar in ship building, repair and recycling
- Reforming shipping policy and strengthening institutional framework
- Enhancing India's global stature to become a maritime power
- Developing ocean, coastal and island cruise hub in India
- Promoting world-class maritime research, education and training

Priority initiatives to reform shipping policy & strengthen institutional framework

7.1 Reform Merchant Shipping bill to enhance Ease of Doing Business

7.2 Promote tonnage under Indian flag (Atmanirbhar Bharat) by 2022

7.3 Set-up Maritime Development Fund (MDF) for low-cost, long-term financing support by 2021 (INR 2,500 Cr. support from GOI over 7 years)

7.4 Set-up 'India Maritime Centre' unifying all sub-sectors by 2020

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Significant need to improve India's global stature in Marine sector

Regulations driven by International Maritime Organization (IMO)

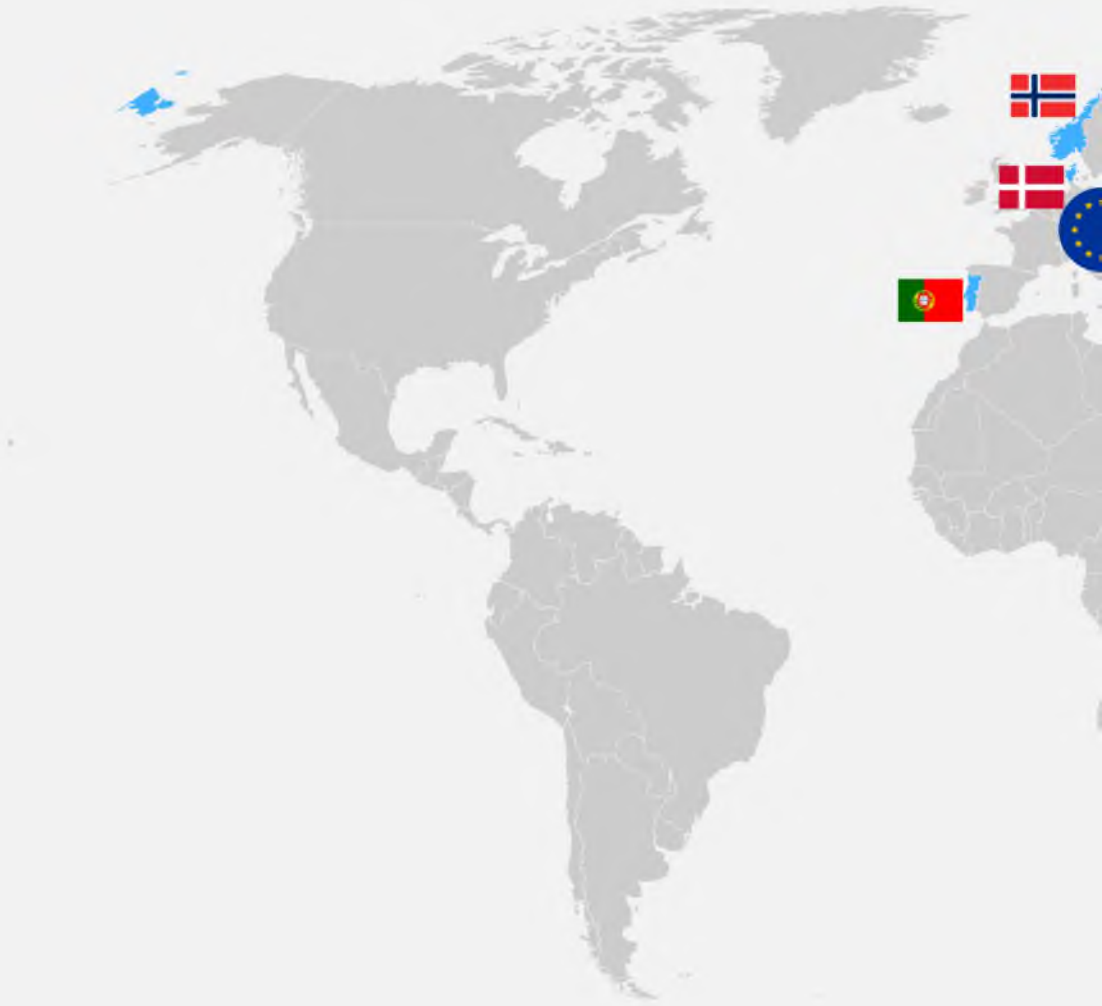
Maritime influential countries forming blocks

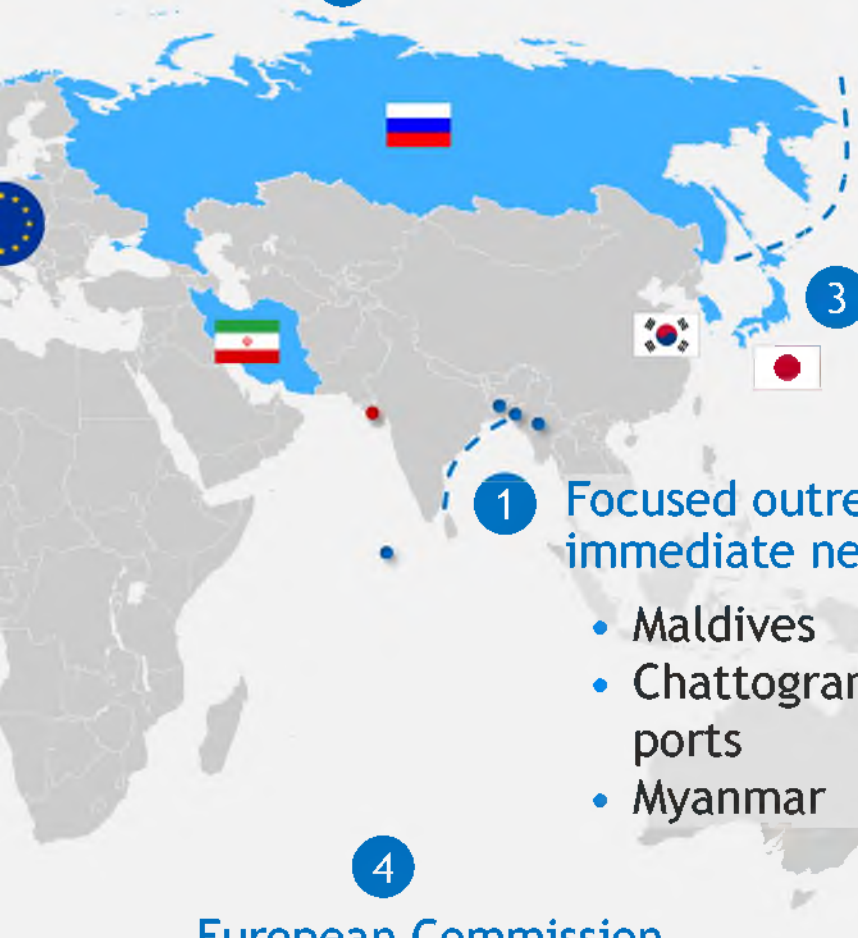
Promotion of Indian interests at IMO requires collaboration with other countries

Need to explore partnerships with Indian Ocean Ring / BIMSTEC nations

China expanding maritime reach across SEA region through heavy

Current status and ongoing initiatives





2 Eastern Maritime Corridor

3 Joint Maritime Commissions

1 Focused outreach to India's immediate neighbors

- Maldives
- Chattogram and Mongla ports
- Myanmar

4 European Commission for shipbreaking at Alang, Gujarat

Priority initiatives

8.1 Enhance maritime co-operation and trade across BIMSTEC nations

- Setup regional BIMSTEC centre in India by 2021
- Enhance investment in infrastructure and facilitate mutual agreements by 2026

8.2 Extend partnerships with 9 leading maritime nations across 5 areas by 2025

8.3 Enhance India's representation in IMO by 2021

8.4 Expand India's influence in developing countries in maritime space by 2025

- Leverage MEA to offer India's core expertise (e.g. IT, naval architecture, maritime training, etc.)

8.5 Operationalize North-South Transport Corridor (INSTC) through Chabahar port

KPI target

Key Performance Indicator	Target (2030)
1 Strengthen collaboration with BIMSTEC nations	Leader for trade & transportation across region
Enhance global partnerships with leading maritime nations through MoUs and active on ground collaboration	>10 (2025)

Shipping

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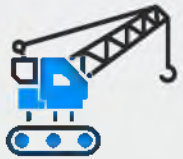
Interventions have boosted cruise passengers over the last 5 years



Rationalization of Port Charges

- Rationalization of charges to a uniform "Fixed Rate" per GRT
- Per passenger "Head Tax" applicable for first 12 hours of stay

Cruise infrastructure & Operations

- Five dedicated terminals
- Online payments /permits system
- Uniform SOP (by MoPSW, port trusts, CISF & MOT)

Immigration

- E-visa facility available at 5 major ports
- Expediated immigration

Cabotage relaxation

- For foreign vessels carrying passengers and calling at Indian ports

India's rank in Travel & Tourism Competitiveness Index (TTCI) has improved from 40 to 34 in last 3 years

FY14

75K passengers

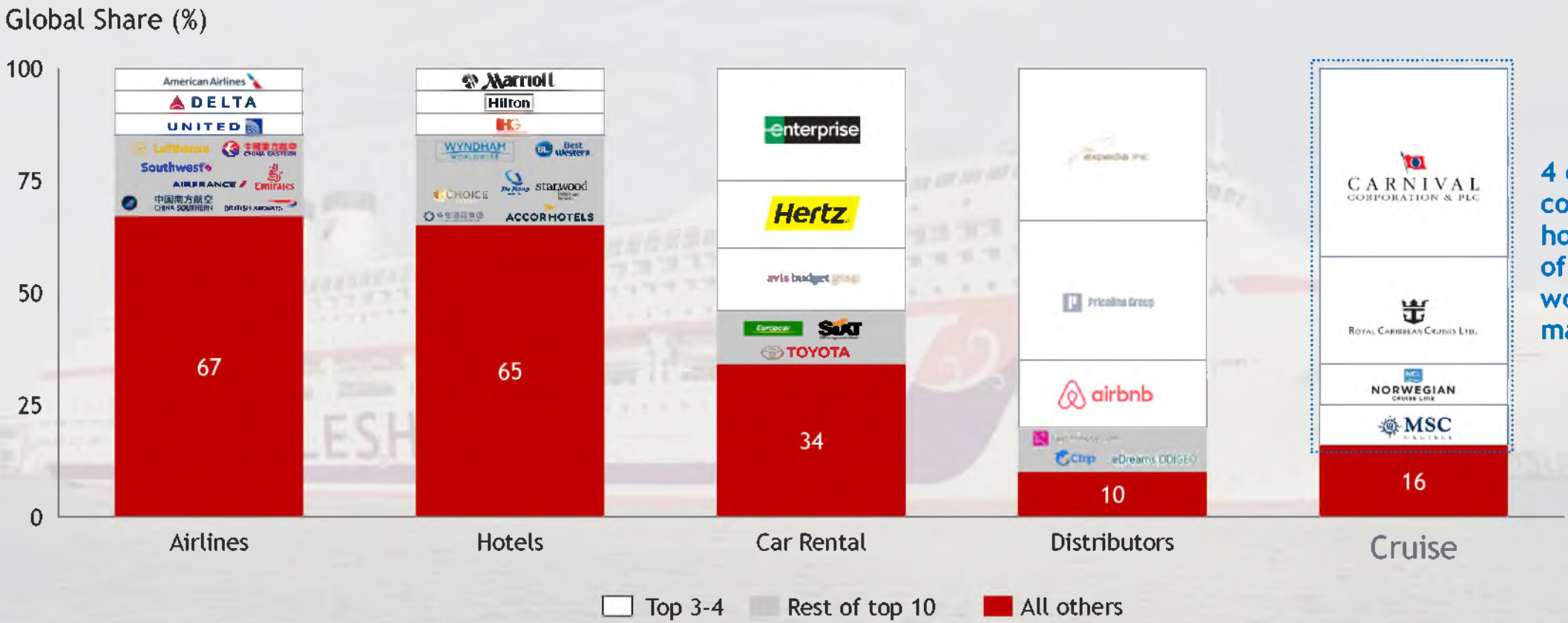
125 ship-calls

FY20

468K passengers

451 ship-calls

Cruise is most consolidated travel & tourism sector



4 cruise companies hold ~~85% of the worldwide market share

Critical to work with cruise-lines for terminal operations and demand generation

Priority initiatives to develop cruise hub in India

9.1 Cruise terminal infrastructure development / enhancement at select 12 ports

- Mumbai, Goa, New Mangalore, Cochin, Chennai and Vishakapatnam by 2021
- Kolkata, Porbandar, Ganpatipule, Diu, Somnath, and Konark basis technical evaluation by 2023

9.2 Develop 5 theme-based coastal and island circuits

- West Coast: Pilgrimage tour (Gujarat), Ayurvedic and wellness (Kerala) by 2021
- East Coast: Heritage tourism (Tamil Nadu, Andhra Pradesh) by 2022
- International coastal circuit along India, Sri Lanka, Myanmar, Thailand by 2022

9.3 Holistic development of island infrastructure & ecosystem across Lakshadweep and Andaman & Nicobar regions by 2023

9.4 Incentivize global cruise-lines for 'Home port' development by 2021

KPI target

Key Performance Indicator
1 Annual cruise passengers
2 Annual ship calls ('Home' + 'Port' calls)
2 Foreign cruise ships with 'Home-port' in India

	Current (2020)	Target (2030)
	4,68,000	>15,00,000
	451	1,000
	1	6

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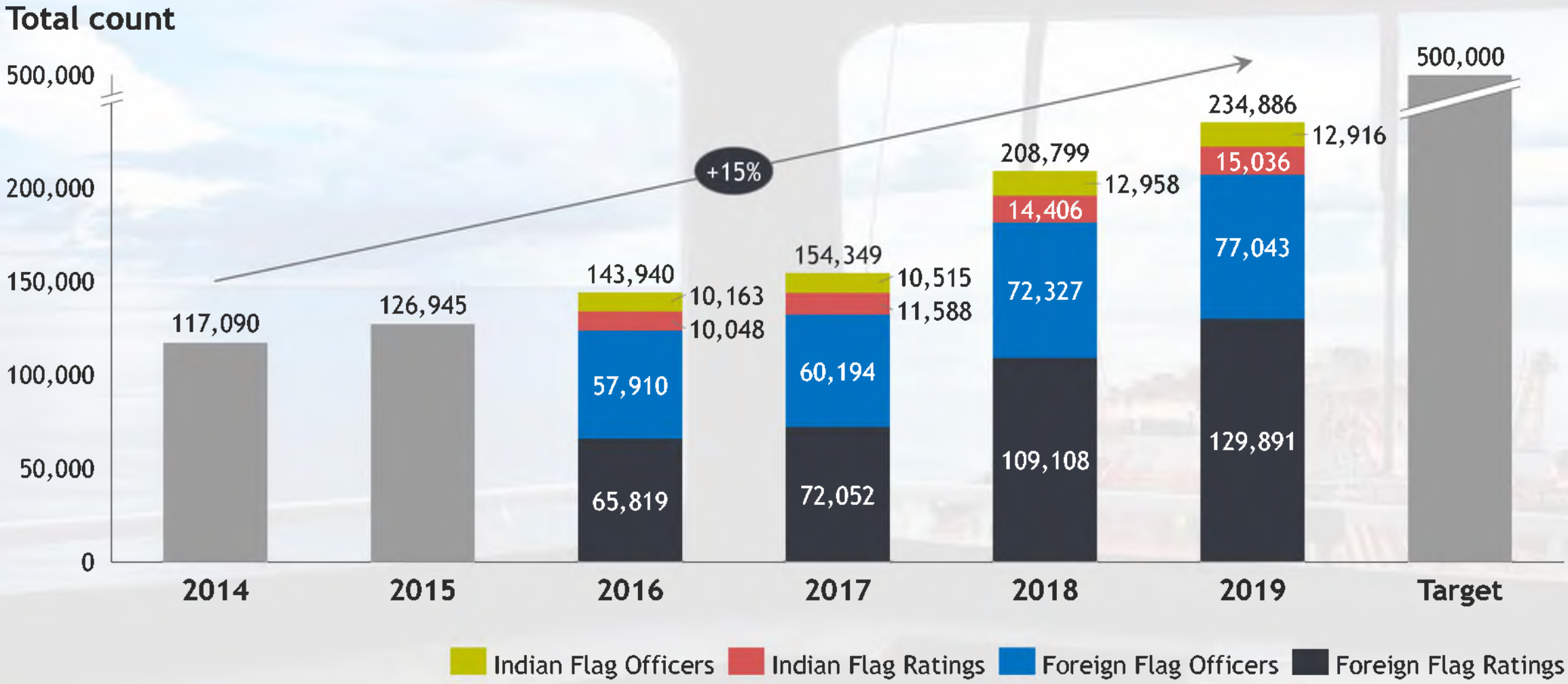
Engagement of Indian Seafarer of Indian Flag / Foreign Flag Ships in last 4 years



Need to strengthen training, education and maritime research to reach best-in-class benchmarks

Build a strong Ecosystem for Seafarers

- 12% share of Seafarers vs 25% for Philippines
- 0.5% share of Women vs 2-3% global average
- Limited ship-board training -- lack of Indian tonnage

Expanding scope of Maritime education and training

- Absence of Indian univ. in world's top 25 ranking
- Courses: ~14 by IMU vs. 25+ offered by global universities
- Train for requirements of future shipping

Promoting Research and Innovation

- Maritime research citations: 42 vs. 2,000+ best-in-class
- Research integration across existing bodies
- Global partnerships

Priority initiatives for maritime capability development

10.1 Strengthen maritime institutions to enhance India's capabilities at par with global standards

10.2 Establish 3 dedicated cruise training academies in partnership with global cruise-lines

10.3 Establish Maritime Knowledge Cluster to drive collaborative research in partnership

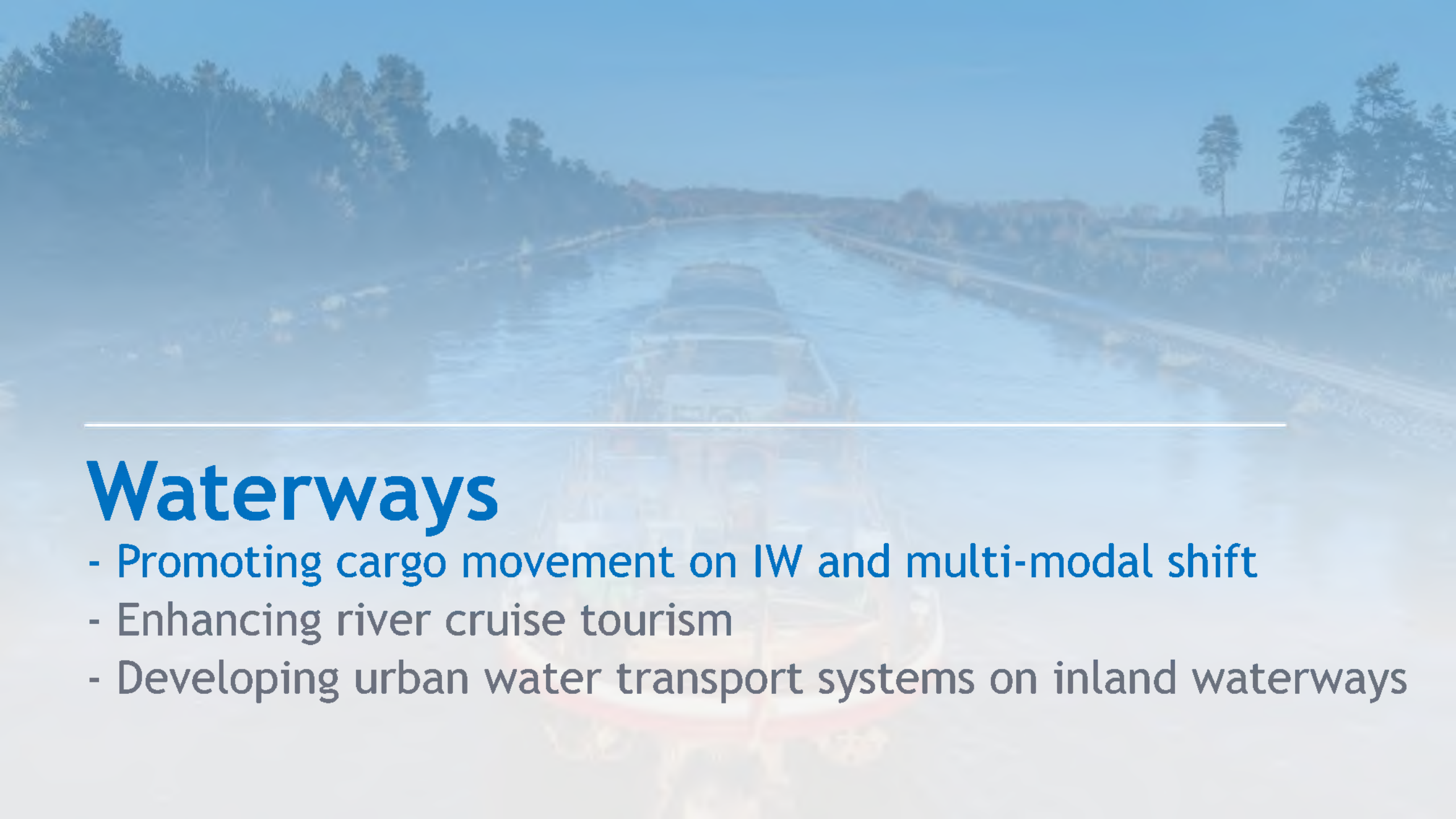
10.4 Develop and operationalize a robust e-governance system for capability development-

- Digitize and upgrade CoC assessment mechanism of seafarers by 2022
- Modernize and digitize recruitment licensing system with stringent governance to regulate and improve functioning of RPSLs by 2021
- Enhance existing systems by 2021 for grievance redressal & complaint registration

10.5 Enable Major Port trusts to recruit talent from private sector by amending existing provisions

KPI target

Key Performance Indicator	Current (2020)	Target (2030)
1 Indian universities in top 25 global ranking for maritime science	-	3-5
2 Research paper citations/ million inhabitants	42	>2,000
3 % research undertaken with industry collaboration	< 20%	60%
4 % share of Indian seafarers across the world	12%	>20%
5 Cruise training academies in partnership with cruise-lines	-	3



Waterways

- Promoting cargo movement on IW and multi-modal shift
- Enhancing river cruise tourism
- Developing urban water transport systems on inland waterways

Current status of ongoing initiatives

- 16 operational out of 23 feasible
- Current share of cargo at 2%
- Current traffic of 74 MTPA

Jal Marg Vikas Project (JMVP)

Capacity augmentation of navigation on NW 1

Public Private Partnership

Terminal operation and maintenance underway for 6 terminals

Arth Ganga

Holistic and sustainable economic development leveraging NW1 for freight, passenger movement and recreation purposes

Regulatory & Technology

Inland Vessels Bill

Land Use Policy for IW

Dredging Policy

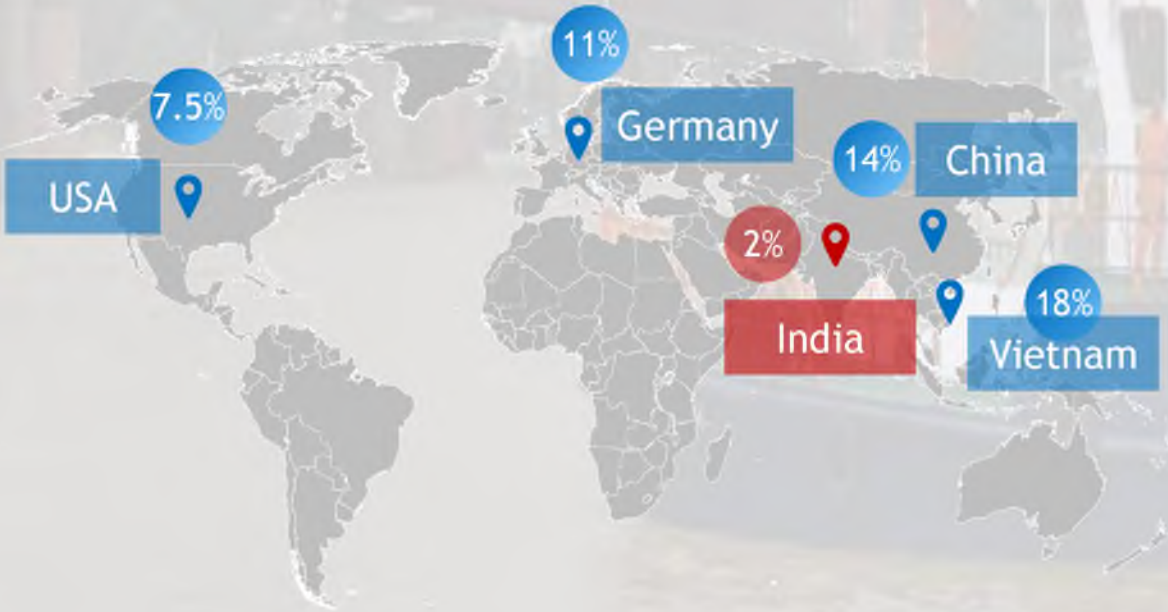
Policy on Private Berth on IWs

Digital initiatives to increase operational efficiency and EoDB

Need to increase share of IW

Sizeable share of IW globally

Modal share of inland water transport (%)



Benefits of IW

Low operative costs –
Costs **30%** less than railways and **60%** less than roadways

Significant carrying capacity –
Equivalent to **one rail rake** and **125 trucks** on road

IWT is **least carbon emitting** form on transportation

Priority initiatives

11.1 Develop and operationalize 23 National Waterways

- Phase 1: Expansion of 10 functional waterways
- Phase 2: Development of 7 new waterways identified

11.2 Eastern Waterways Connectivity Transport Grid (EWaCTG) for regional connectivity with Bangladesh, Nepal, Bhutan and Myanmar

11.3 Connectivity and coastal integration of NW-1 and NW-2 through IBP

11.4 Improving connectivity through multi modal terminals and freight villages

11.5 Regulatory initiatives to enable integration of IW with coastal traffic

- Plying inland vessels in 5 nautical mile corridor & re-evaluation of fair/non-fair weather season

11.6 PPP for development and operations of terminals

11.7 Fiscal initiatives for vessel financing and facilitating logistics costs

- Extend low cost and long terms financing for inland vessels under Maritime Development Fund
- Extension of tonnage tax scheme to inland vessels to enhance availability of inland vessels
- Resolution of anomalies in GST rates for IW and multi modal transportation

KPI targets and impact

	Key Performance Indicator	Current (2020)	Target (2030)
1	Operational National Waterways for cargo and ferry movement	16	23
2	Annual cargo moved on National Waterways	73 MTPA	>200 MTPA
3	Modal share of inland cargo movement	2%	5%

Waterways

- Promoting cargo movement on IW and multi-modal shift
- Enhancing river cruise tourism
- Developing urban water transport systems on inland waterways

River cruise on National waterways

5 Key waterways with operational river cruises

2 of these prioritised to be developed further

4 additional waterways prioritised for river cruise tourism


BRAHMAPUTRA


NW1
NW2
IBP
NW97
NW5


EAST COAST CANAL

Key initiatives to enhance river cruise tourism

12.1 Development of Waterdromes for seaplanes (16 locations) in partnership with MoCA

12.2 Development of river cruise terminal infra and jetties on 5+ national waterways

12.3 Master planning to identify routes, and other enablers for river and canal tourism

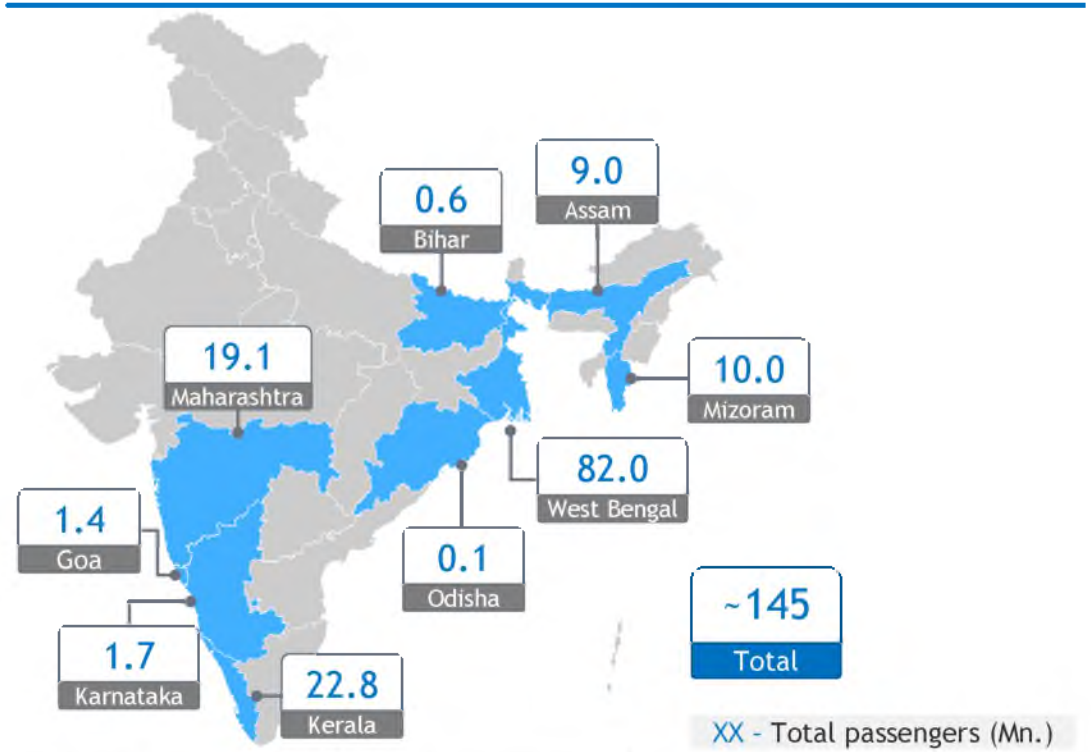
12.4 River cruise tourism with seacoast bound locations on Eastern coast and outside India

Waterways

- Promoting cargo movement on IW and multi-modal shift
- Enhancing river cruise tourism
- Developing urban water transport systems on inland waterways

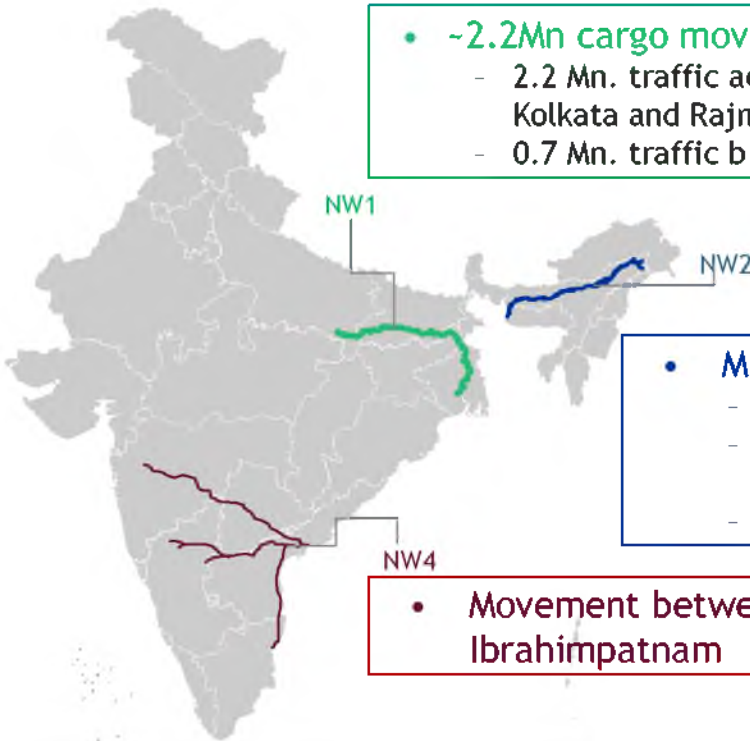
Urban water transport - Current landscape

Ferry: Operations underway in 9 States with ~145 Mn. annual passenger



Need to augment existing infrastructure in line with Global practices

Ro-Ro: Movement active on NW 1, 2 and 4



- ~2.2Mn cargo movement
  - 2.2 Mn. traffic across points located between Kolkata and Rajmahal (Jharkhand)
  - 0.7 Mn. traffic b/w Sahibganj and Manihari
- Movement across 3 pairs
  - Dhubri – Hatsinghmari
  - North Guwahati – South Guwahati
  - Kamlabari – Nemati
- Movement between Lingayapalam and Ibrahimpatnam

Need to develop facilities across major cities to decongest truck movement

Key initiatives to develop urban water transport system

13.1 Drive synergies across Centre and State

- Development of community jetties the to boost growth: Arth Ganga and Arth Brahmaputra
- Facilitate vessel deployment for private sector operations
- Develop 10+ Ro-Ro terminals to reduce city traffic congestion & cost of transportation

13.2 Develop and operationalize 60+ ferry terminals across NWs and coast with State Govt.

- Kochi - Metro transport linked with ferry terminals
- Maharashtra water transport
- Gujarat water transport
- Goa and Others

13.3 Promote PPP for terminal development, operations and maintenance and ferry vessel operations under SPV with State Govt.

13.4 Promote sustainable Inland waterways and protecting environment

- Promotion of alternate fuel vessels
- Environmental studies with action plan for protection of aquatic diversity for Gangetic river dolphins

KPI targets

Key Performance Indicators	Current	Target (2030)
1 Operationalize new community jetties and terminals on National Waterways for ferry movement	-	60
2 Annual passengers moved by ferry operations	14 Cr.	70 Cr.
3 Operational waterways for river cruise movement	6	>10

MIV 2030 – Key targets

	Key Performance Indicator	Current (2020)	Target (2030)
1	Major Ports with >300 MTPA cargo handling capacity	-	3
3	% of Indian cargo transshipment handled by Indian ports	25%	>75%
3	% of cargo handled at Major Ports by PPP/ other operators	51%	>85%
3	Average vessel turnaround time (containers)	25 hours	<20 hours
5	Average container dwell time	55 hours	<40 hours
6	Average ship daily output (gross tonnage)	16,500	>30,000
7	Global ranking in ship building and ship repair	20+	Top 10
8	Global ranking in ship recycling	2	1
9	Annual cruise passengers	4,68,000	>15,00,000
10	% share of Indian seafarers across globe	12%	>20%
11	% share of renewable energy at Major Ports	<10%	>60%

Impact of Maritime India Vision - 2030

INR 3,00,000 - 3,50,000 Cr.

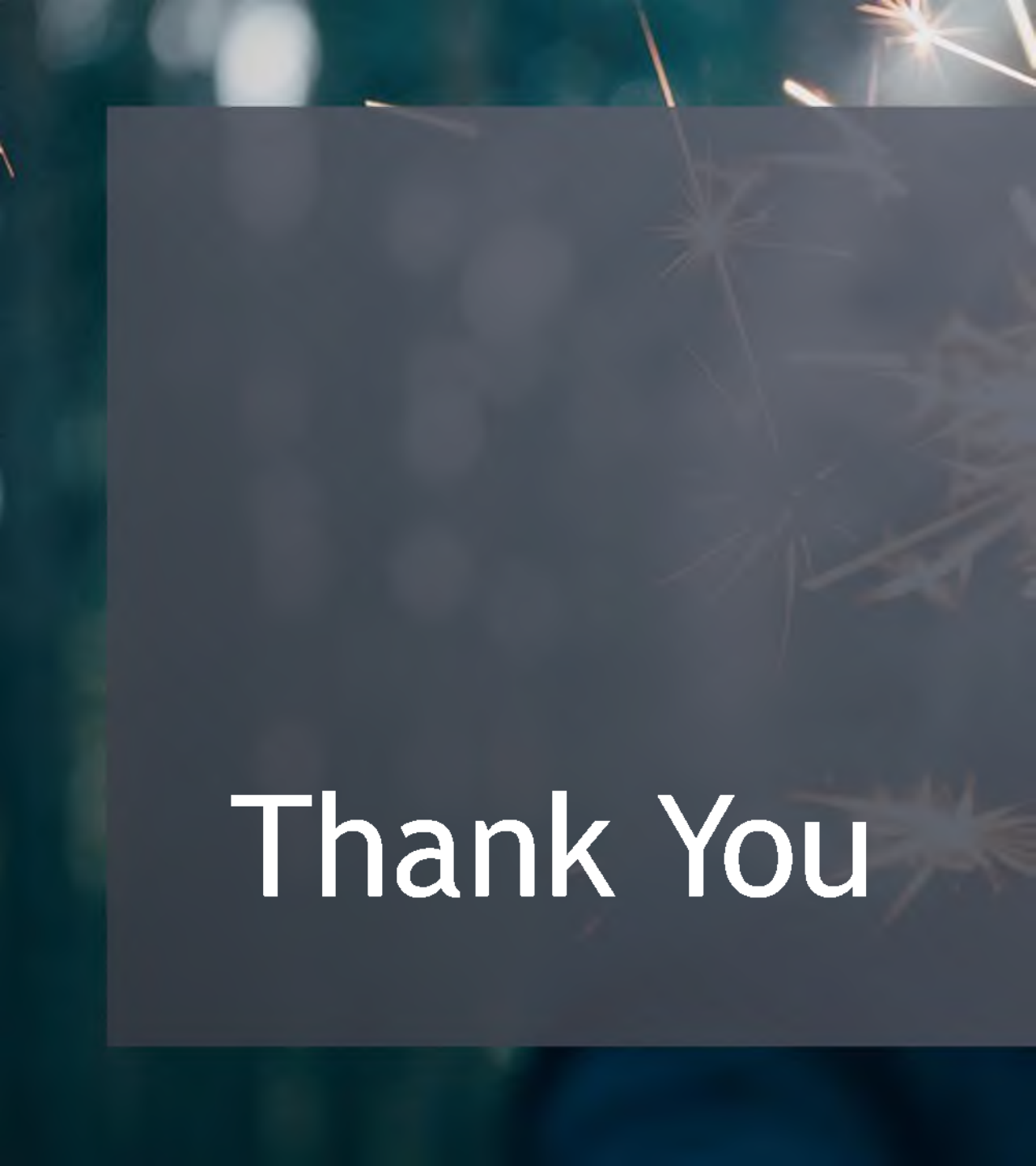
20,00,000+

INR 20,000 Cr.+

Investment

Additional jobs
(direct and indirect)

Additional annual revenue
unlock for ports


Thank You

Appendix – Introduction

Maritime India Vision 2030: 14 topic specific groups

1 Traffic forecast, capacity planning and resources mobilization

2 Improve performance of ports to world class levels

3 Create new world class ports in India

4 E-governance in Maritime sector for EoDB and paperless operations

5 Make Maritime logistics highly cost competitive with end to end services

6 Make India the Cruise development Hub of the world

7 Integration and enhancement of Indian maritime institutes

8 Development of Indian ship-building, repair recycling industry to world class level

9 Development of water transport in cities

10 Reforms in all maritime acts / laws / regulations / policy

11 Become global maritime leader through active participation in global maritime activities

12 Make all ports and other maritime bodies Health, Safety, Security and Environment compliant as per global benchmarks

13 Enhance India's stature in global shipping and share in seafarer

14 Promotion of inland waterways transport

Appendix – World class port infrastructure

Cargo traffic volume expected to increase by 1.7-2X by FY 2030

All values are in MTPA

Category	FY 11	FY 15	FY 20	FY 30 (Projections)
Petroleum, Oil & Lubricants (POL)	318	346	437	610-685

Key Drivers:

- Crude oil: 355 MTPA refining capacity addition expected by 2030
- POL Imports: LPG (40% of total imports) driven by urbanization growth scenarios
- POL Exports: MS/HSD (70% of total exports) projected basis domestic consumption (~280-315 MTPA)
- Natural Gas: ~6% to 10% growth expected as a result of fluctuations in global spot prices
- Domestic supply: ~4 to 8% growth by new ONGC & reliance fields in eastern offshore

Cargo traffic volume expected to increase by 1.7-2X by FY 2030

All values are in MTPA

Category	FY 11	FY 15	FY 20	FY 30 (Projections)
Petroleum, Oil & Lubricants (POL)	318	346	437	610-685
Coal (Thermal + Coking)	139	273	327	530-680

Key Drivers:

- Domestic consumption: 55-70% energy contribution
- Domestic production: 0.9-1 Bn tons expected from CIL by 2030; e-auctions of commercial blocks driving ~125 to 225 MTPA capacity potential
- Demand driven by steel production: 255 MTPA steel capacity expected by 2030
- Domestic coal washeries: 20-60% washeries operationalization
- Upcoming thermal plant: 6-8 GW in AP cluster by NTPC Simhadri and Krishnapatnam Power Corp

Cargo traffic volume expected to increase by 1.7-2X by FY 2030

All values are in MTPA

Category	FY 11	FY 15	FY 20	FY 30 (Projections)
Petroleum, Oil & Lubricants (POL)	318	346	437	610-685
Coal (Thermal + Coking)	139	273	327	530-680
Containers	134	165	246	505-620

Key Drivers:

- 6%-10% growth on account of GDP growth and growing economies of other compatible countries
- Growth in manufacturing sector, and success of DFCC to push containerization

Cargo traffic volume expected to increase by 1.7-2X by FY 2030

All values are in MTPA

Category	FY 11	FY 15	FY 20	FY 30 (Projections)
Petroleum, Oil & Lubricants (POL)	318	346	437	610-685
Coal (Thermal + Coking)	139	273	327	530-680
Containers	134	165	246	505-620
Iron ore	127	43	94	130-145

Key Drivers:

- All major steel companies have secured captive iron ore mines
- 2-5% CAGR growth likely in low grade iron demand e.g. from China
- Coastal movement constituting ~65-70% of total traffic movement
- Steel plant capacity addition - 10 MTPA addition at JSW Dolvi and VJNR; 5 MTPA at Essar steel

Cargo traffic volume expected to increase by 1.7-2X by FY 2030

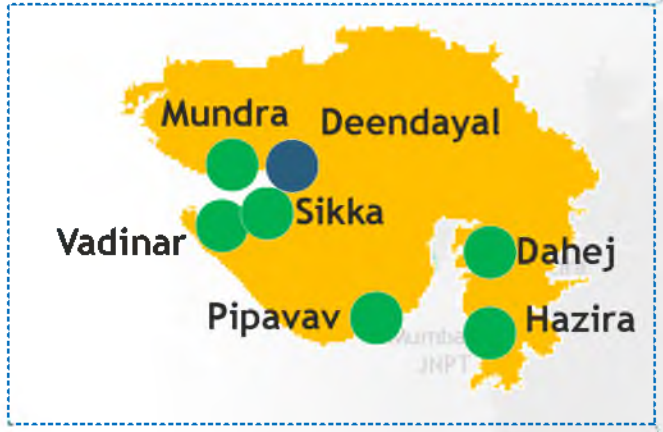
All values are in MTPA

Category	FY 11	FY 15	FY 20	FY 30 (Projections)
Petroleum, Oil & Lubricants (POL)	318	346	437	610-685
Coal (Thermal + Coking)	139	273	327	530-680
Containers	134	165	246	505-620
Iron ore	127	43	94	130-145
Others (cement, fertilizers, food grains, etc.)	168	229	215	390-440

Key Drivers:

- Fertilizers: 5-8 MTPA coastal potential
- Cement: 13-18 MTPA coastal potential
- Steel: 14-20 MTPA coastal potential

Enhance infrastructure in high traffic and transshipment potential clusters



Gujarat cluster

POL	310-330
Iron Ore	5-15
Coal	50-60
Container	210-230
Others	100-120
FY'30 Traffic	**710-730**
FY'19 Traffic	490

Major Ports Minor Ports

Enhance infrastructure in high traffic and transshipment potential clusters

North Maharashtra cluster

POL	60-70
Iron Ore	5-15
Coal	0-5
Container	100-120
Others	0-5
FY'30 Traffic	**190-210**
FY'19 Traffic	130

Major Ports Minor Ports

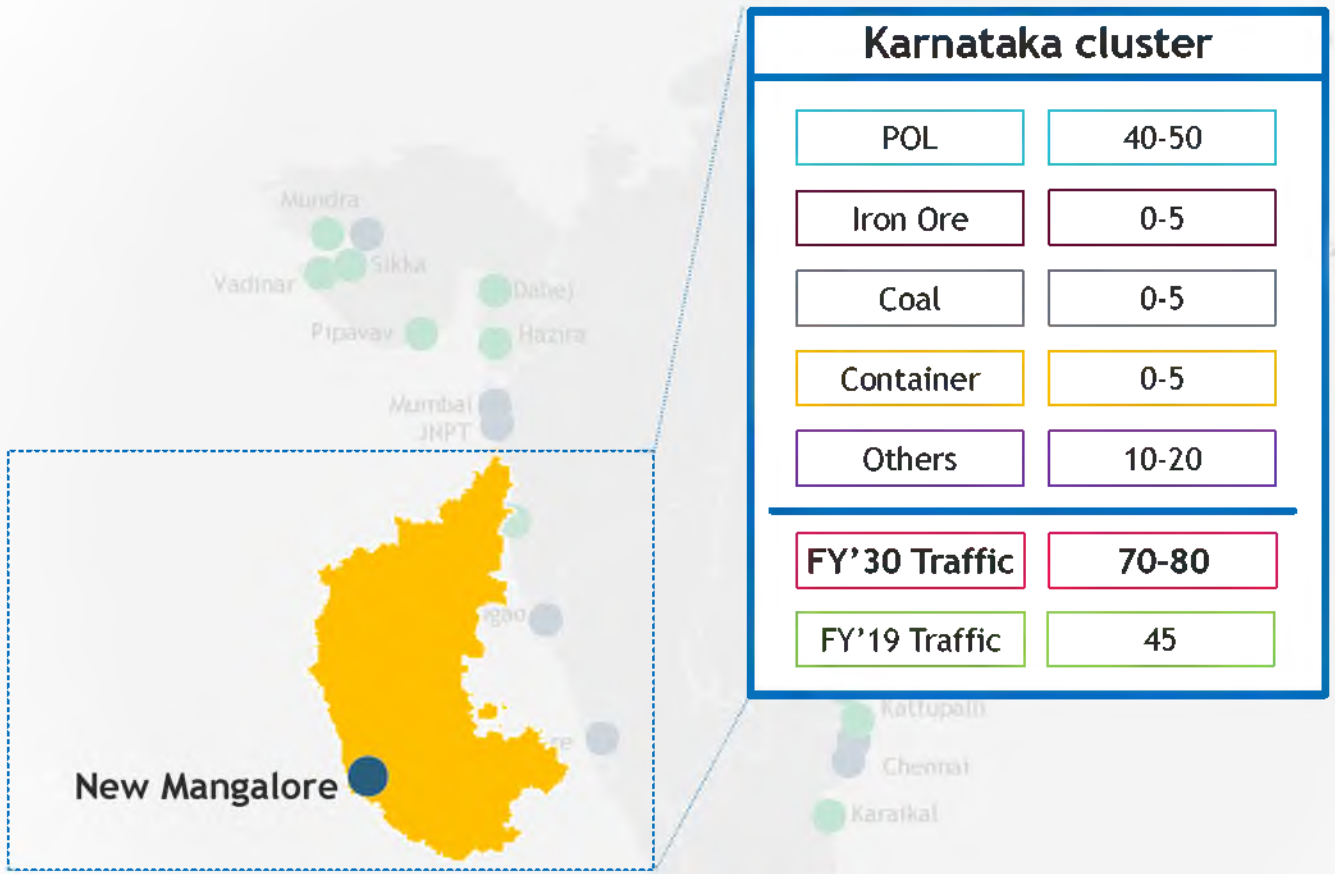
Enhance infrastructure in high traffic and transshipment potential clusters

South Maharashtra & Goa cluster

POL	0-5
Iron Ore	40-50
Coal	40-50
Container	0-5
Others	10-20
FY'30 Traffic	**100-110**
FY'19 Traffic	60

Major Ports Minor Ports

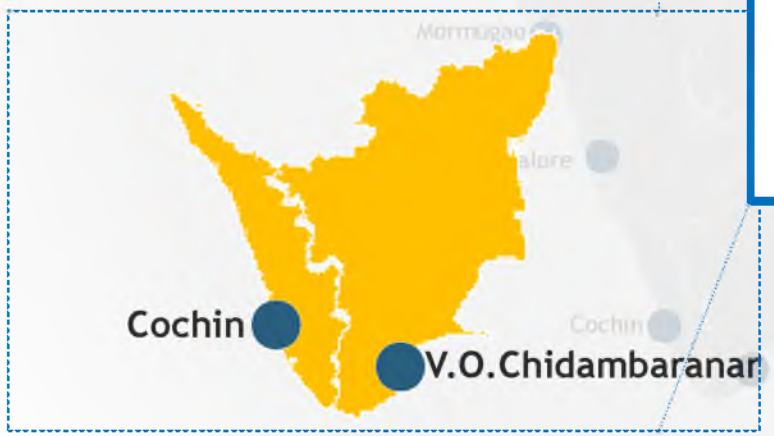
Enhance infrastructure in high traffic and transshipment potential clusters



Karnataka cluster	
POL	40-50
Iron Ore	0-5
Coal	0-5
Container	0-5
Others	10-20
FY'30 Traffic	**70-80**
FY'19 Traffic	45

Major Ports Minor Ports

Enhance infrastructure in high traffic and transshipment potential clusters



South Tamil Nadu & Kerala cluster

POL	30-40
Iron Ore	0-5
Coal	20-30
Container	60-70
Others	20-30
FY'30 Traffic	**150-170**
FY'19 Traffic	80

Major Ports Minor Ports

Enhance infrastructure in high traffic and transshipment potential clusters

South Andhra Pradesh & North Tamil Nadu cluster

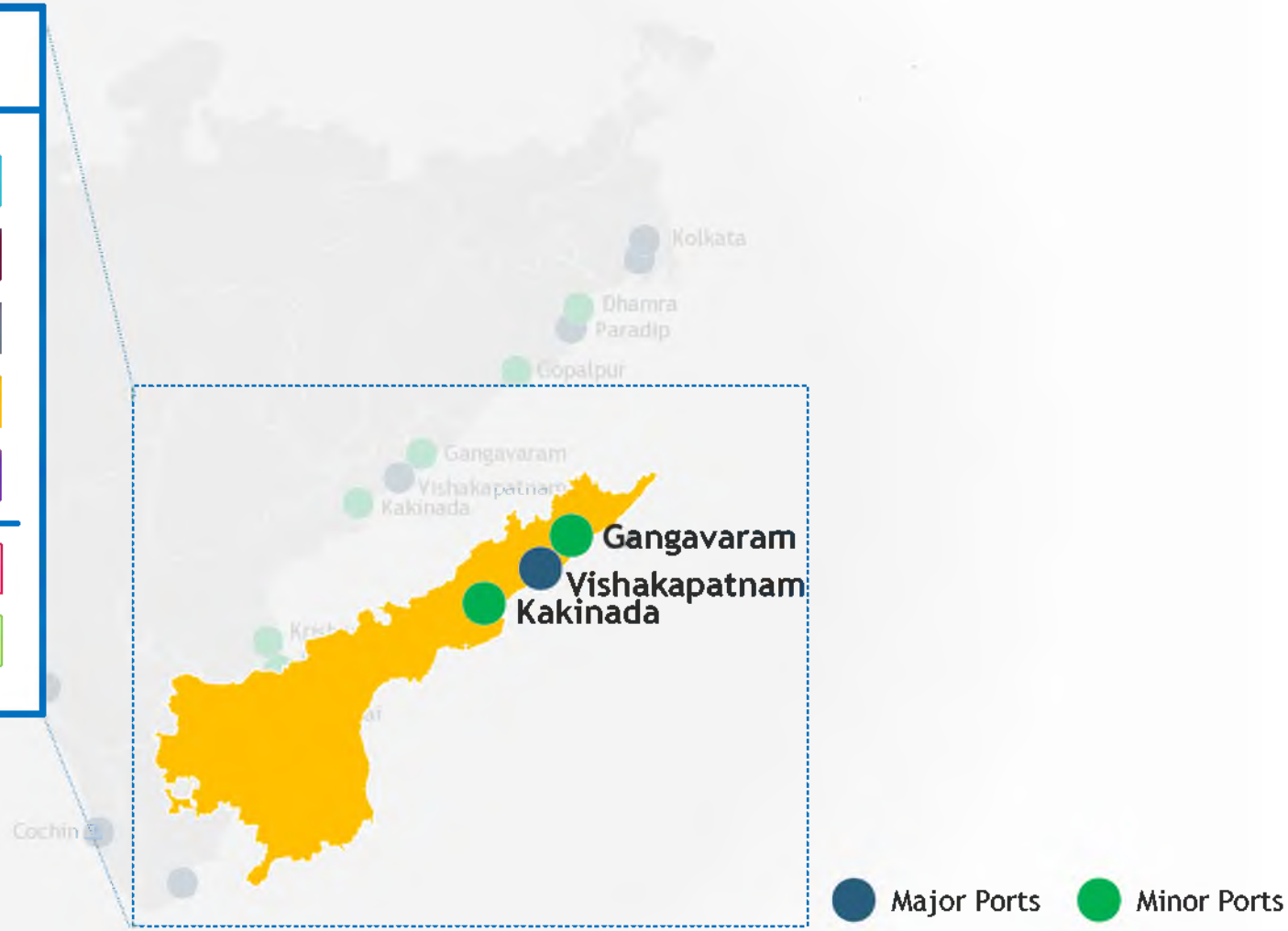
POL	30-40
Iron Ore	5-15
Coal	110-130
Container	60-70
Others	80-100
FY'30 Traffic	**330-350**
FY'19 Traffic	160

Major Ports Minor Ports

Enhance infrastructure in high traffic and transshipment potential clusters

North Andhra Pradesh cluster

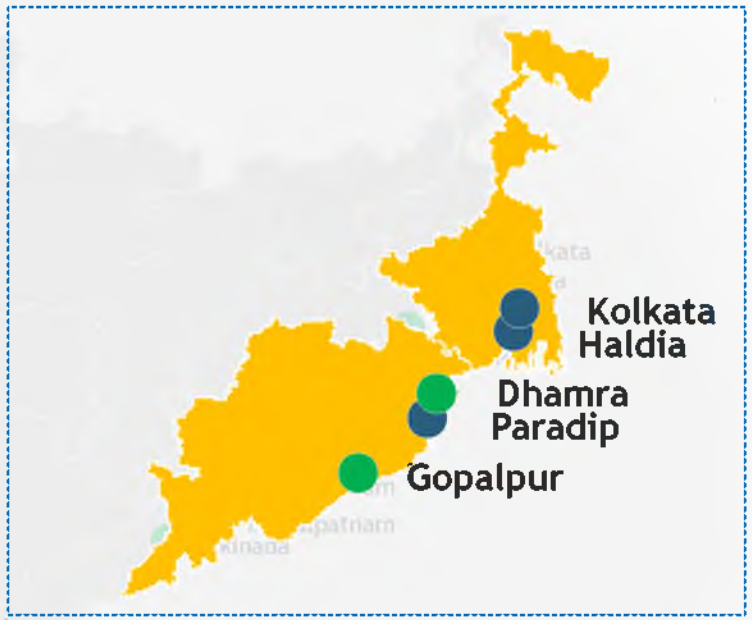
POL	30-40
Iron Ore	20-30
Coal	40-60
Container	0-5
Others	40-60
FY'30 Traffic	**160-180**
FY'19 Traffic	110



Enhance infrastructure in high traffic and transshipment potential clusters

West Bengal & Odisha cluster

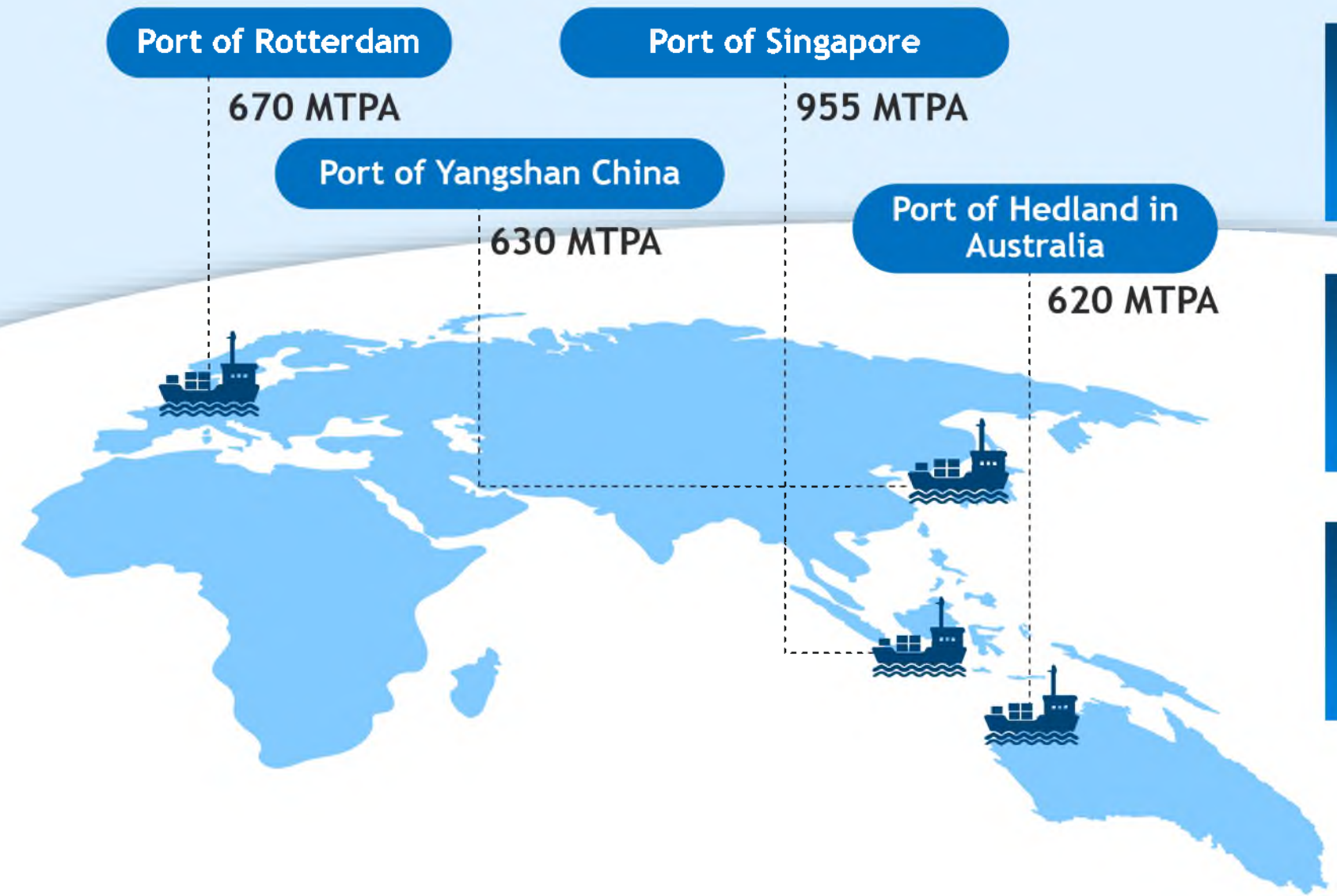
POL	70-90
Iron Ore	25-35
Coal	200-230
Container	25-35
Others	45-55
FY'30 Traffic	**400-420**
FY'19 Traffic	210



Major Ports Minor Ports

Limited number of Indian ports with >100 MTPA capacity

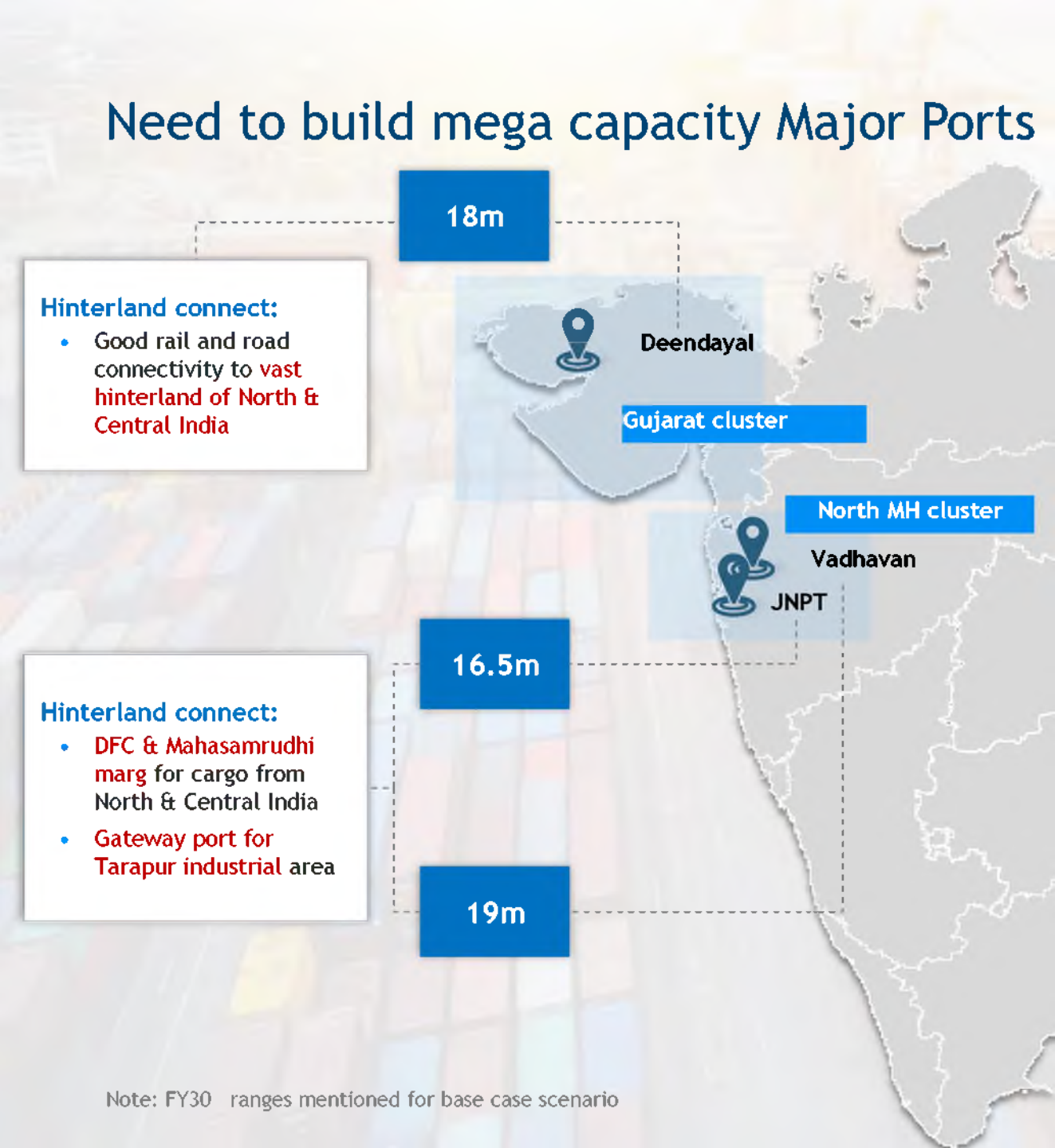
World is moving towards Mega Ports



Benefits of Mega Ports

- 10-15% lower operational costs
- Ability to handle large ships e.g. Cape-size vessels
- Drive hinterland economic development

Need to build mega capacity Major Ports



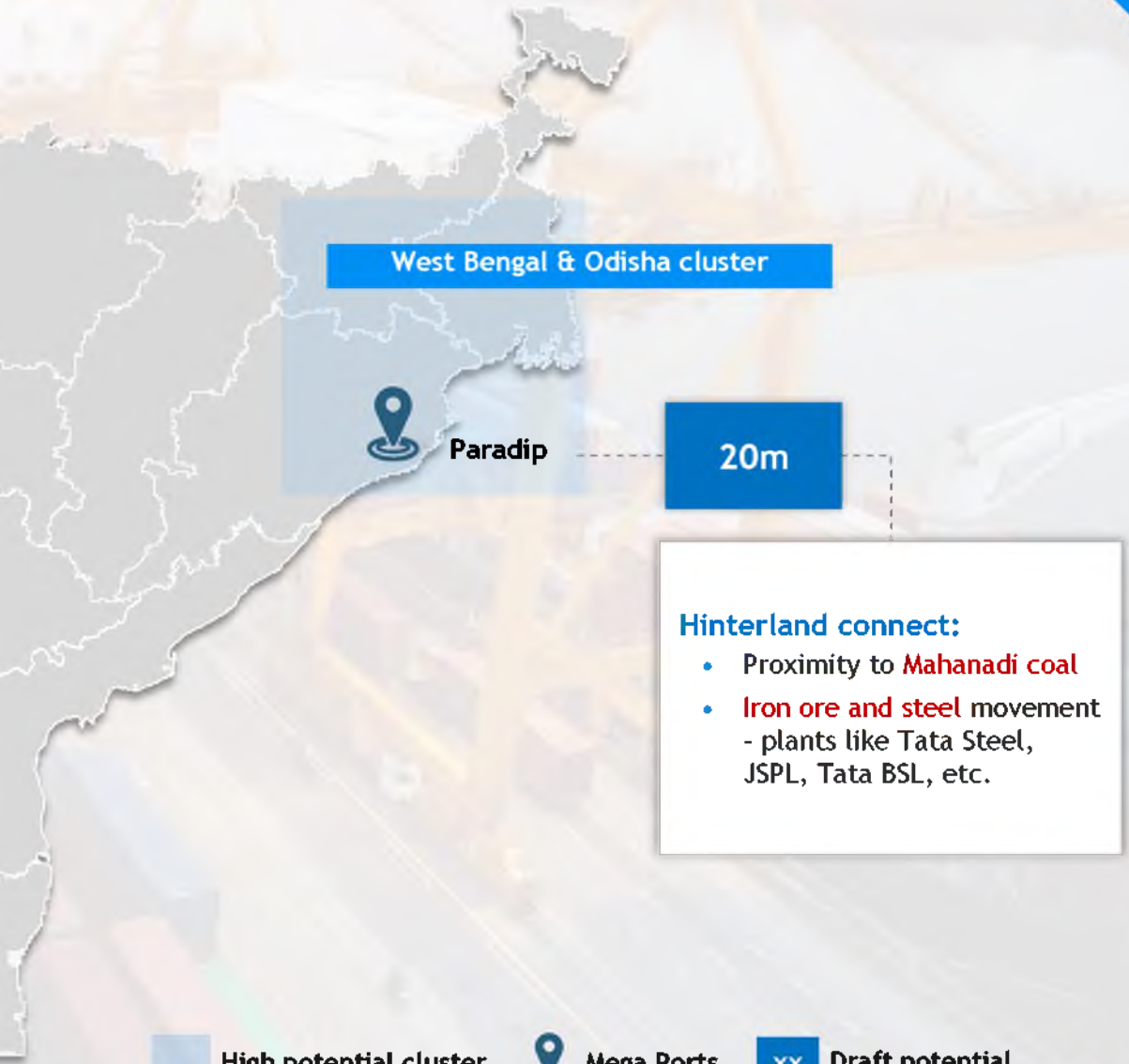
Hinterland connect:

- Good rail and road connectivity to vast hinterland of North & Central India

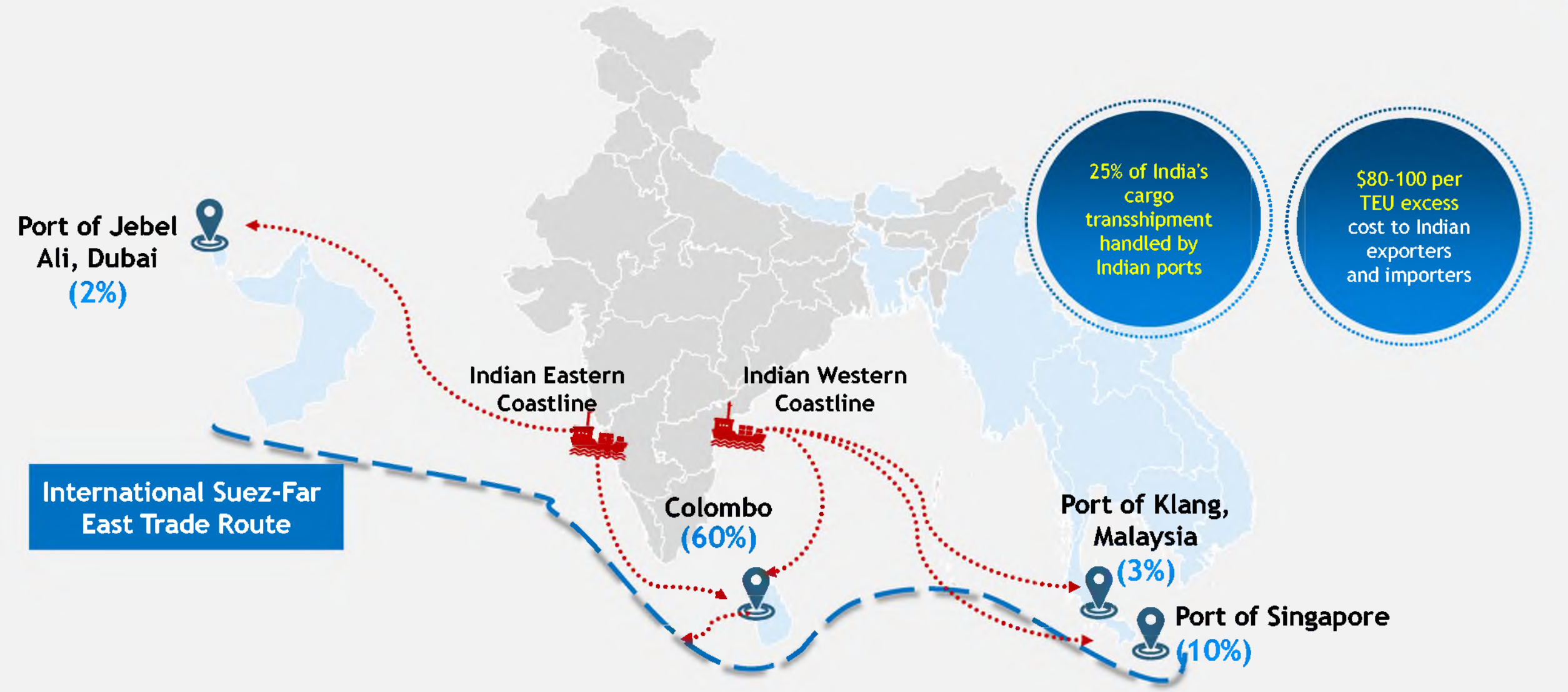
Hinterland connect:

- DFC & Mahasamrudhi marg for cargo from North & Central India
- Gateway port for Tarapur industrial area

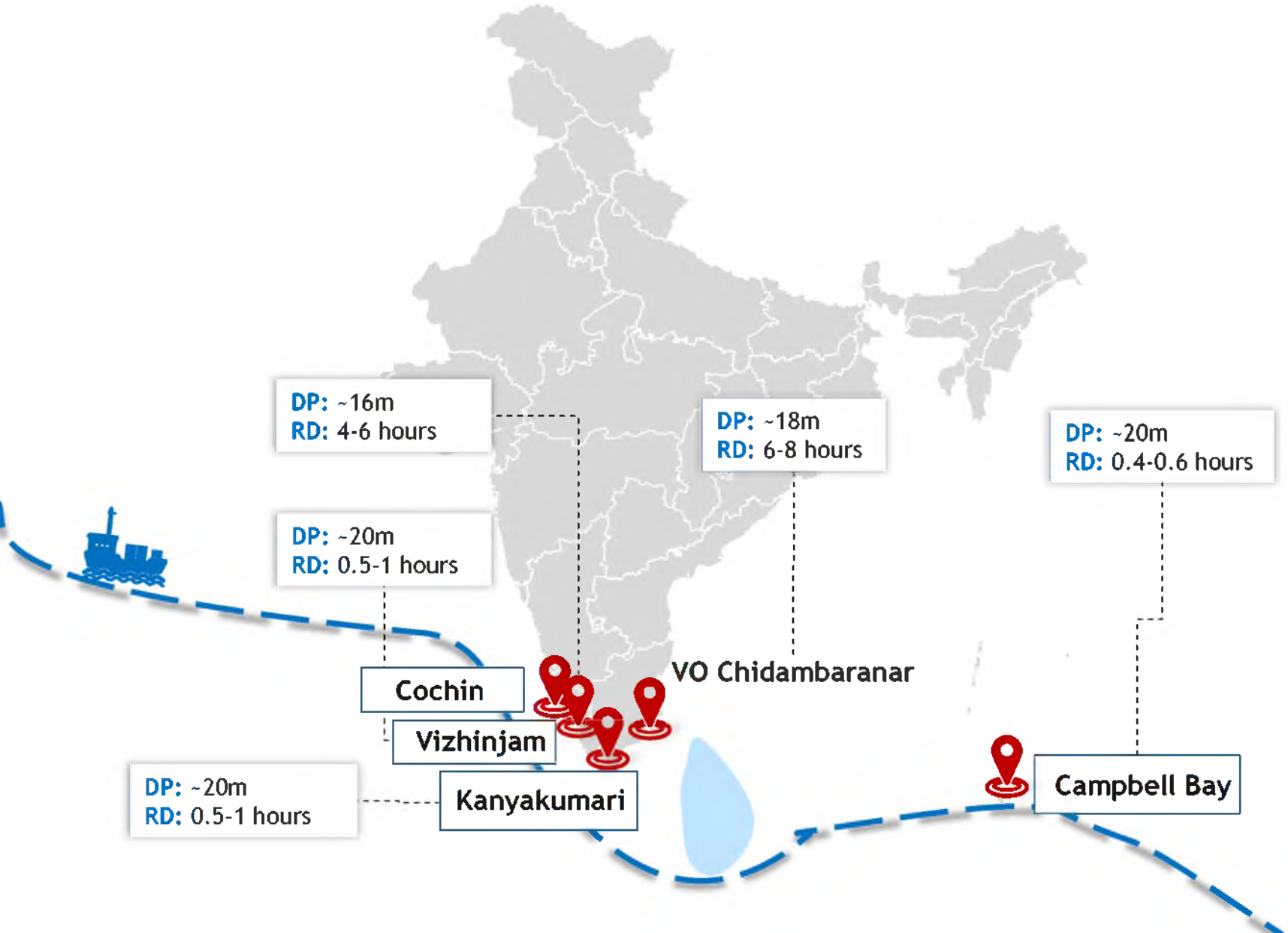
Note: FY30 ranges mentioned for base case scenario


West Bengal & Odisha cluster
Paradip
20m
Hinterland connect:
• Proximity to Mahanadi coal
• Iron ore and steel movement - plants like Tata Steel, JSPL, Tata BSL, etc.
High potential cluster
Mega Ports
xx
Draft potential

Transshipment hub required to reduce cost of trade and save foreign exchange



Liners prefer minimum deviation and at least 18 m draft



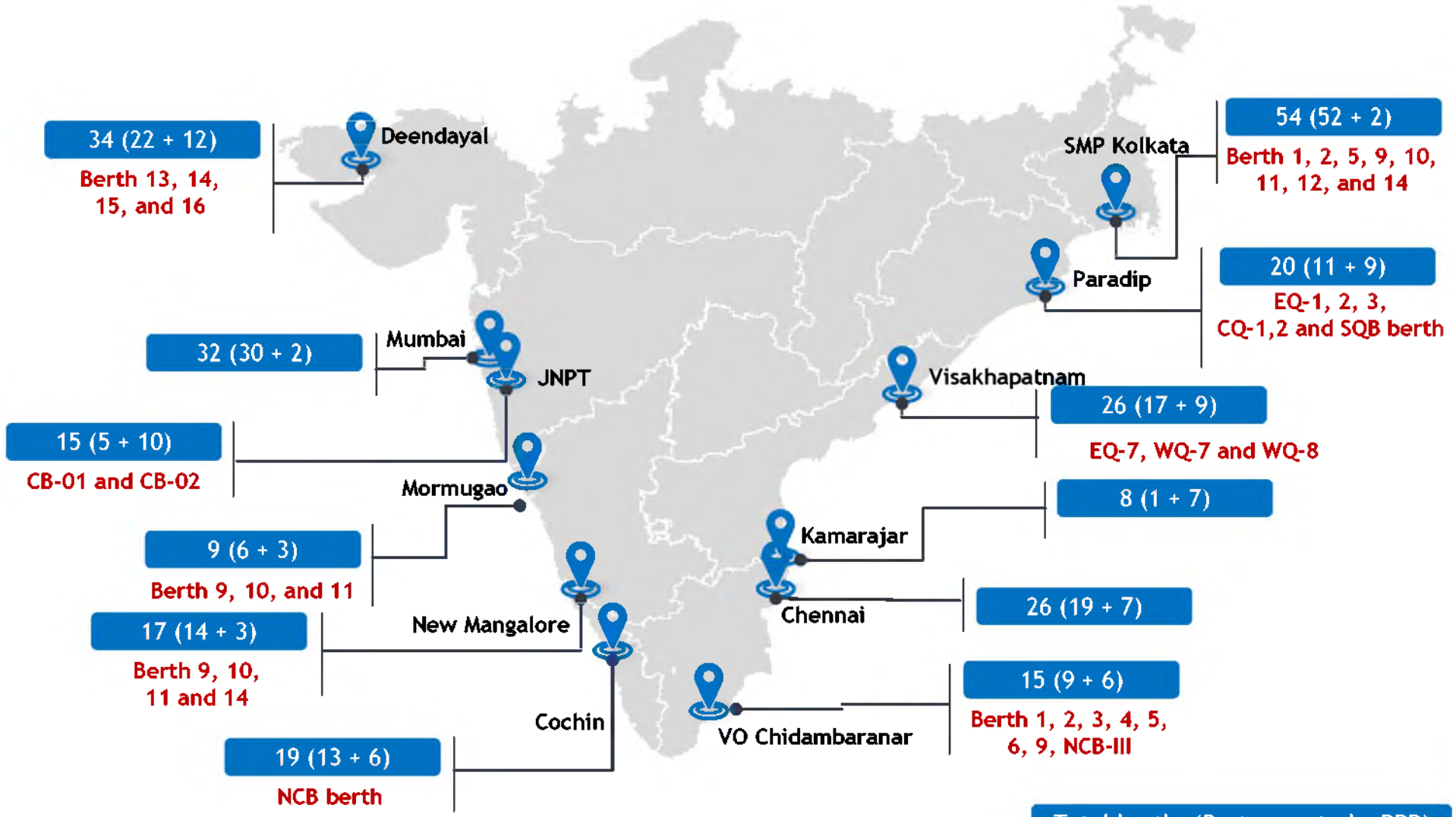
- Prioritize Vizhinjam in short-term
- Additional TS port in Kanyakumari region in phased manner
- Additional TS port in Campbell Bay in a phased manner
- Enhance Transshipment volumes at Cochin Port

International Suez-Far East Trade Route

DP Draft potential
RD Maritime route deviation

Landlord model acceleration for Major ports

Total 275 berths; 76 (28% of total) PPP/Captive berths handling ~51% of total cargo currently



Total berths (Port operated + PPP)

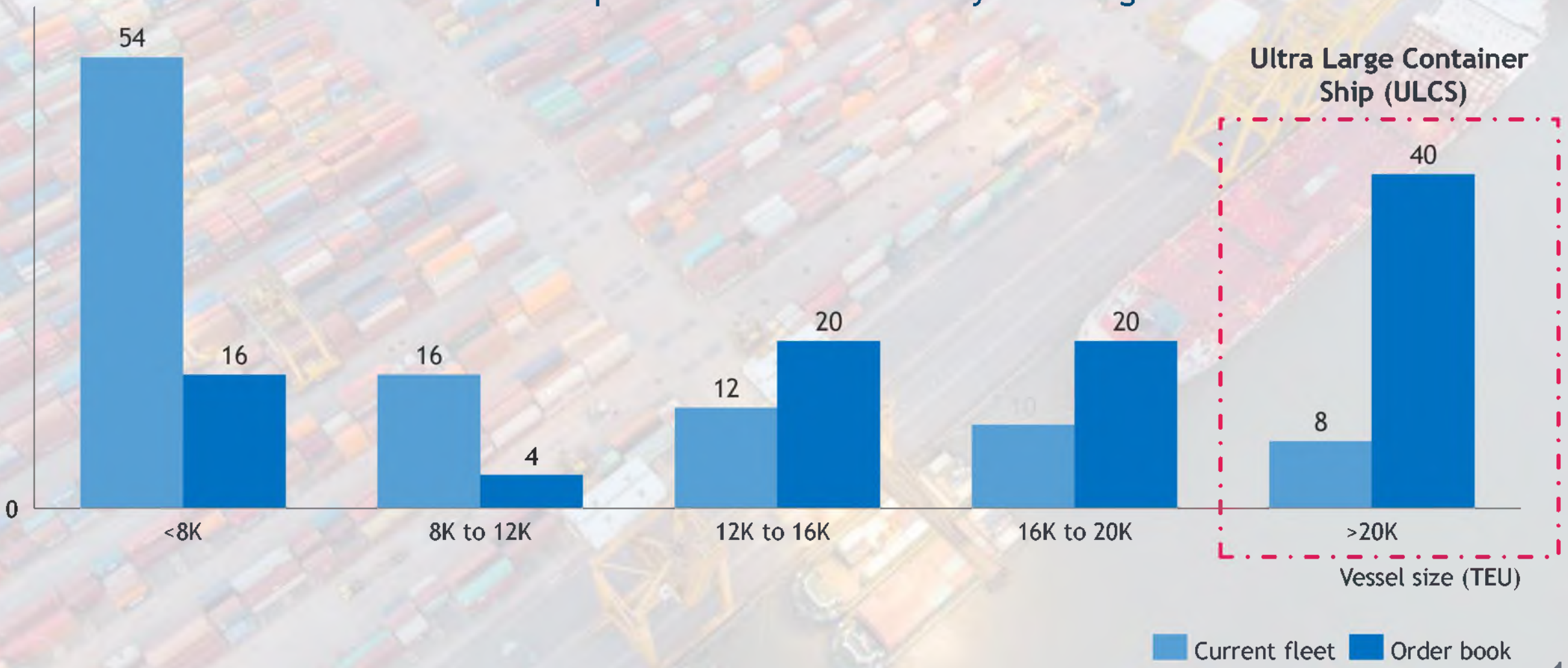
39 projects planned for Landlord model adoption

Initiatives underway

1. All future cargo projects in PPP
2. Existing berths for PPP under Asset Monetization
3. Revision of MCA to cater to dynamic business environment
4. Revision in Captive Jetty policy

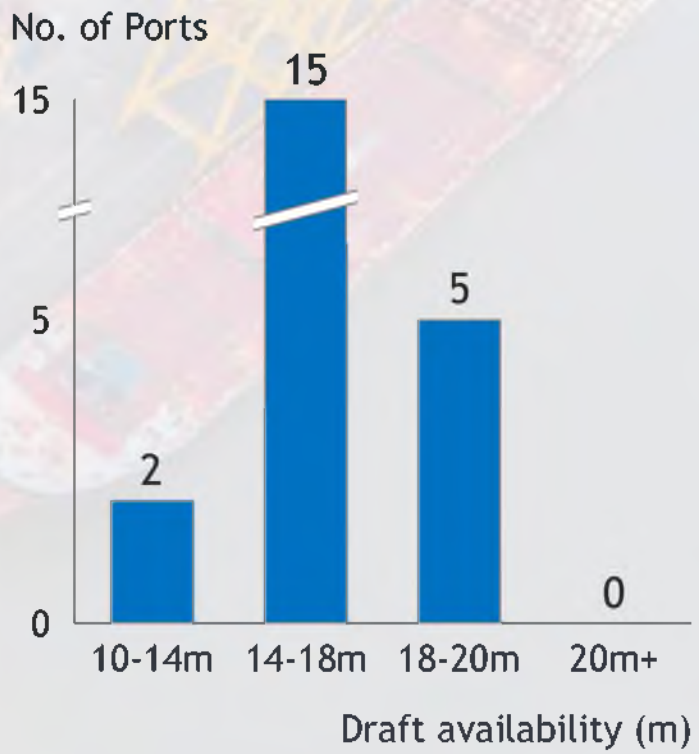
Size of ships increasing due to better cost efficiencies

Containership fleet and order book by size range



Improving draft availability at Major Ports

Draft availability in India



Major Ports | Non-Major Ports | xx Draft availability (m)

1.1 Major Ports with >300 MTPA handling capacity | Activities and milestones

	Key activities	Total cost (Cr)	Target
1.1.1	Paradip Port		
1.1.1.1	Capacity augmentation projects:		
	- Mechanization of EQ-1,2 & 3 (3 Berths) for handling export Coal Cargo (Till date: 715 Cr; 2021: 720 Cr)	1435	Q3, 2021
	- LPG Terminal at South Oil Jetty (Till date: 350 Cr; 2021: 340 Cr)	690	Q4, 2021
	- Development of New Coal Berth for handling Import Coal Cargo (Till date: 460 Cr; 2021: 195 Cr)	655	Q4, 2021
	- Mechanization of SQB Berth	75	Q3, 2023
	- Optimization of Inner Harbour facilities - (Till 2024: 630 Cr; 2025-2027: 2370 Cr) (CCEA Note underway)	3000	Q1, 2027
	- Mechanization of CQ-1 & 2 (2 Berths)	1103	Q4, 2027
	- Mahanadi Riverine Port (Phase-I)	2562	Q4, 2027
1.1.1.2	Hinterland connectivity projects:		
	- Rail - Haridaspur-Paradip New line, MGR BOT line and EQ Rail Infrastructure (Till date: 3040 Cr; 2021: 160 Cr)	3200	Q4, 2021
	- Road - Concrete road building, uniflow and 2nd exit establishment (Till 2022: 90 Cr; 2023: 60 Cr)	150	Q4, 2023
1.1.1.3	MMLP setup: Rail facilities & warehousing (Till date: 130 Cr; Till 2024: 2270 Cr)	2400	Q1, 2024
	MMLP setup: 100% port land industrialization (2025-2027: 4000 Cr)	4000	Q4, 2027

1.1 Major Ports with >300 MTPA handling capacity | Activities and milestones

	Key activities	Total cost (Cr)	Target
1.1.2	Deendayal Port		
1.1.2.1	Techno-economic feasibility study to expand Tuna Tekra terminal	5-10	Q2, 2021
1.1.2.2	Capacity addition projects:		
	– Pipeline rationalization of Oil jetty 1 to 4 (Till 2022: 40 Cr; 2023-2024: 130 Cr)	170	Q4, 2024
	– Conversion of general cargo berth to mechanized fertilizer handling facility (Till 2022: 60 Cr; 2023-2024: 240 Cr)	300	Q4, 2024
	– Oil jetty cum bunkering complex	234	Q4, 2024
	– Container terminal at Tuna Tekra (Till 2024: 3000 Cr; 2025: 2200 Cr)	5200	Q4, 2025
	– Mechanized Bulk terminal at Tuna Tekra (Till 2024: 1000 Cr; 2025: 1000 Cr)	2000	Q4, 2025
	– Construction of Oil Jetties - 7,8,9,10 and 11 (Till 2022: 100 Cr; 2023-2024: 350 Cr; 2025: 300 Cr)	750	Q4, 2025
	– 1 SBM and 2 product jetties at Vadinar (Till 2024: 330 Cr; 2025: 118 Cr)	448	Q4, 2025

1.1 Major Ports with >300 MTPA handling capacity | Activities and milestones

Key activities	Total cost (Cr)	Target
1.1.3 JNPT Port		
1.1.3.1 Capacity augmentation projects:		
- Construction of Coastal Berth	170	Q3, 2022
- Development of Container Terminal by BMCT(Phase-II)	3196	Q4, 2022
- Additional Liquid Cargo Terminal - Phase 1	181	Q2, 2023
1.1.3.2 Hinterland connectivity projects:		
- 6 to 8 laning of NH-4B- SH-54 and Amra Marg	2935	Q2, 2021
- Expressway from Dighi Industrial Cluster -Pune to JNPT	4500	Q3, 2022
- Expressway from Sanathnagar industrial cluster - Hyderabad to JNPT	22000	Q2, 2023
- 3rd line rail connectivity from Jasai to JNPT	125	Q1, 2024
- Development of DFC compliant rail yard at JNPT	267	Q4, 2024

1.1 Major Ports with >300 MTPA handling capacity | Activities and milestones

	Key activities	Total cost (Cr)	Target
1.1.4	**Vadhavan Port**	.	
1.1.4.1	Vadhavan - EC and CRZ clearance finalization		Q2, 2021
1.1.4.2	Submission and clearance of PIB/PPPAC PROPOSAL		Q1, 2022
1.1.4.3	Award and commencement of EPC and PPP bids		Q3, 2022
1.1.4.4	EPC works completion (breakwater, road connectivity, power, etc.)	65,544	Q2, 2024
1.1.4.5	10,000 hectares of land mass acquisition and approval for SEZ status		Q2, 2024
1.1.4.6	PPP commissioning and container terminals 1 to 4 operationalization		Q2, 2024
1.1.4.7	Complete Phase-I (LNG berths, Ro-Ro, etc.) operationalization		Q4, 2024
1.1.4.8	Phase-II capacity operationalization		Q4, 2030
1.1.5	**Kamarajar Port**		
1.1.5.1	Capacity addition projects:		
1.1.5.2	- Modification of Iron ore to coal terminal (SIOTL)	250	Q4, 2021
1.1.5.3	- Container Terminal (Phase-1, Stage-II)	560	Q4, 2021
1.1.5.4	- Coal Berths -3 & 4 (TNEB)	320	Q4, 2022
1.1.5.5	- General Cargo berth 2	200	Q1, 2024
1.1.5.6	- IOCL Captive Oil Jetty	465	Q4, 2024

1.2 Indian cargo transshipment by Indian ports | Activities and milestones

Key activities		Total cost (Cr)	Target
1.2.1	Vizhinjam Port		
1.2.1.1	Support from Central Govt. to facilitate EoDB and infra development	-	Q4, 2021
1.2.2	Kanyakumari region		
1.2.2.1	Re-evaluate business feasibility as per TS study post traffic commencement at Vizhinjam	15000	Q2, 2024
1.2.2.2	Conduct tender process and develop TS hub in Kanyakumari region on PPP basis		Q4, 2028
1.2.2.3	Collaborate or partner with 1-2 anchor liners for success of transshipment hub		Q4, 2028
1.2.3	Campbell Bay - Development of TS hub on PPP basis	10000	Q4,2025
1.2.4	Enhance Transshipment volumes at Cochin Port	-	Q4, 2022

1.3 Landlord model for Major Ports | Activities and milestones

Key activities		Total cost (Cr)	Target
1.3	Landlord model acceleration for Major Ports		
Phase 1: Landlord model adoption for 38 identified berths across major ports			
1.3.1	DPT		
	- Berth 13, 14, 15, and 16	2000	Q4, 2025
1.3.2	JNPT: *Covered in 1.1.3.1*		
1.3.3	MoPT		
	- Conversion of berth 9 and 3 barge berths	700	Q4, 2024
	- Berths 10 & 11	100	Q4, 2024
1.3.4	NMPT		
	- Berth 14	280	Q4, 2021
	- Berths 9, 10, & 11	200	Q4, 2025
1.3.5	VoCPT		
	- Berths 9 and NCB III	550	Q4, 2022
	- Conversion of 1, 2, 3, & 4 berths	500	Q4, 2024
	- Conversion of 5 & 6 bulk berths		Q4, 2028

1.3 Landlord model for Major Ports | Activities and milestones

	Key activities	Target
1.3.6	VPT	
	- Berth EQ7	Q4, 2024
	- Berths WQ7 & WQ8	Q4, 2024
1.3.7	PPT: *Covered in 1.1.1.1*	
1.3.8	CoPT: NCB berth	Q4, 2025
1.3.9	SMP Kolkata	
	- Berth 2	Q4, 2022
	- Berth 5 & 10	Q4, 2023
	- Berth 11 & 12	Q4, 2025
	- Berth 1, 9 & 14	Q4, 2026
1.3.10	Phase 2: Re-evaluation of remaining berths potential for landlord model	Q4, 2025

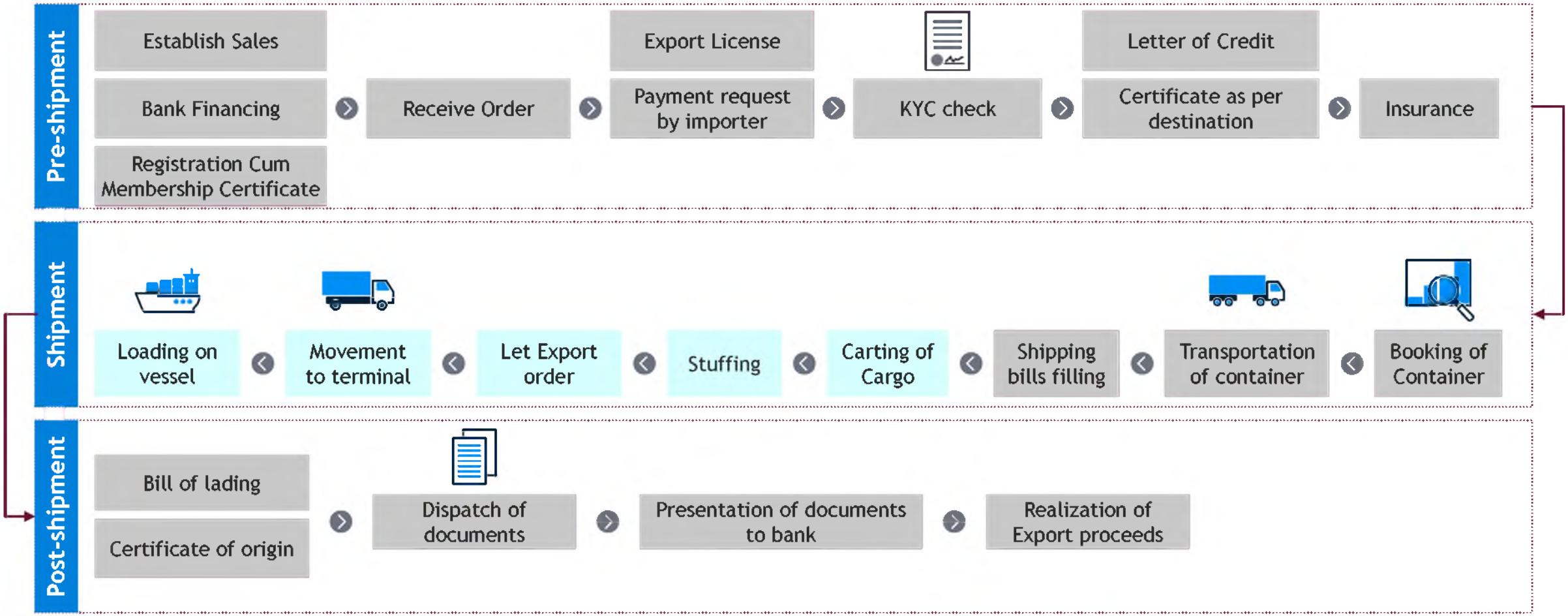
1.4 Draft strategy for Major Ports | Activities and milestones

	Key activities	Total cost (Cr)	Target
1.4	Draft enhancement for Major Ports		
1.4.1	All Major Ports to conduct technical assessment to identify potential berths for draft enhancement	-	Q2, 2022
1.4.2	Dredging for Container terminals at Major Ports -	20000 - 25000	
	- Phase-1: Min. 1 berth with 16-16.2m draft availability		Q2, 2024
	- Phase-2: Min. 1 berth with 18m+ draft at Mega Container Ports		Q4, 2024
1.4.3	Dredging for Bulk terminals at Major Ports -		
	- Phase-1: Max. berths as Panamax compliant (14m+ draft)		Q2, 2024
	- Phase-2: Min. 1 berth as Capesize compliant for terminals with >1 Capesize ship call per week		Q4, 2024

Appendix – Smart ports

High degree of manual interfaces in current export/import value chain

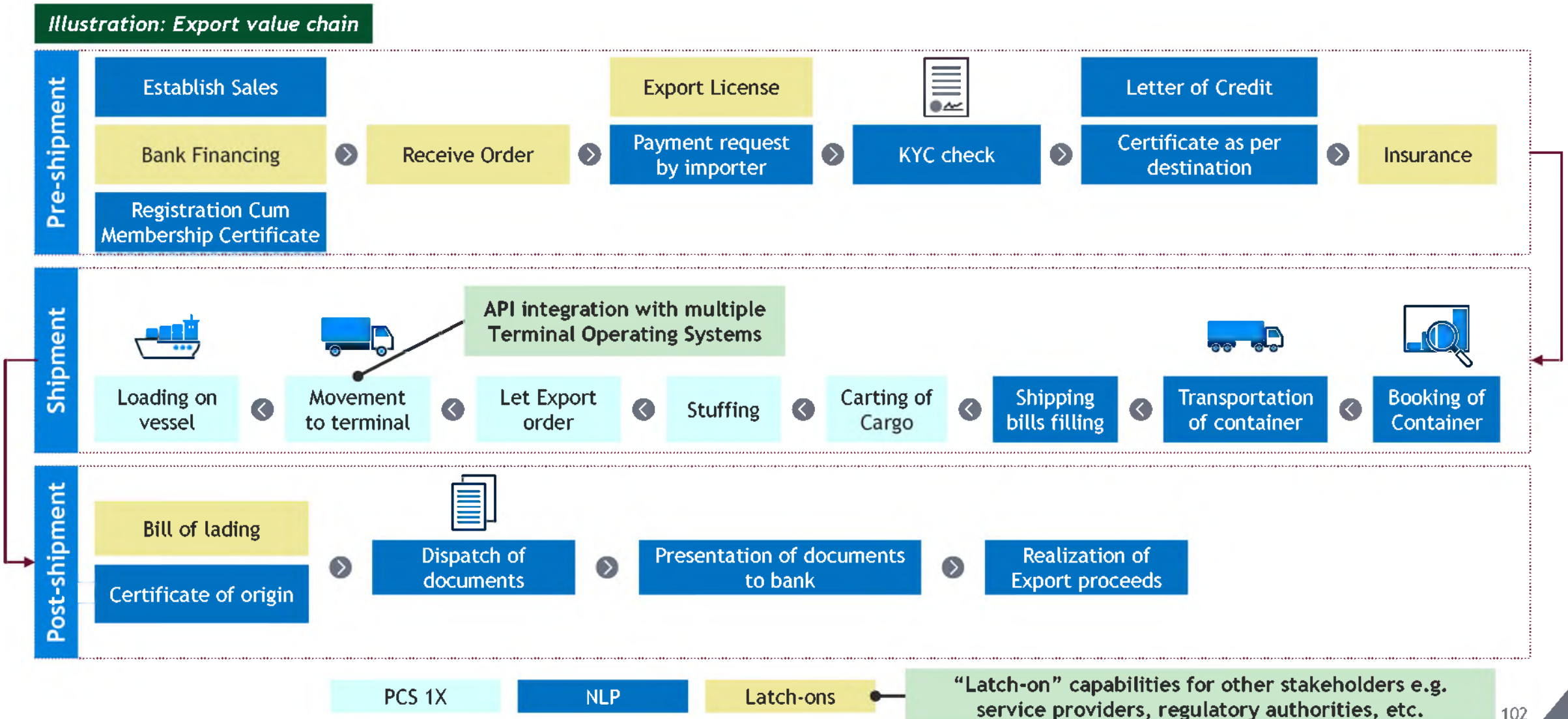
Illustration: Export value chain



PCS 1X | Manual interfaces / In-silo systems

NLP Marine platform to enable end-to-end paperless EXIM activities

Single window platform for all stakeholders (ports, shipping lines, regulatory bodies, service providers, etc.)



“Smart Ports” integrate data and processes across 5 layers

Infrastructure layer (sensing)

Roads sensing

Bridges

Rails

Vessels

Enterprise core layer

- Road & rail network mapping system
- SAP preventive maintenance
- Freight performance data system
- Vessel information system

API integration layer

Data and analytics layer

Traffic Centre

Smart maintenance

Rail optimization

Port monitor

Digital front-end (user interfaces)

Web portal

Mobile applications

By 2025, all Indian Major Ports to implement prioritized digital solutions

	"Must have" digital solutions	Driving Logistics Efficiency	Enabling E2E Smart ports
No. of used cases	20	25	13
Illustrations	• Asset health monitoring • Predictive maintenance • GPS container tracking	• Automated Quay cranes • AI/ML container arrival prediction and monitoring	• Autonomous cranes • Autonomous aerial vehicle surveillance

2.1 National Logistics Portal (NLP) Marine | Activities and milestones

	Key activities	Total cost (Cr)	Target
2.1	National Logistics Portal (NLP) Marine to enable single integrated platform for EXIM activities across stakeholders		
2.1.1	Bid submission and Tender for NLP Marine	64 (one-time cost with 2-year support)	Completed
2.1.2	Selection of Bidder and Tender allocation		Dec, 2020
2.1.3	Submission and Acceptance of detailed Software Requirement Specification (SRS)		Jan, 2021
2.1.4	Development and Deployment of Platforms (Cargo, Carrier etc.)		May, 2021
2.1.5	Integration with external applications (ICEGATE, Certification Systems) and Relevant PGA/EPC as per SRS	4 per year (OpEx after initial 2 years)	
	- Integration with ICEGATE		Jun, 2021
	- Integration with PGA's and EPC's		Aug, 2021
	- Integration with Certification systems (e.g. Cerf. Of Origin)		Sep, 2021
2.1.6	UAT, Training & Pilot implementation		Nov, 2021
2.1.7	Go-live and stabilization		Dec, 2021

2.2 "Smart ports" solutions enablement | Activities and milestones

	Key activities	Total cost (Cr)	Target
2.2	Establish a Digital Center of Excellence (DCoE) under IPA to develop standardized architecture across ports and drive transition of Indian ports to "Smart ports"		
2.2.1	Basis detailed technical study, map out digital infrastructure requirements for a pilot port (data centers, IT infrastructure, etc.)	Approx. 20 for pilot (1 Major Port)	Q2, 2021
2.2.2	On-board a Multi-System Integrator (service provider) for 20 "Must-have" technology solutions pilot (e.g. Next-gen VTMS, asset health monitoring, etc.)		Q2, 2021
2.2.3	Roll-out "Must-have" technology solutions across major ports to enable digital transformation of ports	7 - 8 (per port for other Major Ports)	Q4, 2022
2.2.4	Pilot 24 "Driving logistics efficiency" technology solutions across ports basis actual traffic volume and cargo profile to drive scalability and cost effectiveness	5 per year (OpEX for all Major Ports)	Q2, 2024
2.2.5	Enable 13 "World class ports" technology solutions across ports to drive transition of Indian ports to Smart Ports of the future		Q4, 2025

2.3 Enterprise Business System (EBS) | Activities and milestones

Key activities	Total cost (Cr)	Target
2.3 Standardize internal processes and deploy Enterprise Business System (EBS) across 5 Major Ports		
2.3.1 Phase 1: Primary solution development		
- Development of primary modules such as port operations, finance, vendor self-service, etc.		
- Integration with PCS and allied systems		
- Setup of call center, IT helpdesk, & Port service center		
2.3.2 Phase 2: Backend systems integration		
- Development of secondary modules such as administration, engineering, maintenance, etc.	324	Q1, 2021
- Integration with GIS and internal port systems		
- Online electronic office with immediate workflow		
- Enabling disaster recovery site & Port Command center		
2.3.3 Phase 3: Full-scale operationalization		
- Integration and operationalization of all modules		
- Integration with partner and customer systems		
- User Acceptance Testing (UAT)		

2.4 Unified Ship e-registration portal | Activities and milestones

	Key activities	Total cost (Cr)	Target
2.4	Develop digital registration and certification portal for Indian flagged ships and drive acceptance of e-documents across ports		
2.4.1	Onboard IT partner to digitalize ship registration process to submit e-forms & get access to e-certificates	10-15 (One-time cost for developing the solution)	Q1, 2021
2.4.2	Digitize module on 'Registration of Mortgage'		Q1, 2021
2.4.3	Onboard IT partner to augment ship registration website		Q1, 2021
2.4.4	Engage with Indian Ocean MoU for transitioning and acceptance of digital certificates for foreign vessels across all ports		Q1, 2022

Appendix – Reducing logistics costs

Enhancing modal shift and coastal shipping

Challenge #1

High first & last lead times

Challenge #2

High freight costs - Lack of return flows and low parcel sizes

Challenge #3

Lack of commodity-specific infrastructure

Modal share of coastal shipping

~6%

15%+

Other best in class

Initiatives underway

1. Priority berthing
2. Cabotage relaxation
3. Discount on VRC
4. Coastal Shipping bill
   - Encouraging higher share of Indian vessels in coastal shipping and reducing transportation costs

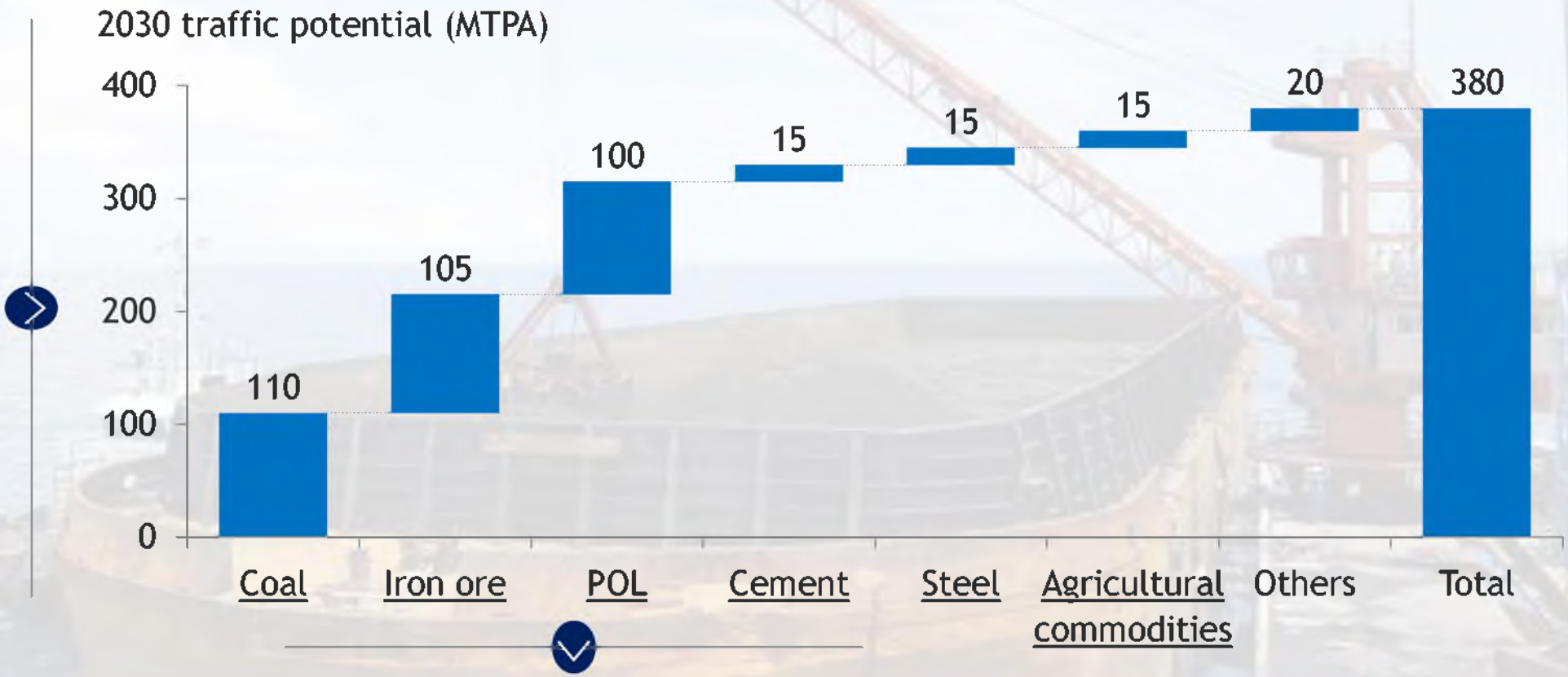
Way forward | Commodity-specific handling infrastructure

245

Current coastal traffic (MTPA)

380

2030 potential traffic (MTPA)



Setting up coastal and inland cargo facilitation center

Potential routes for Coal coastal shipping

Potential routes for Iron Ore coastal shipping

Movement from Eastern cluster ports to Western coast

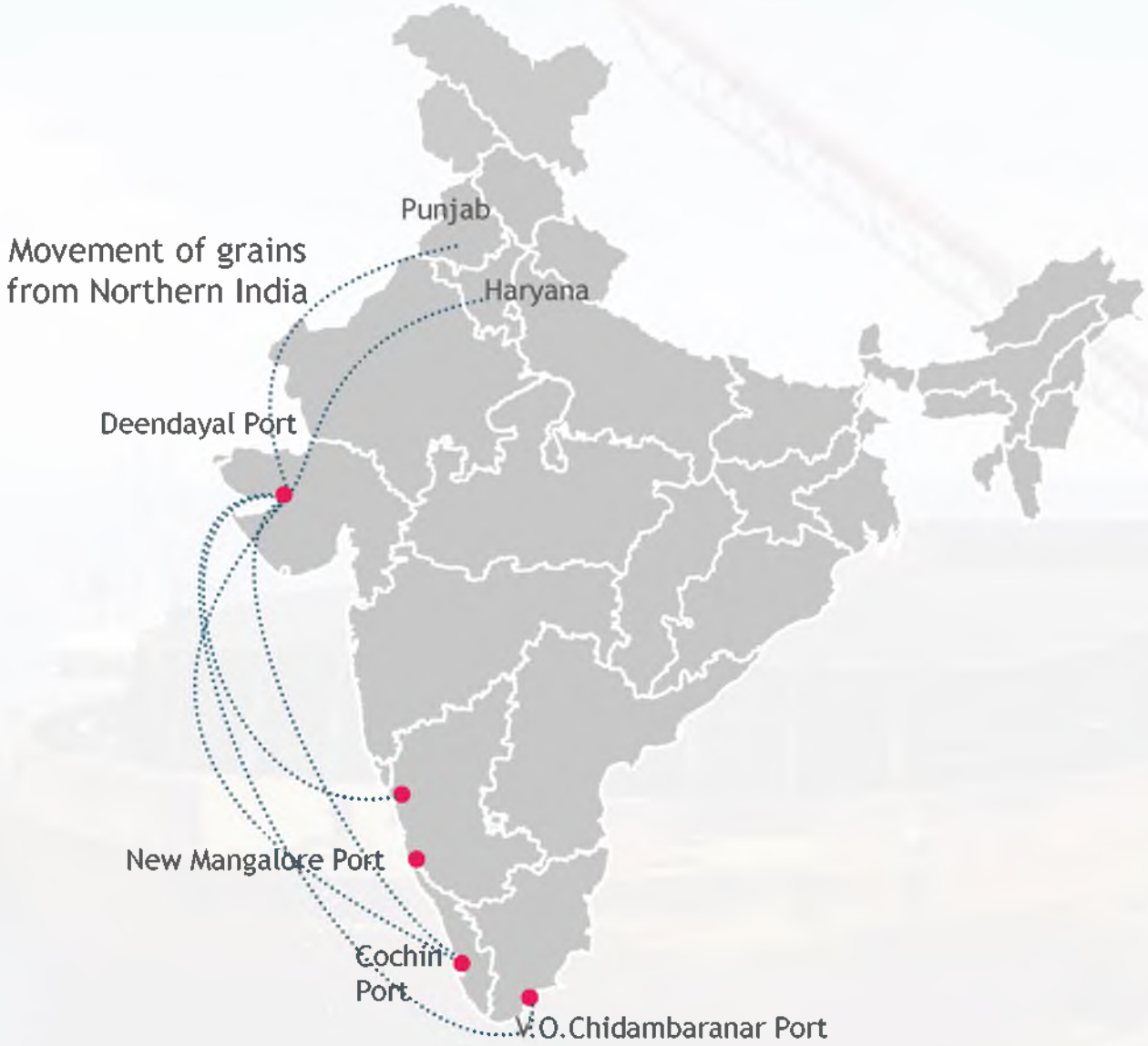
Major Ports Non-Major Ports

Potential routes for POL coastal shipping

Potential routes for Cement coastal shipping

Potential routes for Steel coastal shipping

Potential routes for Agricultural commodities coastal shipping



Reducing Cost of Doing Business (CoDB)

Cost plus margin model for VRC

Excess personnel costs

Limited revenue sources to offset high-cost base

2x+

Vs.

VRC charges compared to benchmarks

Initiatives underway

Revised Township

Land Policy –

Monetize

non- core assets

Way forward | Expanding revenue base

Port-led industrialization (6000+ acres)

Augmentation and diversification of revenue:

- Technical consultancy
- Non-core assets monetization

Port-led Industrialization - "Make for World in India"

Current status

- Limited flexibility in commercial terms
- Land lease / rental rates not in line with market trends
- Unavailability of value-added services

Port of Jebel Ali

- Specialized in-house teams (50-150 pax)
- Innovative commercial models:
  - Direct discounts on land leases
  - Flexible rental payment schedules

Port of Rotterdam

- Land development through partnerships
  e.g. 240 Hectares with DHG
- Plug and play infrastructure such as:
  - Tank storage - dry/wet bulk cargo
  - Process and cooling water facilities

Initiatives underway

- Land Policy guidelines revision underway

Way forward | Port-led industrialization

Co-development models with State Govt., NICDC, etc.

Commodity-specific industrialization

Plug and play infrastructure

Investor outreach and marketing cell

Digital Land Portal

Improving productivity to achieve best-in-class levels

~25% reduction in TAT in last 4 years

Vessel Turnaround Time (TAT) (hours)

Container Terminals

Quay Crane productivity (Moves/hour)

RTG Crane productivity (Moves/hour)

Initiatives underway Project Unnati productivity initiatives

Way forward | Improving port productivity

Berth mechanization

Landlord model adoption

RTG crane automation

Pre-berthing wait time optimization

Berth operating norms standardization

Improving port evacuation efficiency

India's rank in Liner Shipping Connectivity Index (LSCI) improved from 28 to 24 in last 2 years

Lack of adequate infrastructure & services

High congestion in connectivity routes

Average container dwell time

~55 Hours

<40 hours

Truck turnaround time (TAT)

~6 Hours

<3 hours

Initiatives underway

- Container scanners - Mobile & Drive through
- On wheel examination
- DPD and DPE services

Way forward | Improving port evacuation efficiency

Acceleration of multi-modal connectivity projects

Prioritization of trunk infra (Four-lane road project across entire coastline)

On-premise ancillary infrastructure

Gate clearance automation

Reducing other logistics related costs in value chain
Illustration: Container related costs

Shortage in availability of containers currently

Reducing imports to increase equipment imbalance

Movement of empties and high demand increasing cost for trade

80%+

Container manufacturing by Chinese companies

ISO

Standardized manufacturing (20 & 40 feet)

Way forward

Promoting Atmanirbhar Bharat by encouraging container manufacturing in country

3.1 Coastal shipping acceleration | Activities and milestones

	Key activities	Total cost (Cr)	Target
3.1.1	Food grain: Establish food grain depots near 6 ports (Chennai, NMPT, Cochin, V.O.Chidambaranar, Karaikal, Mormugao) in coordination with FCI		
3.1.1.1	Conduct joint discussions with ports & FCI to define strategy	60-70	Q2 2021
3.1.1.2	Allotment of land, order design and tendering for construction		Q4 2021
3.1.1.3	Completion of construction works		Q2 2022
3.1.2	Coal: Push for implementation of port connectivity projects (e.g. mine to port via rail) and drive coastal coal adoption at western ports		
3.1.2.1	Conduct joint discussions with MoR to expedite development of the rail connectivity projects on Talcher to Paradip route	100-150	Q1 2022
3.1.2.2	Build coal handling and storage requirements at major & minor western ports handling coastal coal		
	- Feasibility study, TEFR and EOI to setup storage locations		Q2 2021
	- RFQ, RFP and LoI facilitation for project tendering		Q3 2021
	- Completion of construction works		Q1 2024

3.1 Coastal shipping acceleration | Activities and milestones

	Key activities	Total cost (Cr)	Target
3.1.3	Cement: Build silo infrastructure to improve coastal vessel turnaround time at targeted ports and drive additional cement coastal demand		
3.1.3.1	Conduct joint discussions with ports & shipping operators to move clinker (and steel) along two-way coastal circuits (such as TN-WB, OD-TN)	-	Q1 2021
3.1.3.2	Develop silo cement storage infrastructure at targeted major and minor ports for coastal shipping (such as Paradip/Dhamra/Gopalpur, Haldia, JNPT, New Mangalore) via PPP route	1200-1400	
	- Feasibility study, TEFR and EOI to identify potential customers		Q4 2021
	- RFQ, RFP finalization for project tendering		Q2 2022
	- Completion of construction works		Q2 2023
3.1.4	POL: Ensure infrastructure readiness to support POL coastal cargo increase projected by 2030		
3.1.4.1	Additional Liquid Cargo Handling Jetty with storage tank at SMP Kolkata	172	Q2 2023
3.1.4.2	New berth construction at Kamarajar	465	Q2 2024

3.1 Coastal shipping acceleration | Activities and milestones

	Key activities	Total cost (Cr)	Target
3.1.5	**Steel: Develop coastal circuits for steel and agglomeration centers to drive growth of steel coastal cargo**		
3.1.5.1	Conduct joint discussions with ports & shipping operators to move steel (& clinker) along two-way coastal circuits & push use of EXIM vessels	-	Q1 2021
3.1.5.2	Develop steel agglomeration centers via PPP route at select load ports (Paradip, Haldia) to enable aggregation of cargo at ports	80-100	Q1 2023
3.1.6	**Establish a Coastal and Inland Cargo Facilitation Center (CCFC) under MoPSW to drive demand for coast cargo through outreach and collaborative planning with select PSUs, trade associations, private players and Rail/ road ministries**		
3.1.6.1	Set-up a dedicated center with to drive coastal demand	-	Q2 2021
3.1.6.2	Drive coastal adoption of priority commodities by creating plan of actions (routes, target players & associated ports) and initial discussions with select PSUs and private shippers		Q3 2021
3.1.6.3	Implement identified action plans through detailed discussions with associated stakeholders (PSUs, private players, logistics service providers, rail & road ministries)		Q3 2022

3.2 Reducing Cost of Doing Business (CoDB) | Activities and milestones

	Key activities	Target
3.2.1	**Reduce Vessel Related Charges (VRCs) in line with market trends and capital requirements**	
3.2.1.1	Each port to conduct study on potential ways to reduce VRCs (both revenue and cost measures)	Q4, 2021
3.2.1.2	Discussions and finalization with MoPSW on initiatives to reduce VRC	Q1, 2022
3.2.1.3	Implementation of finalized revenue measures (e.g. non-core asset monetization, port led industrialization, etc.)	Q2, 2023
3.2.1.4	Implementation of finalized cost measures (e.g. berth mechanization, manpower redistribution, etc.)	Q2, 2023
3.2.2	**Increase use of Direct Port Delivery and Direct Port Entry at Indian ports to reduce the transit time and overall costs**	
3.2.2.1	Assess the current readiness of the port for a roll-out of DPD and DPE (storage area, number of trailers, RFID tags, etc.) and strengthen requisite infrastructure	Q3 2021
3.2.2.2	Roll out DPD and DPE in a phase-wise manner across major ports with defined adoption targets (e.g. 20% traffic in year 1)	Q2 2024

3.2 Port-led industrialization | Activities and milestones

	Key activities	Target
3.2.3	Ports to explore co-development models to drive port led industrialization through collaboration with various partners (e.g. partnership with state governments, central bodies – NICDC, etc.)1	
3.2.3.1	Conduct joint discussions with partners (e.g. state governments, state industrial bodies, central bodies – NICDC, private developers) for collaboration for industrialization	Q2 2021
3.2.3.2	Onboard co-developers/ partners for developing part land or initiate self-development (basis ports' strategy)	Q1 2022
3.2.4	Drive commodity-specific industrialization efforts by identifying targeted industries relevant to port location	
3.2.4.1	Evaluate and identify specific commodities/ industries to target basis port's location, cargo profile and growth expectations of various industries	Q4 2021
3.2.4.2	Drive discussions with state and central government to obtain sector-specific incentives (e.g. allot port land for a sector-specific parks)	Q2 2022

3.2 Port-led industrialization | Activities and milestones

	Key activities	Total cost (Cr)	Target
3.2.5	Develop plug and play infrastructure/value added services (using Maritime Development fund, cash reserves or with co-developer) and commercial flexible terms for attracting industries to port land		
3.2.5.1	Each port to conduct an assessment and finalize type of plug & play infrastructure to be provided for attracting target industries	800-1000	Q4 2021
3.2.5.2	Deploy upfront capital required for infrastructure development (use port's reserve, avail MDF, and/or partner with co-developer)		Q2 2022
3.2.5.3	Develop plug and play infrastructure (e.g., road connectivity, power-sewage-water connectivity) and value-added services at port land		Q2 2023
3.2.6	Establish centralized investor outreach and marketing cell under IPA/MoPSW to attract investment in port land		
3.2.6.1	Establish a specialized investor outreach and marketing cell by building Business Development & commercialization capabilities	-	Q1 2021
3.2.6.2	Define key objectives, functions (e.g. promote FDI investment for ports with progress monitoring mechanism, ensure handholding of investors till implementation) and targets for the cell (e.g. annual FDI increase targets)		Q1 2021
3.2.6.3	Drive consultations with the ports to finalize the operating model and engagement mechanism		Q2 2021

3.2 Port-led industrialization | Activities and milestones

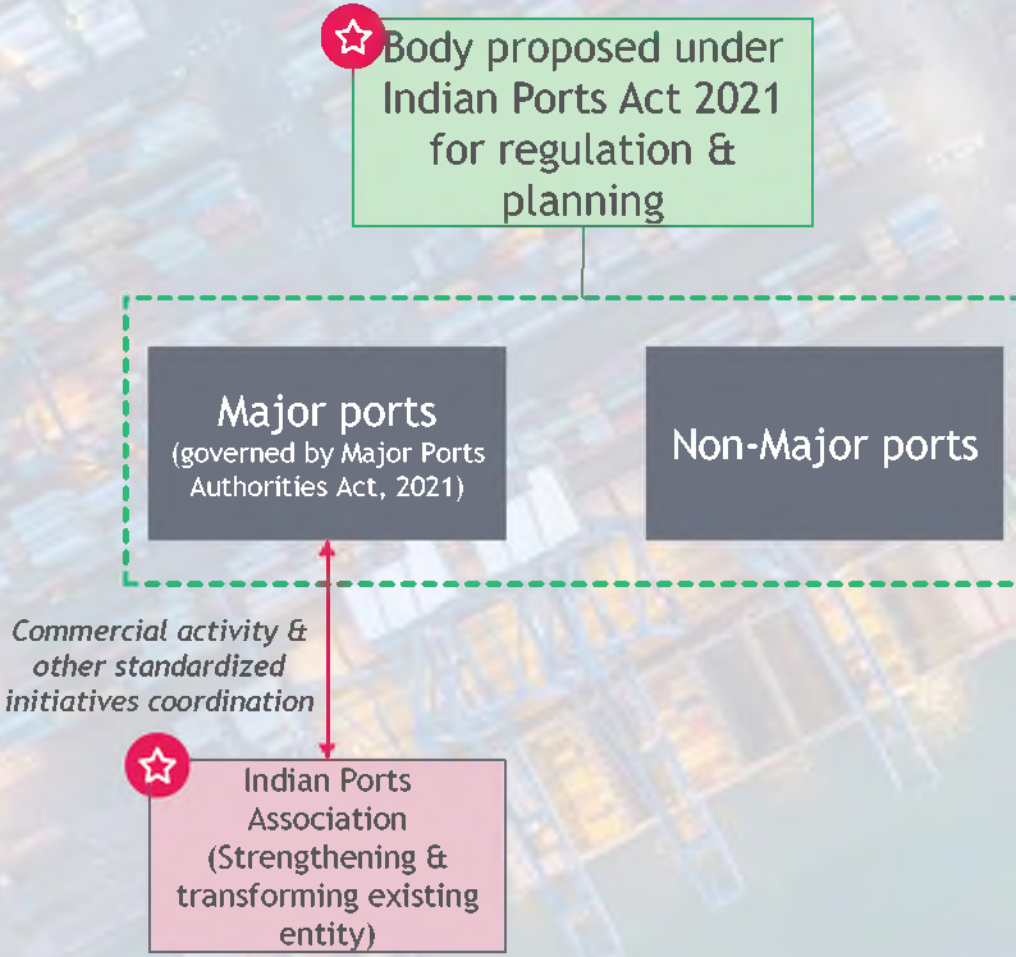
	Key activities	Total cost (Cr)	Target
3.2.7	Set up a one stop shop digital land portal to provide real-time information of land at ports to investors		
3.2.7.1	Onboard a technology partner to jointly identify key features of a digital land portal - such as queries regarding cargo, land availability status, master plans etc.		Q2 2021
3.2.7.2	Technology partner to finalize technology, create an implementation roadmap and drive implementation of the portal	-	Q3 2021
3.2.7.3	Establish mechanism for ports to directly update their details; and establish cadence for periodic/real-time updates to the land portal		Q1 2022

3.3 Port productivity and evacuation improvement | Activities and milestones

	Key activities	Total cost (Cr)	Target
3.3.1	Improve terminal performance for all container terminals with low QC productivity (less than 30 moves/hour) with measures such as -		
3.3.1.1	Deployment of pre berthing optimization software and process systems	2000-2500	Q3, 2021
3.3.1.2	Shift change time optimization to less than 10 minutes per instance		Q3, 2021
3.3.1.3	QC operator skill improvement through training and incentivization		Q2, 2022
3.3.1.4	Implement measures - dual cycling of QC and twin lift enablement		Q4, 2022
3.3.1.5	Upgrade or automate multiple degrees of freedom in crane operations		Q4, 2024
3.3.1.6	Improving yard and evacuation performance for container terminals		Q4, 2024
3.3.2	Improve berth productivity for dry bulk terminals through -		
3.3.2.1	Institutionalizing berth operating norms for each port basis best in class practices and on-ground factors in alignment with all maritime stakeholders	-	Q2, 2022
3.3.2.2	Implementing measures to reduce Non-working time at berth -		
	- Haul-in-haul out optimization for vessels	-	Q3, 2021
	- Institutionalizing hot seat changes for crane operators		Q2, 2022
	- Preventive/Predictive maintenance of stackers, conveyors, Wagon tipplers, etc.		Q2, 2023
3.4	Reduce other logistics related costs (e.g. container related costs)		
3.4.1	Conduct comprehensive study to identify issues related to container returns, availability	-	Q2, 2021
3.4.2	Assist in drafting policy to promote container manufacturing in India	-	Q3, 2021

Appendix – Ports institutional reforms

Priority interventions - Summary |



Institutional coverage

India Maritime Center

(Independent & professionally run organization on the lines of NASSCOM)

25+ Shipyards	40+ Shipping Lines	Non-Major ports	Major ports
Trade Assoc & bodies	200K+ Sea Farers	100+ marine institutes	Inland waterways
CHAs	Trans-porters Assoc.	Maritime Supplier ecosystem	Select financial institutions

Unifying platform for maritime sector stakeholders

Priority initiative under MIV 2030

Major Ports Authorities Act 2021

Constitution and composition of Board of Major Port Authority in place of the Board of Trustees

Enabling the Board to -

- Frame the scales of rates for assets usage and services available
- Use property, assets and funds as it may deem fit for the benefit of respective Major Port
- Create master plan for any development or infrastructure (established or proposed) within port limits

Constituting an Adjudicatory Board for adjudication of any disputes or claims among Major Ports, Public Private Partnership (PPP) concessionaires and captive users

6

Retaining the right of the Central Government

- To order survey or examination of the works of the Major Port Authority
- To take over the management of the Major Port Authority in specific circumstances of national interest
- To issue directions to every Major Port Authority on matters of policy

5

Empowering the Board of Major Port Authority to raise loans in any currency and issue securities for capital expenditure and working capital requirements

4

Removing Tariff Authority for Major Ports (TAMP) and the powers of tariff fixation to be given to Port Authorities based on the prevailing market conditions

Major Ports not able to leverage scale benefits across processes which can unlock value

- Lack of coordinated business development to attract foreign investors
- Limited technology usage and data exchange
- Lack of coordination in project planning
- Non-standardized processes across ports

International benchmark observed

Transnet National Port Authority (TNPA) managing planning, BD, advisory and coordination for 8 ports in South Africa

Way forward

Re-structuring of existing Indian Port Association (IPA) to drive nationally coordinated efforts for Major Ports

- Digital Centre of Excellence (DCoE)
- Investor outreach and Marketing cell
- Centralized team for large procurement

Indian Ports Act to provide oversight across Major & Non-Major ports

	Functions	Major Ports	Non-Major Ports
1	National Port Plan	Regulator[1]	
2	Development of new ports	Regulator / MoPSW	Regulator / SMB
3	Viability of existing ports	Regulator / MoPSW	Regulator / SMB
4	Facilitate competitions	Regulator	
5	Technological advancement		
6	Commercial utilization of coastline (development of ports, shipyards, repairs, lifeboats, crafts, etc.)	MoPSW/ DGS / Regulator	
7	Registration of ports	Regulator	Rules to comply with SOLAS, Safety of Navigation, MARPOL, etc.
8	Preparation of model terms of contract, quality of service	Regulator	
9	Uniform regulation of functioning and practices of scheduled ports		
10	Maintenance of cargo data, records, etc.		
11	Periodic review of concession agreement		
12	Complaints and dispute resolution (disputes b/w Major and Non-major ports, anti-competition, etc.)		

1. Regulator to be established under Indian Ports Act

Promoting PPP to attract investment

Current status

28% berths under PPP (including captive)

Limited PPP in services like dredging, towage, etc.

Issues to be resolved in existing PPP concessions

International benchmark

- Pilotage and towage under PPP
  - Sydney port: Operator to offer towage services to ship owners
- Port equipment (cranes, TTs, etc.) under Operate, Maintain & Transfer (OMT)

Way forward

Introduce new MCA:

- OMT model
- Operate & Maintain (O&M)

Maritime services

- PPP in Towage
- PPP in dredging

Strengthening existing MCA to improve investor ease

4.1-4.3 Major Port Authorities Act 2021 and Indian Port Bill | Activities and milestones

	Key activities	Target
4.1	Implement action items under Major Port Authorities Act 2021 to enhance governance of Major Ports	Q2 2021
4.2	Transform 'Indian Ports Association' to nationally coordinate efforts across Major Ports	
4.2.1	Detailed study to re-define responsibilities and organization structure for IPA	Q2 2021
4.2.2	Establish team with requisite capabilities, publish agenda & drive execution	Q3 2021
4.2.3	Drive nationally coordinated efforts along following key areas:	
	- Planning & technical advisory	Q1 2022
	- Projects and business development	
	- Implementation & centers of excellence	
	- Large procurement, HR & training for leadership	
4.3	Implement action items (e.g. setting up a regulatory body, national port planning, etc.) under Indian Ports Act 2021 to enhance governance of Indian ports	Q2 2021

4.4 PPP promotion | Activities and milestones

	Key activities	Target
4.4.1	Draft new Model Concession Agreements (OMT and O&M models) to promote PPP in 3-5 years depending on the current labor situation, cargo profile and market condition	
4.4.1.1	Appoint a Consultant for drafting new PPP models	Q2 2021
4.4.1.2	Prepare first draft of new MCA models	Q4 2021
4.4.1.3	Review and finalize draft MCA models with approvals from MoPSW	Q1 2022
4.4.1.4	Circulate MCA for cross ministerial consultation	Q2 2022
4.4.2	Revise existing Model Concession Agreement to improve contracting process & attract private investment (e.g. condition precedents, dispute resolution, min. performance standards, etc.)	
4.4.2.1	Constitute a committee to study required revisions in existing MCA models	Q1 2021
4.4.2.2	Committee to recommend final revisions / additional provisions in MCA	Q1 2021
4.4.2.3	Conduct joint discussions with all stakeholders and refine identified changes	Q2 2021
4.4.2.4	Draft a Cabinet note for identified revisions in existing MCA	Q2 2021
4.4.2.5	Facilitate inter-ministry consultations and incorporate feedback accordingly	Q2 2021
4.4.2.6	Final note to Cabinet for approval	Q3 2021

4.4 PPP promotion | Activities and milestones

	Key activities	Target
4.4.3	Implement measures to accelerate landlord model adoption across Major ports	
4.4.3.1	Develop a masterplan plan for every Major port and provide visibility of the same to the investors	Q4 2021
4.4.3.2	Identify berths and other opportunities and map them to various types of concession models	Q2 2022
4.4.4	Ensure adequate provisions in the Land Use Policy to support various collaboration models (central / state govt. , industrial bodies, etc.)	
4.4.4.1	Ensure provisions added are in line with Central Govt. initiatives e.g. National Investment and Manufacturing Zones (NIMZ) Policy	Q3 2021
4.4.4.2	Collaborate with central bodies and state governments for development of port land and extend benefits (industrial park benefits, tax benefits, etc.)	Q4 2022

Appendix – Green, safe and sustainable ports

Accelerating Renewable energy adoption

Current status

~118 MW Solar power capacity currently

0.3-6% power share of RE across ports

International benchmark

>60%

- RE share targets set by best-in-class benchmarks by 2025

200 MW

- Wind power generated at Port of Rotterdam

Way forward

Bundling requirements and leveraging agencies like EESL to provide solar energy

New technologies like floating PVs to be evaluated

Expand usage of wind energy through both on/offshore farms

Reducing air emissions

LNG bunkering

Establish LNG bunkering facilities at select Major ports basis market trends

Pilot ship to ship bunkering at select terminals

Providing Shore to ship electricity

SOP drafted for supply up to 150KW power

Phase-wise deployment

- Short-term: Smaller size tugs and ancillary crafts
- Long-term: Indian coastal and EXIM vessels

Multi-fuel strategy for vehicles

Switch to cleaner fuels

- CNG for short haul vehicles
- LNG for long haul vehicles
- Electricity for small vehicles

Future usage - Hydrogen / Methanol etc. to be evaluated

Infra (pumps, charging stations) via PPP

Dust emission management program

Sensor-based tracking mechanisms

Conduct air extraction & treatment via baghouses

Dust control methods - waterproof fabrics, water suppression, etc.

Other initiatives – Water, greening and solid waste management

Water

- Atomizers and mist canons for water conservation
- Sewage storage and treatment plants via PPP
- Oil sensitivity maps for fast & effective oil spill response operations
- Spill Control and Emergency Management Plan with Navy

Green Belt

- Increasing green belt coverage near material handling areas via corporate CSR funds
- Developing mangrove in areas beyond material handling under 33% greenbelt cover

Solid waste management

- Pilot to drive higher solid waste recycling
- Promoting re-use of waste material in civil construction and other purposes
- Promoting use of biodegradable waste for production of useful byproducts

Waste to Wealth

Current status

- Ports conducting regular soil investigation studies - 290 acres land reclamation done at VoCPT
- PPP model being explored for capital dredging
- Dredging Policy for Port underway

International benchmark

- Australia:
  - Environmental Code of Practice for Dredged Material Management
- Port of Maryland:
  - Dredged material being used for restoration of shorelines / islands

Way forward

- Collaborating with dredging partners (DCI) to build port wise strategy
- Conducting pilots at select ports for new use cases

Zero Accident vision for Indian ports

Current status

- Lack of exhaustive training for workers
- Sub-optimal incident response systems
- Gaps existing in facility designs leading to potential safety incidents

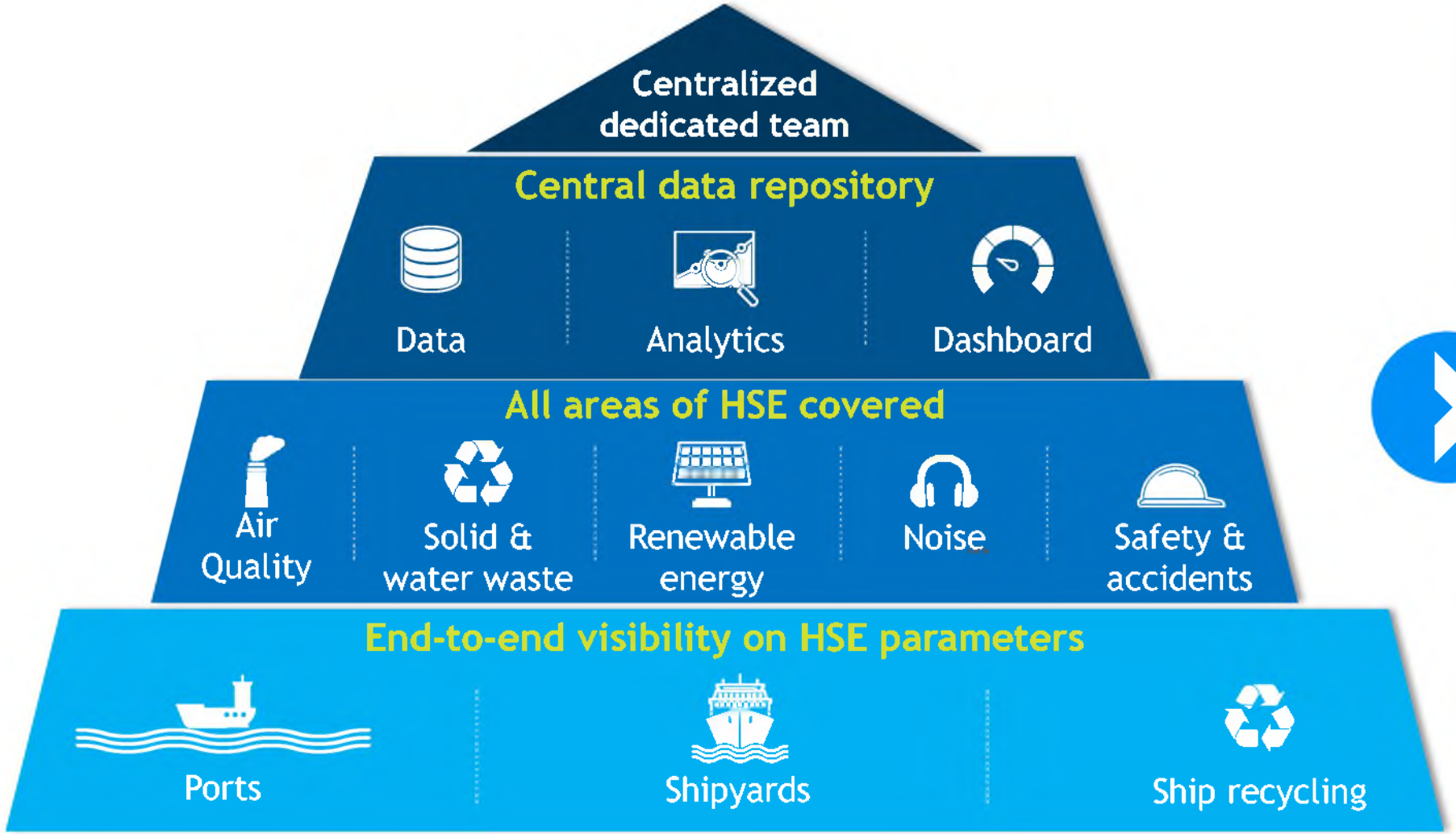
International benchmark

- German seaports:
  - Exhaustive training programs
- Port of Hamburg:
  - Process reengineering to reduce physical risks
- Port of Singapore:
  - Cultural Excellence program to drive employee

Way forward

- Periodic risk assessment basis MTMSA
- Digital system for incident management
- Induction training with refresher every 3-5 years
- Process reengineering for material handling

Centralized monitoring of environmental parameters in real time in future



Monitoring and analyzing trends & causes

Tracking areas of HSE (energy, safety, etc.)

Ensuring E2E visibility & transparency

5.1 Renewable energy | Activities and milestones

	Key activities	Target
5.1	Increase usage of renewable energy to >60% of total energy by 2030 across Indian ports with primary focus on solar and wind	
5.1.1	Create a central team via bodies such as EESL, NIWE etc. to conduct an energy assessment for Solar and Wind energy opportunities across Major Ports	Q2 2021
5.1.2	Drive central pooling of port-wise requirements and execute procurement for public/private provider	Q4 2021
5.1.3	Finalizing procurement of provider to provide renewable energy as per assessment across Major Ports	Q2 2022
5.1.4	Phase 1- Increase share of renewable energy at ports to 30%	Q4 2024
5.1.5	Phase 2- Increase share of renewable energy at ports to 50%	Q2 2027
5.1.6	Phase 3- Increase share of renewable energy at ports to >60%	Q2 2030

5.2 Air quality improvement | Activities and milestones

	Key activities	Total cost (Cr)	Target
5.2.1	Drive adoption of multi-clean fuels (Electric, CNG, LNG) for vehicles in port ecosystem		
5.2.1.1	Conduct pilot at select viable ports and incorporate learning from pilot	2-4	Q4 2021
5.2.1.2	Draft a policy and clear roadmap for adoption of multi-clean fuel across ports	140-160	Q4 2022
5.2.1.3	Creation of infrastructure at each port (e.g. LNG station, CNG pumps, EV charging stations, etc.)		Q4 2025
5.2.1.4	Create non-monetary incentives for trade to shift to alternate fuels (e.g. priority in queue, fast track lane, etc.)		Q4 2025
5.2.1.5	Implement clean fuel vehicle program at viable ports to achieve targets		Q4 2030
5.2.2	Provide shore to ship electricity to vessels (tug-boats, coastal vessels and EXIM trade vessels) in a 3-phase targeted manner		
5.2.2.1	Onboard intermediary and drive commercialization for providing shore to ship electricity to vessels	-	Q4 2023
5.2.2.2	Phase 1 - Prioritize and provide shore to ship power for port stationed vessels & tug-boats	2-5	Q4 2025
5.2.2.3	Phase 2 - Prioritize and provide shore to ship power for vessels deployed for coastal navigation	160-180	Q4 2030

5.2 Air quality improvement | Activities and milestones

	Key activities	Total cost (Cr)	Target
5.2.3	Establishing LNG bunkering stations at select ports in line with fuel adoption trends by shipping liners		
5.2.3.1	Conduct detailed market assessment and identify ports strategically advantaged to provide LNG bunkering facilities	-	Q4 2021
5.2.3.2	Accelerate development of LNG bunkering facilities (already in pipeline)		Q4, 2024
5.2.3.3	Establish LNG bunkering stations on pilot basis in prioritized select LNG terminal ports for ship-to-ship bunkering	60-80	Q4 2028

5.3 Water, Green cover and SWM | Activities and milestones

	Key activities	Target
5.3.1	Build infrastructure (sewage treatment plant, hull cleaning)) for sewage waste-water and oily waste treatment and develop oil spill response plans	
5.3.1.1	Phase 1	
	- Tendering and award of projects under PPP mode	Q2 2022
	- Collaborate with Navy to develop oil-spill response plans	Q4 2022
	- Completion of construction and commissioning of sewage plants	Q4 2025
5.3.2	Employ water conservation techniques at select Ports by deploying atomizers and mist canons on pilot basis and expand to other ports post incorporation of learnings from pilot	Q4 2025

5.3 Water, Green cover and SWM | Activities and milestones

	Key activities	Total cost (Cr)	Target
5.3.3	Strengthen solid waste & plastic waste management program in alignment with Swachh Bharat Mission & promote waste to wealth		
5.3.3.1	Conduct active recycling of waste material & re-usage of recycled material	100-120	
	- Segregation of solid waste, plastic and biodegradable materials		Q4 2022
	- Re-use of bio-degradable / plastic in civil construction and other purposes		Q4 2023
	- Promote use of biodegradable waste for production of useful byproduct for public and environmental use		Q4 2025
5.3.4	Develop green belt (including mangrove, mudflats) cover at ports with participation of corporates under CSR program		
5.3.4.1	Develop adequate green belt near material handling area with support of CSR funds of corporates and increase coverage	40-50	Q2 2022
5.3.4.2	Develop green belt and mangrove in other available land (area beyond material handling) for ports with inadequate land near the material handling area; MoPSW to drive discussion with MoEFCC to exempt active mudflats within CRZ notification framework 2011/2019	200-250	Q4 2022
5.3.4.3	Provision for compensatory mangrove plantations to be explored with MoEFCC	-	Q4 2022

5.4 Sustainable dredging | Activities and milestones

	Key activities	Total cost (Cr)	Target
5.4	Employ sustainable dredging disposal mechanism and promote waste to wealth		
5.4.1	Conduct study for identifying innovative methods for recycling / reusage of the dredged material	12-15	Q4 2021
5.4.2	Collaborate with dredging partners to identify and build port wise strategy & roadmap for recycling and reusage of dredged material	-	Q2 2022
5.4.3	Land Reclamation and creation of bunds across ports post evaluation	1000-1200	Q2 2023
5.4.4	Implementation of identified methods for 1 port on pilot basis		Q4 2024
5.4.5	Incorporating learnings and expand to other ports in phases -		
	- Phase 1: Extend implementation coverage to min. 4 ports		Q4,2026
	- Phase 2: Extend implementation coverage to min. 8 ports		Q4,2027
	- Phase 3: Extend implementation coverage to all ports		Q4 2028

5.5 Safety at Ports | Activities and milestones

	Key activities	Target
5.5.1	**Strengthen safety at ports to ensure 'Zero accidents' at Indian Ports**	
5.5.1.1	Define a risk assessment framework basis MTMSA guidelines	Q2 2021
5.5.1.2	Conduct port-wise risk assessment to ensure better management of end-to-end handle hazardous material	Q4 2021
5.5.1.3	Finalize port-wise strategy to address identified potential safety risks	Q4 2021
5.5.1.4	Institutionalize process to implement safety measures (e.g. Swatchh Sagar portal, annual awards, recognition, etc.) on sustainable basis	Q2 2022
5.5.1.5	Digitize and mandate safety inspection and active incident reporting for all workers to driver stringent incident reporting	Q2 2022
5.5.2	**Strengthen training program for port workers through a 2-pronged approach to reach 100% staff trained on areas specific to their job**	
5.5.2.1	Define a comprehensive safety training program for port workers	Q3 2021
5.5.2.2	Conduct induction training of port workers on safety precautions specific to their area of operations	Q4 2021
5.5.2.3	Recurring training refresher (every 3-5 years) for each worker	Q2 2022
5.5.2.4	Incorporate learnings from incident assessment and mock drills & establish regional training CoE's under MoPSW to streamline incidence response	Q1 2023

5.5 Safety at Ports | Activities and milestones

	Key activities	Target
5.5.3	Conduct process reengineering by redesigning material handling operation at Indian Ports to reduce physical hazards at Indian Ports	
5.5.3.1	Conduct port specific traffic study & identify mitigation measures to ensure safety	Q3 2021
5.5.3.2	Finalize port-wise strategy to address identified potential physical hazards	Q1 2022
5.5.3.3	Implement identified mitigation measures across ports (e.g. setup of one-way vehicle passageways, re-design of materials handling operations, etc.)	Q2 2022
5.5.3.4	Institutionalize process to drive continuous improvement and ensure minimal work-related hazards on sustainable basis	Q2 2023

5.6 Centralized Monitoring | Activities and milestones

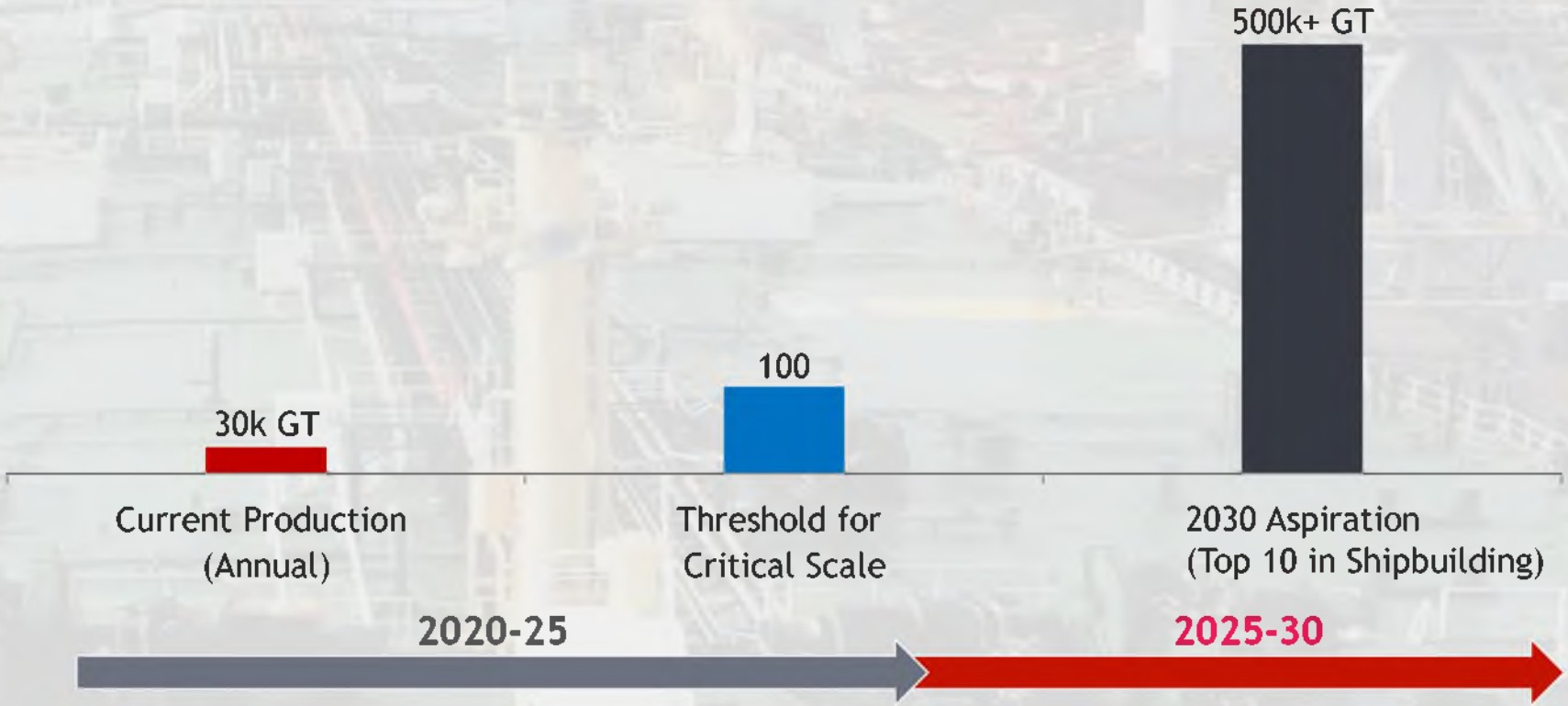
	Key activities	Total cost (Cr)	Target
5.6	Build a real time monitoring program to track key HSE KPIs across ports, shipyards, and ship recycling areas		
5.6.1	Create a centralized and specialized team to drive E2E monitoring of ports, shipyards, and ship recycling areas	-	Q2 2021
5.6.2	Central team to define ambition and reporting framework for HSE parameters along with infrastructure to be installed		Q3 2021
5.6.3	Ports to conduct HSE assessment, subscribe to standard global target setting programs (e.g. SBTi) and ensure compliance to certifications & international conventions (e.g. ISO 14001, OHSAS 18001, MARPOL 73/78)	15-20	Q3 2021
5.6.4	Drive long-term process institutionalization at ports through deployment of sensors (e.g. for tracking air quality, weather, etc.) and systems to capture data (leverage existing mechanisms as applicable)		Q2 2022

Appendix – Ship building

Ship building vision 2030 : Make in India, Make for World

3 focus areas to rebuild the threshold scale by 2025 and initiate a 'Virtuous Cycle'

1. Demand Activation
2. Ecosystem Development
3. Fiscal Support



- Support to be provided through **domestic demand** (both cargo and non-cargo)
- Vessels that can be built **readily** and at **international prices** in India

- Utilize **supply chain ecosystem** and scale to cater **domestic and export market**
- No additional support required

"Make in India" acceleration for Ship building industry

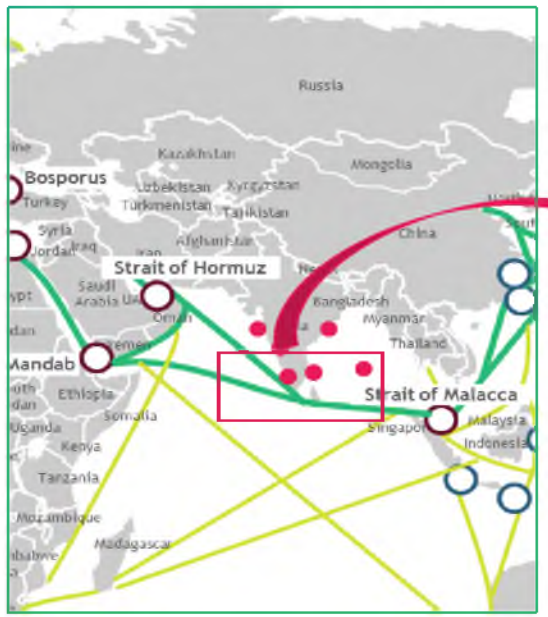
	< 10 years			Suggested Basic Customs Duties for Used Vessels		
	Type of vessel	*GT*	*Timeline*	< 10 years	10-25 years	25+ years
	Port Crafts, Tugs	All	2022	50%	100%	Not allowed
	Small dredgers	Up to 5K	2022	50%	100%	Not allowed
	Offshore vessel	All	2022	50%	100%	100%
	Coastal cargo	Up to 10K	2025	25%	50%	100%
	Inland cargo	Up to 2K	2025*		Not allowed	

500+ Vessels

50,000+ Employment

Ship repair : India has significant ship repair capabilities; critical to prioritize Indian and foreign flag vessels plying in India

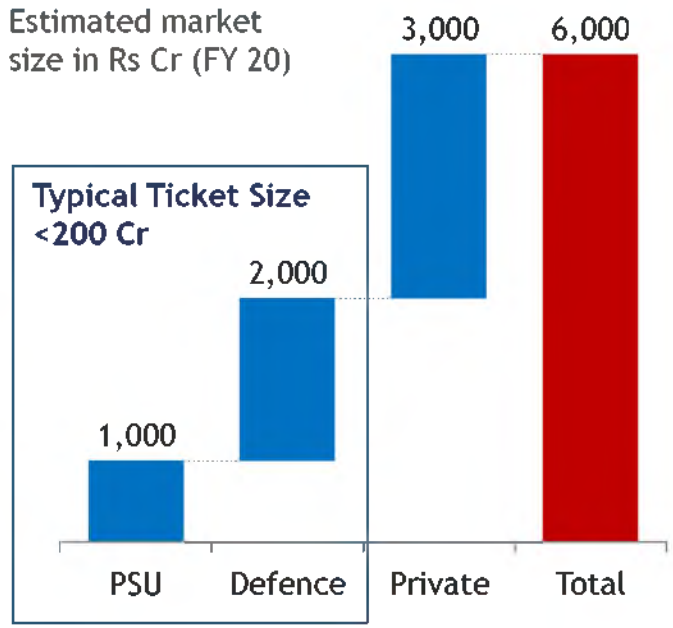
India is placed well on global trade routes...



~30,000 ships make call on Indian coast currently and require maintenance every 6 - 12 months

...with several yards offering ship repair services...

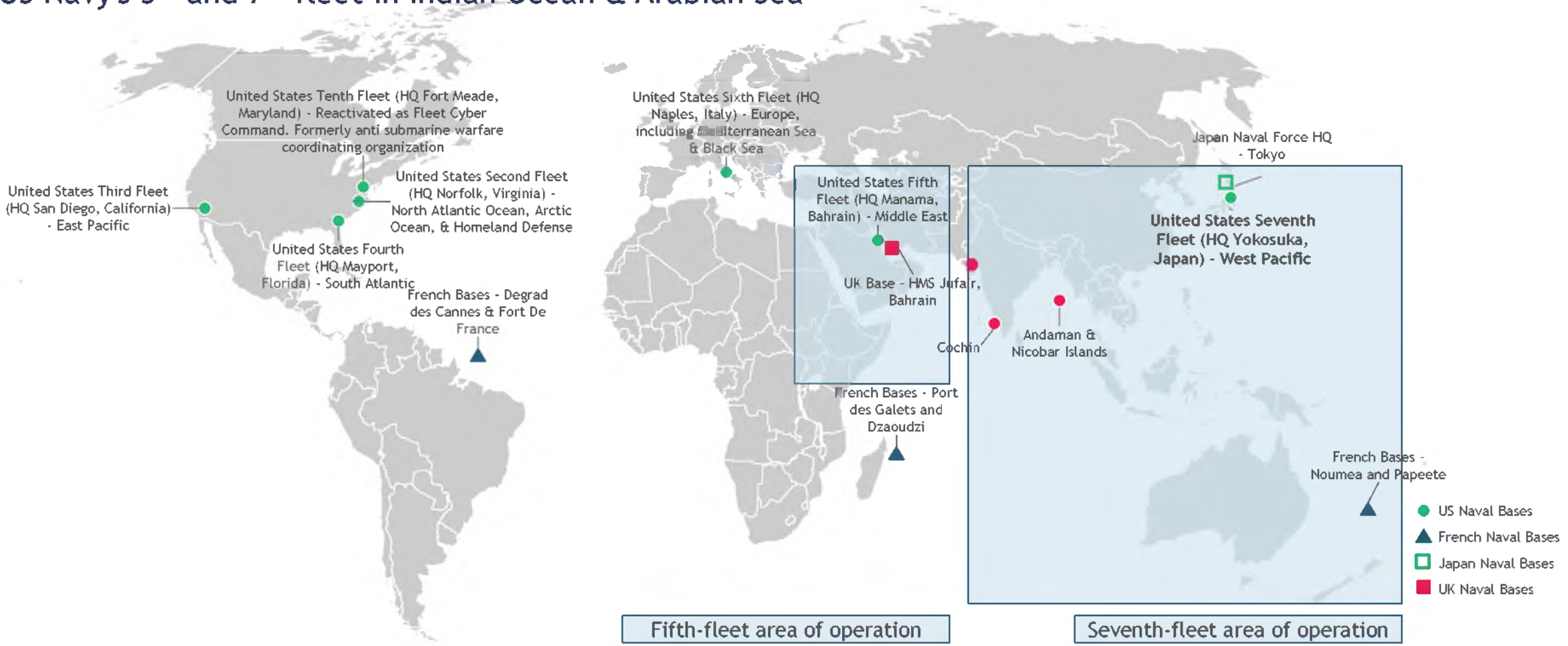
...and significant domestic market to focus



India to sustain focus on operational efficiency and augment capacity

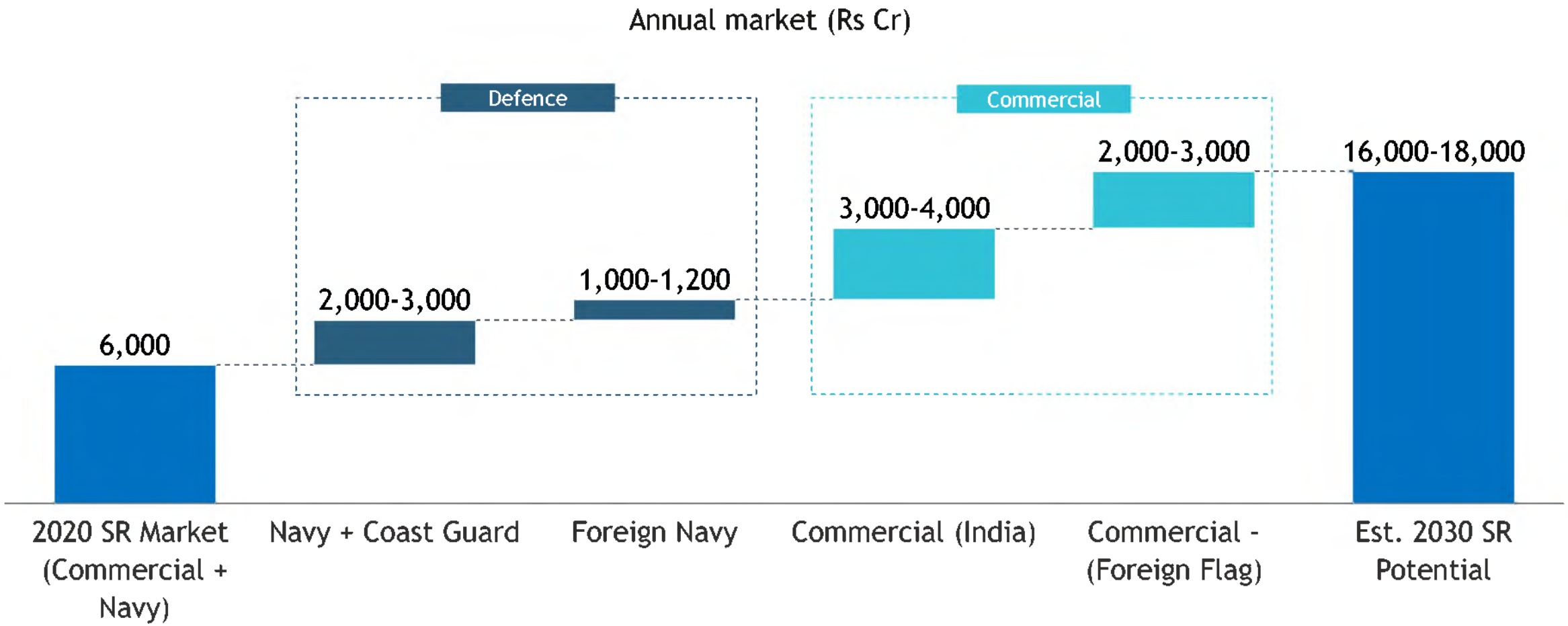
Ship repair : Additionally, strategic opportunity to offer repair services to Indian Navy and the allies

US Navy's 5th and 7th fleet in Indian Ocean & Arabian Sea



India poised well to collaborate with US Navy and the allies in current geo-political scenario

Ship repair vision 2030 : Add Rs 10,000 Cr+ direct economic activity and generate 50,000+ jobs



Note: Market is estimated basis expected Ship Repair spend by type of vessels, and the Indian vessel fleet in 2014 and 2025
Source: Drewry Maritime, Clarkson, IMO, IWAI, Indiastat, BCG analysis

3 interventions required to promote domestic Ship Repair facilities

1

'Atmanirbhar Bharat' - Repair of vessels under INR 200 Cr. through local shipyards

2

RoFR rules strict implementation

3

Fiscal interventions :

- GST @ 5% - parity with airlines MRO
- Waivers for ship repair specific free trade 'depots/units'

4-5K Cr
(Additional market potential)

30-35K
(Additional annual employment potential)

Short term impact
(2025)

Ship recycling vision 2030 : Become #1 recycling destination

Promoting ship recycling on West coast

Other initiatives to grow ship recycling

- Infrastructure development at Alang
- Enhancing usability and price realization for recycled steel from ships
- Coordinated promotion of ship recycling industry

6.1 Ship building | Activities and milestones

Key activities	Target
6.1 Channelize domestic demand for Indian Shipbuilding by leveraging PPP (Aatmanirbhar Bharat)	
6.1.1 Short term: Tugs & port crafts	
- Define rules/ SOPs for indigenizing Tugs & port craft construction	Q4, 2020
- Freeze India specific requirements	Q4, 2020
- Finalize & publish standard designs for Tugs	Q2, 2021
- Implement long term charter agreement (7 yrs+) for major ports	Q2, 2021
6.1.2 Short term: Small & medium dredgers	
- Define rules/ SOPs for indigenizing dredger construction	Q1, 2021
- Freeze India specific dredger design requirements	Q3, 2021
- Implement long term charter agreement for ports & IWAI	Q3, 2021
6.1.3 Short term: Offshore, Research & SSLNG vessels	
- Define rules/SOPs for indigenizing offshore/research vessel construction	Q3, 2021
- Identify & publish India specific requirements that are to be pursued under Atmanirbhar	Q4, 2021
- Implement long term charter agreement (7 yrs+) for Govt bodies & PSUs	Q1, 2022
6.1.4 Publish staggered customs duty for used Foreign vessel import	
- Non-cargo vessels (Tugs & small dredgers)	Q1, 2022
- Cargo vessels (small coastal and inland)	Q1, 2022

6.2-6.3 Ship Repair | Activities and milestones

	Key activities	Target
6.2	**Channelize domestic demand for Indian Ship repair by leveraging PPP (Aatmanirbhar Bharat)**	
6.2.1	Short term:	
	- Issue compliance guidelines to operationalize Aatmanirbhar Bharat	Q4, 2020
	- Extension of prevailing RoFR upto 2030	Q1, 2021
6.2.2	Mid term:	
	- Extend Aatmanirbhar provisions to all vessels availing cargo ROFR through PSUs and Government entities	Q4, 2022
	- Extend Aatmanirbhar provisions to all vessels with long term time charters (7+ Yrs) from PSUs and Government entities	Q4, 2022
	- Revise GST for Ship Repair to 5% for India flag vessels and nil for foreign flags	Q2, 2022
	- Rationalize all input and direct input service GST to 5%	Q2, 2022
6.3	**Enhance ship repair capability in India**	
6.3.1	- Develop two ship repair clusters (one each on the East & West coast) with focus on ancillary industry development	Q4, 2022
6.3.2	- Specify revisions in FTWZ act for Depots/ Warehouses for Ship Repair	Q1, 2022
6.3.3	- Deploy 2 used floating drydocks through PSU shipyards	Q4, 2022

6.4-6.5 Ship Recycling and Design-as-a-Service | Activities and milestones

Key activities		Target
6.4	**Reduce costs of designing by providing 'design as service'**	
6.4.1	IRS to shortlist a design software	Q1, 2021
6.4.2	Secure adequate licenses for overall Indian ecosystem	Q1, 2021
6.4.3	Establish process to lease the design software for the specified project duration to Indian shipyards and design firms (Principle - no profit, no loss)	Q2, 2021
6.5	**Strengthen Ship recycling ecosystem in India**	
6.5.1	Modify BIS guidelines to reflect chemistry-based pricing of recycled steel	Q1, 2021
6.5.2	Develop ISO17025 testing lab and a ship recycle park at Alang	Q4, 2021

Appendix – Shipping policy

Merchant Shipping Bill | Key changes (1/2)

Registration of vessels

- Relaxation - nationality norms
- Relaxation - ownership norms
- Registration of Ships to that of Vessels
- Indian controlled tonnage scheme

Effective Regulation

- Confiscation of stateless vessels
- Resolution of distressed vessels
- Regulation of training
- Regulation of recruitment agencies

Ease of Doing Business (EoDB)

- Remove license requirement for Indian ships
- Remove approval requirement for Seafarers

Seafarer Welfare

- Provision of gratuity
- Provision of contributory person
- Continued wages in captivity

Merchant Shipping Bill | Key changes (2/2)

Registration of vessels

- Extension of wreck to territorial waters convention
- Bunker oil pollution convention
- Intervention convention
- London Anti-dump convention
- Ship ballast water convention
- Air pollution MARPOL convention

Port related conventions

- International Ships and Port Security (ISPS) code
- International Safety Management (ISM) code
- Facilitation convention
- Maritime labor convention

Fishing vessels related conventions

- Cape Town agreement
- STCW-F Convention
- ILO work on Fishing convention

Other initiatives underway

Aid to Navigation Bill 2020

Promotion of tonnage under Indian flag & making Indian ships more competitive

Right of First Refusal (RoFR) to Indian Flag Vessels

Indian built, flagged & owned

- Including foreign vessels paying 25% contract money to Indian shipyard and 50% of hull fabrication completed

Foreign built, Indian flagged and owned

Indian built, foreign flagged and owned

Subsidy Support to Indian Merchant Ships

1600 Cr.

Subsidy support in next 5 years

2x

POL, LPG, Coal, etc. handled on Indian ships in 5 years

Maritime Development Fund (MDF) for financial support across maritime sectors

Cabinet note for creation of 'Maritime Development Fund' underway

Maritime Development Fund for sector's financial needs

Ship owners
Limited financing from commercial banks with high rate of interest and low tenure

Ship building/repair
Lack of long-term funds at competitive rates in tune with the industry needs

Coastal shipping
High capex cost for buying vessels for chartering

Inland waterways
Capital required for fairway and terminal development

Cruise development
High capital requirement for development of cruise terminals

Port development
Large capital requirement for port modernization

Maritime cluster in India is complex with many sub-sectors

25+ Shipyards	40+ Shipping Lines	200+ Notified Ports	100+ marine institutes
Trade Assoc.	200K+ Sea Farers	CHAs	Trade bodies
CFSs	Trans-porters Assoc.	Maritime Supplier ecosystem	Regulatory bodies
Select financial institutions		Select environment research institutes	

Global leaders have synergies across sub-sectors through unified maritime body

Japan Maritime Center

Japan maritime body

MAC Net in Korea

Significant impact across 3 areas

- **Strong and unified representation**
- **Thought leadership** for overall ecosystem
- Consistent inputs for **policy making**

Creation of a unified 'India Maritime Centre'

Creation of a unified 'India Maritime Centre' to drive synergies (2/2)

Mandate

Local mandate

- Maritime competitiveness via synchronized domestic sub-sectors
- Advise on policy framework

Global Mandate

- Enhance global visibility

Sector coverage

Cover overall ecosystem through specific initiatives across:

- Cruise sector
- Shipyards
- Ship owners
- Ports
- Regulatory framework etc.

Operating model

Independent and professionally managed Board

Experts and advisors as part of working committees

Secretariat for day to day operations

Financial model

Reliance on public / private grants for initial 2-3 years

Self sustenance over medium term through research advisory, project management services etc.

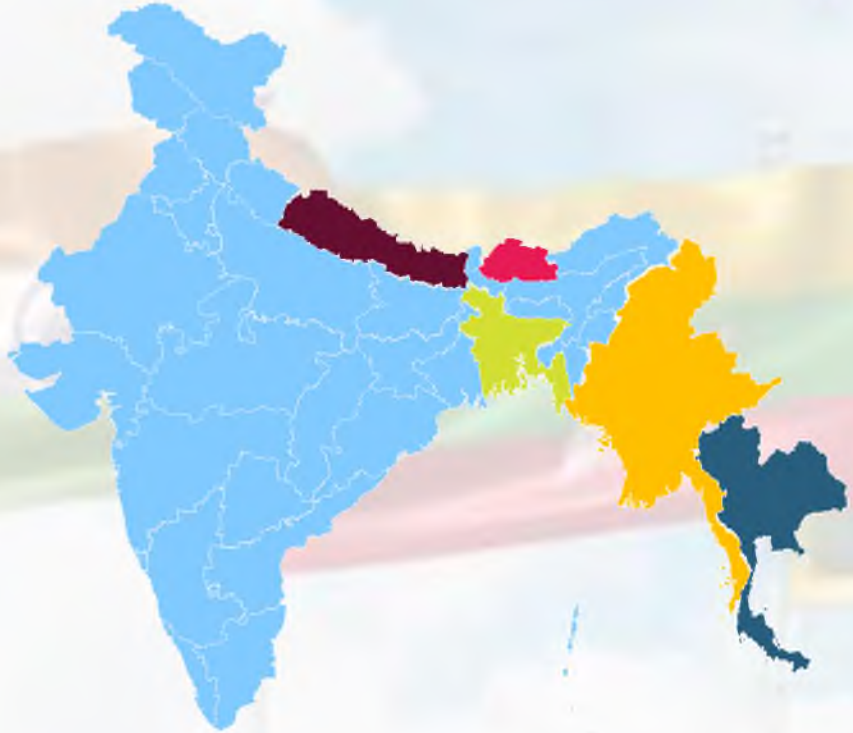
7.1-7.4 Shipping policy & Institutional framework| Activities and milestones

	Key activities	Total cost (Cr)	Target
7.1	Implement specific changes in key legislation to address issues in the sector - Merchant Shipping Bill		
7.1.1	Draft Merchant Shipping Bill incorporating key reform areas such as Vessel registration and regulation, Seafarer welfare and training, Abandonment and emergency fund, Fishing vessels, and International conventions & obligations	4	Q2 2021
7.1.2	Public comments, cabinet approval & introduction in parliament	-	Q3 2021
7.2	Promote tonnage under Indian flag (AtmaNirbhar Bharat) by 2022		Q4, 2022
7.2.1	Revise RoFR Guidelines and online system	-	Q4 2020
7.2.2	Subsidy support for Indian Flag with MoF consent		Q2 2021
7.3	Set-up Maritime Development Fund (MDF) for low-cost, long-term financing support to maritime sector stakeholders	2500	Q2, 2021
7.4	Design & institutionalize Indian Maritime Centre for India:		Q4, 2021
7.4.1	Integrate maritime ecosystem	20-30	Q1, 2022
7.4.2	Improve participation at Global forum like IMO		Q4, 2021

Appendix – Global stature

BIMSTEC | Increasing India's maritime influence

7 nations part of BIMSTEC with India being the biggest in terms of GDP

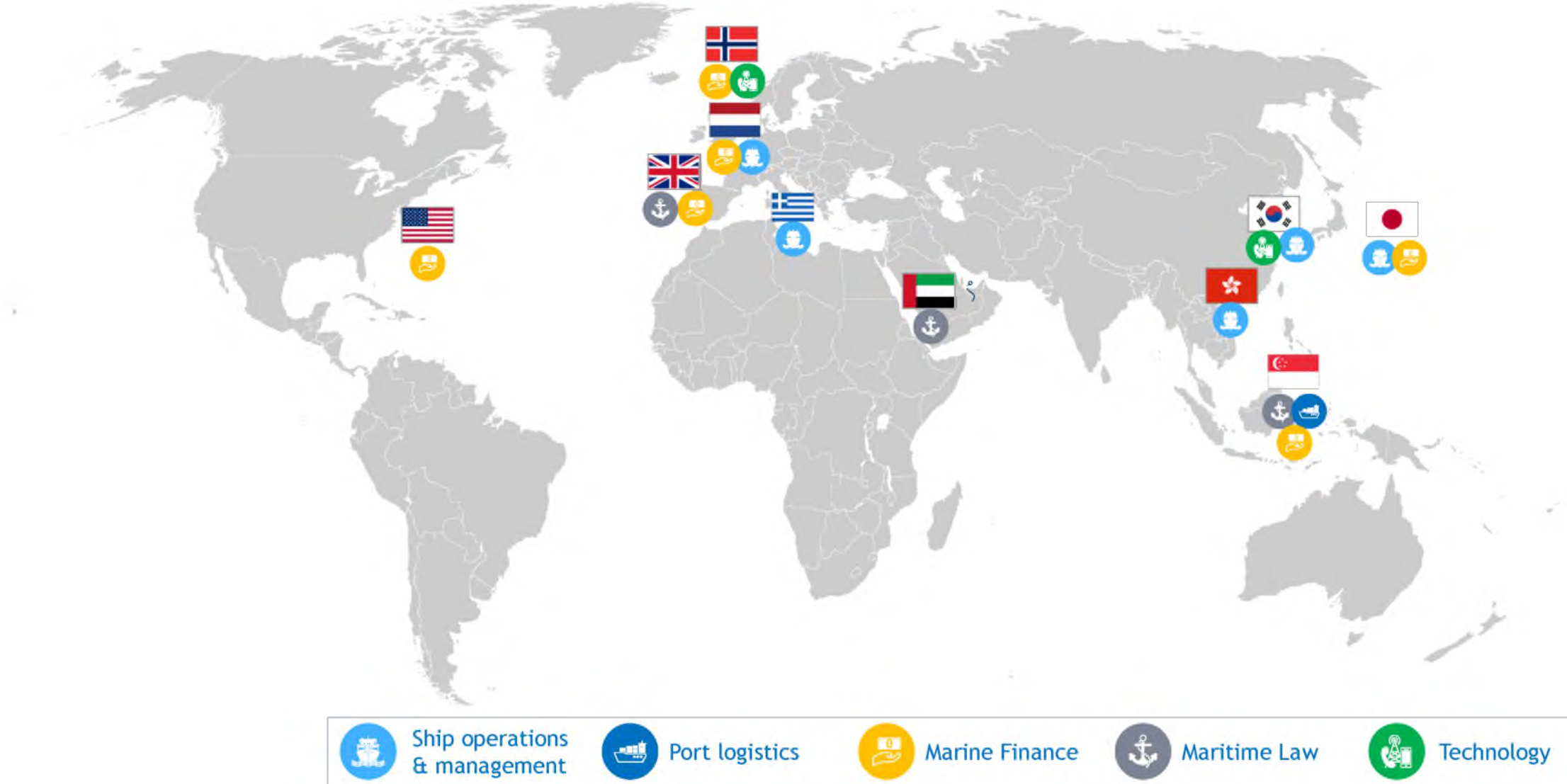


India is the biggest contributors to GDP amongst BIMSTEC countries accounting for 75%

Enhance co-operation among BIMSTEC nations to increase trade for economic & strategic benefits

1. Creation of BIMSTEC Centre in India
2. Infrastructure development to enhance regional connectivity
3. Capability development and other support (e.g. Admin support to Nepal, LRIT support to Myanmar)

Extending partnerships with leading maritime nations / ports

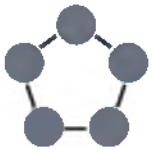


Chabahar port | INSTC operationalization

Strategic location with potential of being the largest trade hub in Asia, connecting India to Afghanistan and central Asian countries

Key steps to operationalize Chabahar port

Collaborate with MEA and IPGL to resolve banking difficulties of trade with US treasury



Include warehousing and transportation to become multi-modal operator at Chabahar port

Key steps to develop similar footholds in other strategic locations

Development of Sabang port in Indonesia

Develop East coast terminal at Colombo along with Japan

8.1 Maritime co-operation & trade across BIMSTEC | Activities and milestones

	Key activities	Total cost (Cr)	Target
8.1.1	Setting up of a regional BIMSTEC centre in India to cement place as an informal leader		
8.1.1.1	Coordinate with BIMSTEC organization and with different ministries MoPSW, MEA, MOF, Trade and commerce, Tourism etc.	-	Q4, 2021
8.1.1.2	Focus on issues and development of maritime activities in BIMSTEC region specifically	-	Q4, 2021
8.1.1.3	Centre to act as a promotion house to collaborate with foreign powers such as Japan, Aus., EU, etc.	20	Q4, 2021
8.1.1.4	Engage with trade associations/ councils focusing on promotion of trade in BIMSTEC region - India-BIMSTEC promotion council by ASSOCHAM	0.5	Q4, 2021
8.1.2	Enhance investment in infrastructure development to improve regional connectivity to facilitate trade		
8.1.2.1	Assist development of dry ports/ ICDs in landlocked nations Nepal and Bhutan	160	Q1, 2025
8.1.2.2	Explore direct sailings from Indian ports	-	Q1, 2024

8.1 Maritime co-operation & trade across BIMSTEC | Activities and milestones

	Key activities	Total cost (Cr)	Target
8.1.3	**Mutual Agreements to facilitate intra-BIMSTEC trade**		
8.1.3.1	Pursue implementation of BIMSTEC coastal shipping agreement		Q4, 2021
8.1.3.2	Operationalization of BIMSTEC master plan on transport connectivity	-	Q4, 2023
8.1.3.3	Promote indigenous shipping industry and associated infrastructure		Q1, 2024
8.1.4	**Develop capabilities across BIMSTEC nations**		
8.1.4.1	Provide training and skill development through maritime institutes by attracting BIMSTEC talent	10	Q1, 2025
8.1.4.2	Increase interaction between Indian and BIMSTEC ports for adoption of best port practices, intermodal connectivity, SOPs etc.	-	Q1, 2024
8.1.4.3	SOPs for seamless crew exchange at BIMSTEC ports	-	Q1, 2024

8.2 & 8.5 Partnerships with Maritime nations | Activities and milestones

	Key activities	Total cost (Cr)	Target
8.2	Devise country-wise & port-wise collaboration strategies across 5 domains (Maritime Law, Maritime finance, Ship operations and Management, port logistics and technology) with 9 countries (South Korea, United Kingdom, Netherlands, Norway, etc)		
8.2.1	Phase 1: develop collaborations with Norway, Hong Kong, Singapore, United Kingdom and USA across the domains of Maritime Law, Maritime Finance and Technology	-	Q4, 2023
8.2.2	Phase 2: Develop collaborations with South Korea, Singapore, Netherlands across the domains of Ship operations and Port logistics		Q4, 2025
8.5	Make Chabahar port fully operational to drive geo-strategic advantages and establish international North - South Transport corridor to facilitate cargo logistics from CIS Countries	-	Q4, 2022 (short term) 2030 (Long term)

Appendix – Cruise

Enhancement of cruise terminal infrastructure

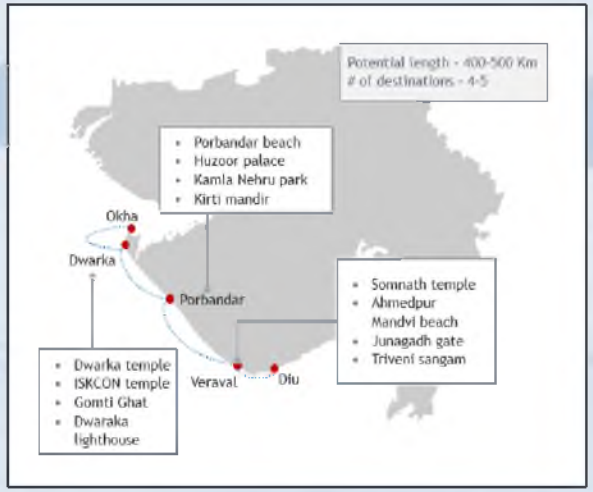
Total Passengers

2020	2030
468	~1550

Development of theme based coastal destinations & circuits

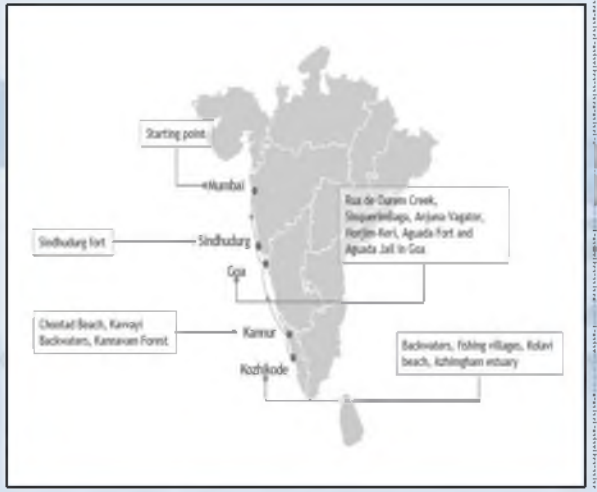
Gujarat – Pilgrimage tours

- Potential to tap market of ~4 million tourists across Dwarka, Somnath, Porbandar, Diu, etc.



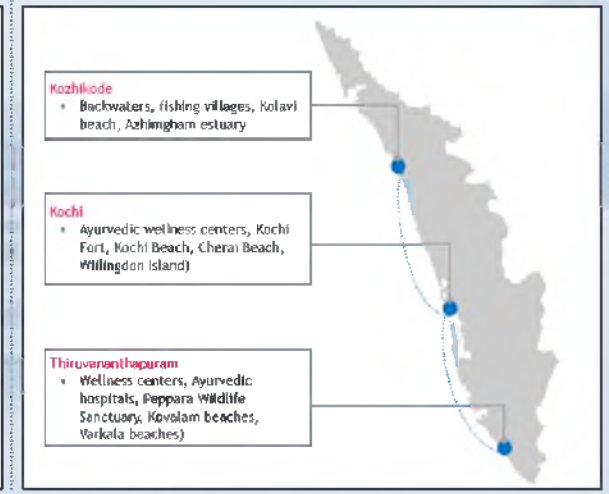
West Coast – Cultural and scenic tours

- Leveraging attractions like Sindhudurg fort and Kerala backwaters to create short-haul cruises



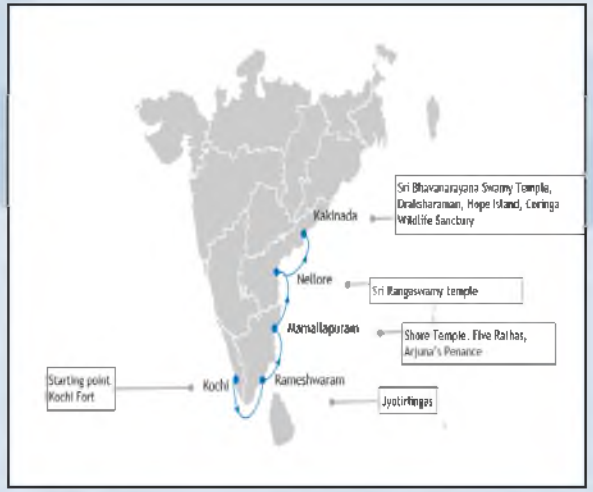
Kerala – High end wellness Ayurvedic tours

- Existing ports and cultural heritage to be harnessed for Ayurvedic wellness & scenic tourism



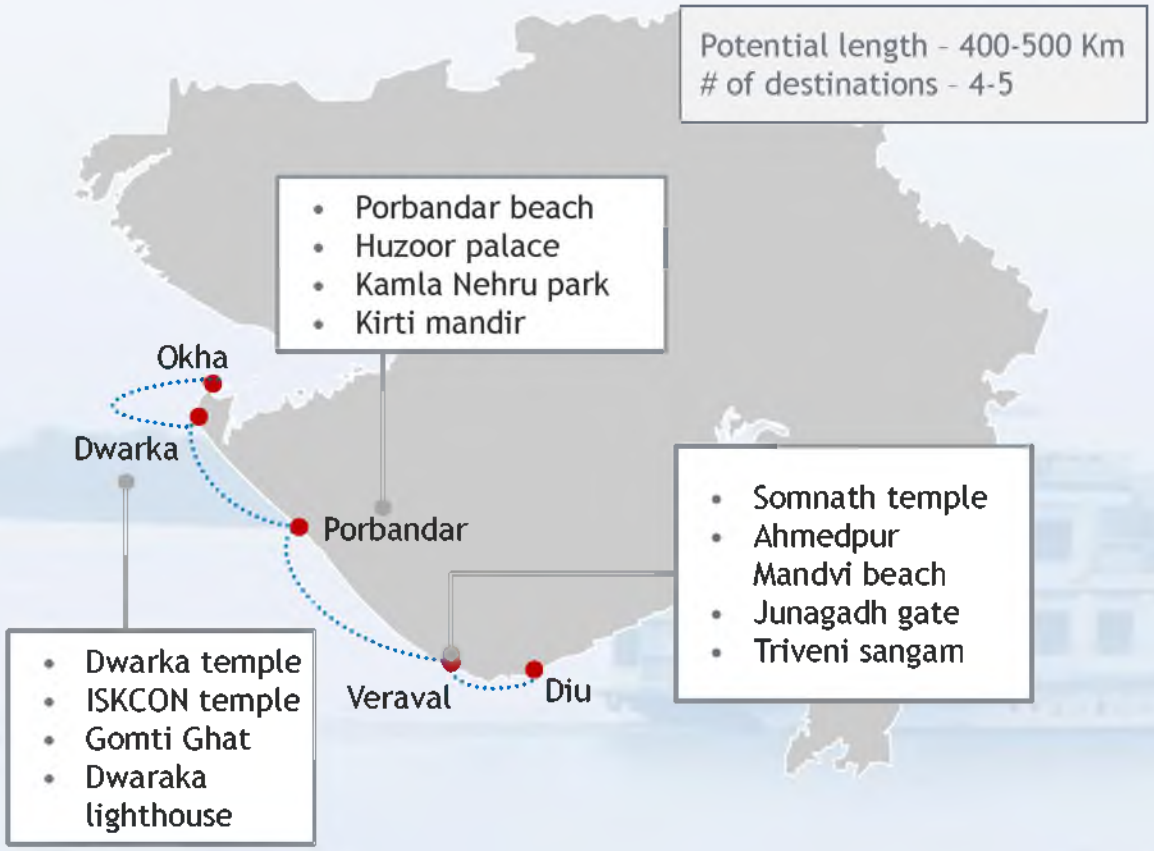
East Coast – Heritage tourism

- Leveraging attractions like Mahabalipuram to create heritage theme circuits



Theme based | Gujarat's coastline can be harnessed for pilgrim tourism in collaboration with tourism and local authorities

Illustrative



Demand Potential

Potential to develop dedicated circuit for pilgrim tourism to tap huge market of ~4 million tourists visiting Dwarka, Veraval, Somnath, Porbandar and Diu

Infrastructure Availability

- Existing ports along the state coastlines could be used to develop infrastructure facilities for linking sea-land through building jetties

Local Collaboration Opportunities can be explored with

- Car rentals
- Hotels
- Day tour operators
- Private participation in operations of terminals

Theme based | History and Culture circuit could be developed on the Western coast as well

Illustrative

Potential length – ~1000 Km
# of destinations – 5-6

The cultural and natural attractions like Sindhudurg fort and Kerala backwaters could be leveraged to create short-medium duration cruises on small cruise boats

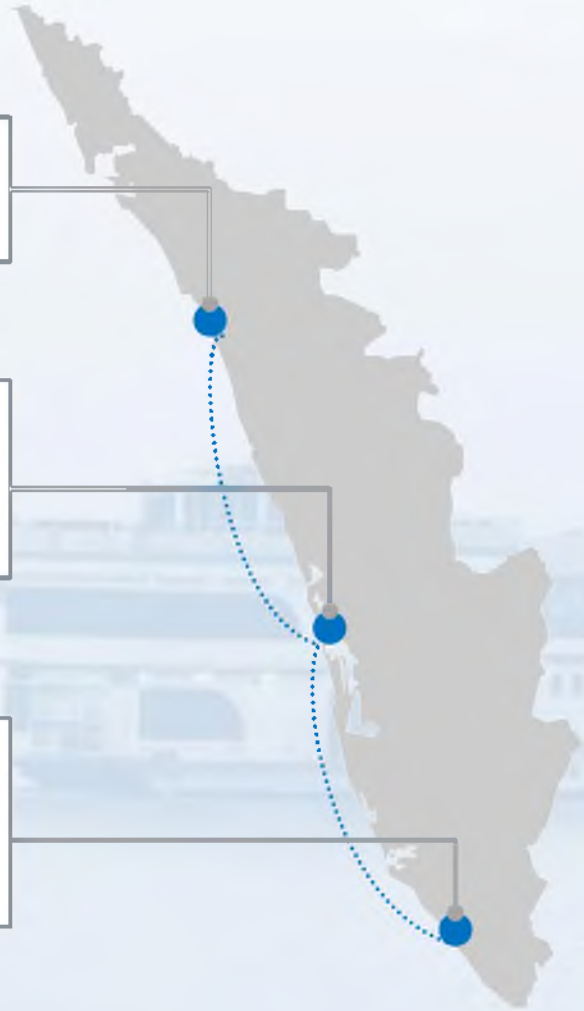
Theme based | Kerala's coastline can be harnessed for Ayurvedic wellness and scenic tourism in collaboration with tourism and local authorities

Illustrative

Kozhikode
- Backwaters, fishing villages, Kolavi beach, Azhimgham estuary

Kochi
- Ayurvedic wellness centers, Kochi Fort, Kochi Beach, Cherai Beach, Wiilingdon Island)

Thiruvananthapuram
- Wellness centers, Ayurvedic hospitals, Peppara Wildlife Sanctuary, Kovalam beaches, Varkala beaches)



Demand Potential

Kerala has been adjudged the best Ayurvedic wellness tourism by several forums

Infrastructure Availability

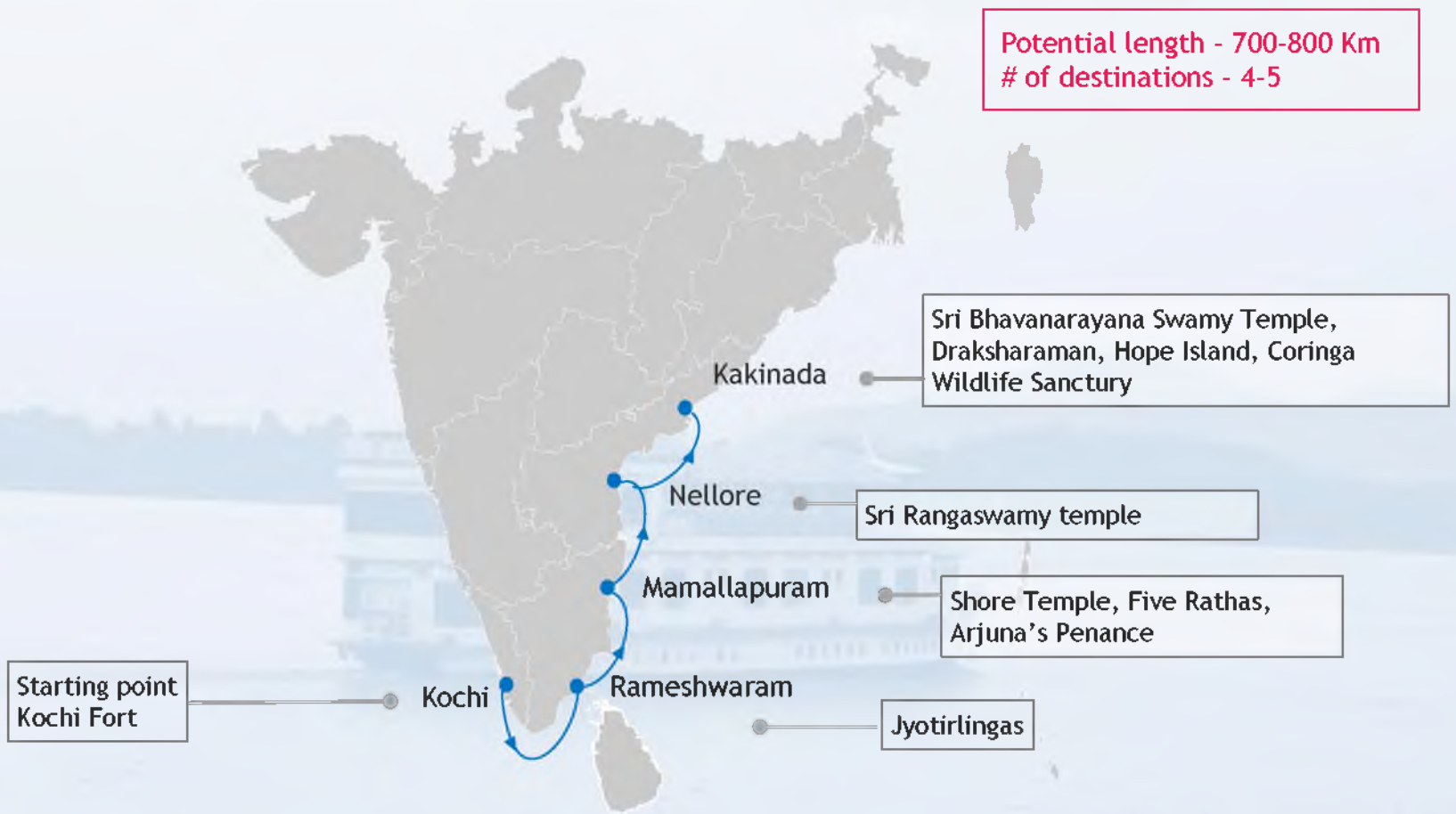
- Existing ports along the state, cultural heritage and biodiversity could be leveraged to build the circuit

Local Collaboration Opportunities can be explored with

- 50+ Ayurvedic wellness centers
- Car rentals
- Hotels
- Day tour operators
- Private participation in operations of terminals

Theme based | Heritage tourism circuit could be developed on the eastern coast

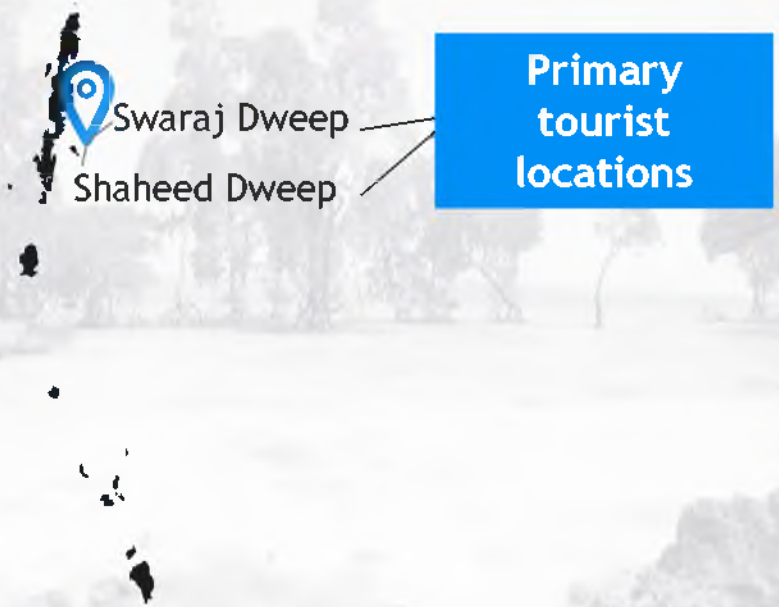
Illustrative



Heritage attractions on the western coast like Jyotirlingas in Mahabalipuram could be leveraged to create heritage theme circuits, which would have significant demand from both domestic and foreign tourists

Island ecosystem development across Andaman & Lakshadweep

Andaman & Nicobar (A&N) Islands



15+ projects worth approx. 750 Cr. undertaken to promote coastal tourism in A&N islands

Lakshadweep Island

Approx. 930 Cr. investment undertaken to promote coastal tourism in Lakshadweep islands

9.1 – 9.3 Cruise tourism | Activities and milestones

	Key activities	Total cost (Cr)	Target
9.1	Infrastructure development and enhancement at select 12 ports for domestic and international cruise terminal development:		
9.1.1	Mumbai	495	Q4 2021 Q2 2024
9.1.2	Goa	102	Q2 2022
9.1.3	Cochin	35	Q1 2021
9.1.4	New Mangalore	400-500	Q1 2021
9.1.5	Chennai		Q4 2020
9.1.6	Vishakapatnam		Q1 2022
9.1.7	6 additional ports (Kolkata, Porbandar, Ganpatipule, Diu, Somnath, Konark) basis final technical evaluation		Q4 2022
9.2	Terminal infrastructure and ecosystem development at 4 theme based coastal destination circuits to activate cruise demand		
9.2.1	Gujarat- Pilgrimage (Okha, Dwarka, Porbandar, Veraval)	300-400	Q2 2022
9.2.2	West Coast - Cultural and scenic (Mumbai, Goa, Kozhikode)		Q3 2022
9.2.3	South Coast - Ayurvedic wellness (Kozhikode, Kochi, Thiru)		Q4 2022
9.2.4	East Coast - Heritage tourism (Rameswaram, Nellore)		Q2 2023
9.3	Holistic development for island infrastructure across Andaman and Lakshadweep to make them an attractive cruise destination	800-1000	Q4 2023

Appendix – Maritime education and training

Ships are evolving & skills will move from manning to newer processes

Capabilities required for on-shore operations will evolve to computer science, marine electronics, etc.

India need to develop capabilities to support blue economy - marine geology, environmental science, etc.

Upcoming fields basis global benchmarking

- Marine Electronics
- Computer Science
- Artificial Intelligence
- Oceanography
- Marine Geology
- Marine Environmental Science
- Maritime Law & Finance

Expanding areas of maritime education in line with trends

1 Creation of 5 dual degree courses for seafarers and ship design

Creation of dual-degree Marine and Non-marine courses to ensure STCW requirements and develop blue economy

	Marine engineering	Nautical science	Naval architecture
Computer science	✓	✓	✓
Marine electronics	✓	✓	

2 Creation of 5 UG and PG courses to develop blue economy

Examples: Courses on Oceanography, Marine geology. Marine environmental science etc.

2 Establishing an IMU campus in North-East region in collaboration with State Govt.

Way forward

- 10+ new courses to be launched across IMUs over next 2-3 years
- Additional dynamic courses to be re-evaluated post 2025 basis industry requirement

Other steps to improve maritime education

- Faculty development
- Global partnerships
- Developing centres of Excellence

PDCs important for upskilling mid-senior level professionals

1

6 out of 10 mid-level professionals are Upskilling

2

Executive certification courses gaining popularity in India

3

Professionals trying to stay competent and looking for future career opportunities

4

Online/offline certification courses for 3-6 months gaining thrust. e.g. Offline - IIMs Online- UpGrad

Professional development courses (PDCs) by Maritime institutes for upskilling

Maritime training institutes to design, develop and deliver PDCs

1 Professional development courses (Officers):

- Invite industry specialists and experienced seafarers to regularly upskill students
- Subjects: Communication systems, Maritime Management

2 Professional development courses(Ratings):

- Subjects: Soft skill enhancement, Catering, hospitality and onboard services

Collaborate with WMU for courses in Maritime Law, Logistics & Management

Maritime Administration & policy

- WMU along with Maharashtra National Law University to offer an MPhil in Maritime law

Maritime Logistics

- WMU in collaboration with IMU to offer a MSc in Maritime logistics and transportation

Maritime Ocean governance

- WMU in collaboration with IIT Chennai (NTCPWC) to offer a MSc in Ocean Governance

Maritime management

- University of OSLO in collaboration with GMU/IMU

World class crew training facilities in partnership with Global cruise lines

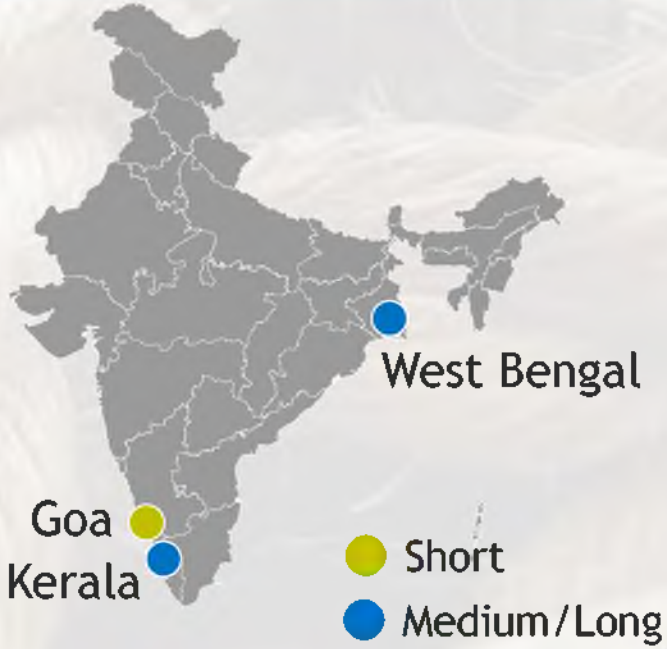
A Government support

- Infrastructure support to cruise lines

B Private support (Cruise-lines)

- Customized cruise courses
- Best-in-class training standards
- Upgradation of infrastructure

C Potential locations



Advanced maritime nations promoting research

Singapore

- **MPA living lab** to provide innovative solutions b/w industry, research institutions, tech. providers, etc.
- Extensive arrangements of **funding secured from VCs, R&D funds etc. to enable start-ups**
- **Four focus areas** – autonomous systems, smart infrastructure, data analytics, and safety/environment

Norway

- **10+ specialized maritime universities**
- **Ocean Space Centre at NTNU as centre of the knowledge cluster** for innovation and testing
- **Attracting world class talent** through grants
- **Five focus areas** – energy efficiency, LNG, maritime operations, business development, and arctic research

Indian Maritime Knowledge Cluster to drive collaborative research

Research and innovation support

B

5+ Global partner research institutes and universities

IMLI · NMRI · Southampton Solent University · Erasmus Universiteit Rotterdam · University of Copenhagen · Universitas Bergensis · Singapore Maritime Institute · NTNU Norwegian University of Science and Technology · KMI Korea Maritime Institute

A

10+ partner Domestic research institutions Maritime & other technical)

Indian Maritime University · CEMS · NTCPWC National Technology Centre for Ports, Waterways and Coasts · CICMT · Indian Maritime institutes

NIOT · INCOIS · CMFRI · IIT M · IIT KGP · IIT B

NLU Orrisa · NALSAR · MNLU · Cochin univ. · Anna univ. · TISS

Sponsored research consultancies

C

10+ partner domestic and international industry players

Cochin shipyard · KONGSBERG · SCI · L&T Shipbuilding · HYUNDAI Heavy Industries Co., Ltd. · MAERSK · CSLA · INSA

Defined Research focus across five strategic areas:

- World class port operations and management
- Navigation and traffic management on inland and coastal waters
- Ship building, management and design technology
- Maritime Safety, Environment and Ocean governance
- Maritime Law, finance and governance

Developing and promoting a strong ecosystem for seafarers

Amendment in Seaman's Provident Fund Act

- Promotion of pension and gratuity benefits for Seafarers

'Women in seafarer' program

- Increasing awareness: career counselling / marketing campaigns
- Incentivization: scholarships and tuition fees wavers
- Promote gender sensitization

E-governance and monitoring system

- CoC assessment mechanism digitization for ease of seafarers
- Upgrade of grievance redressal & complaint registration system
- Online chat-based help and real-time SMS/E-mail alerts

APEC Seafarer Excellence Network

- Collaboration through:
  - Exchange of talent
  - Sharing high-quality MET infrastructures
  - Skilled Labour mobility programs
- Leveraging MEA for long-term country level partnership

Recruitment and placement licensing system

- System digitization to improve transparency
- E-Registration for Seafarers at RPS agency be made compulsory
- Robust governance mechanism with regular KPI monitoring

10.1 Education and Training | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.1.1	Strengthen Maritime institutions to enhance India's capabilities at par with global standards		
10.1.1.1	Introduce 10+ full-time courses at Maritime education and training institutes and other affiliated universities	25	Q4, 2023
10.1.1.2	Finalize partnership with World Maritime University to offer co-branded courses across Maritime Law with Maharashtra National law university	25	Q2, 2022
10.1.1.3	Finalize partnership with World Maritime University and other global universities to offer 3+ other co-branded courses across Maritime logistics and finance with domestic universities		Q4, 2023
10.1.1.4	Partner with select corporates to institutionalize short-term Professional Development courses / certifications for upskilling working professionals		Q4, 2022
10.1.1.5	Launch credit accumulation course programs to offer flexibility to seafarers to complete course credits for Post graduate degree through both online/offline mode	-	Q4, 2022
10.1.1.6	Establish a new IMU campus in North-East region in collaboration with State Govt.		Q4, 2024
10.1.1.7	Build alliance with domestic institutes (IITs) to offer co-branded courses		Q4, 2024

10.1 Education and Training | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.1.2	**Strengthen Maritime training landscape to improve education and training quality of seafarers**		
10.1.2.1	Develop and establish a common entrance examination to streamline admissions process	-	Q4 2021
10.1.2.2	Modernization of training institutes across 5 key areas: Teaching, Administration, Training, pedagogy and assessment		Q4 2021
10.1.3	**Strengthen faculty network across Maritime education and training institutes**		
10.1.3.1	Establish Faculty Development program under IMUs and MTIs to provide two-fold training and development to sea-farers		Q4, 2021
10.1.3.2	Work with NITTTR to customize upfront training for faculty	-	Q4, 2021
10.1.3.3	Work with IITs and IIMs to introduce up-skilling courses		Q4, 2022
10.1.3.4	Establish specific research targets for faculty for publication in Q1 journals and research-linked compensation	2	Q4, 2021
10.1.3.5	Work with domestic institutes like IITs and partner global institutes to expand visiting faculty portfolio	5	Q4, 2023

10.1 Education and Training | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.1.4	Drive academic partnerships with 10+ leading foreign maritime universities prioritized to leverage student exchange, curriculum building, brand credibility as well as world class faculty		
10.1.4.1	Establish Programmatic collaborations with select 7 universities		Q4, 2024
10.1.4.2	Evaluate and establish satellite campus in partnership with partner universities		Q4, 2028
10.1.5	Establish dedicated cruise training academies in partnership with Global cruise lines to enhance availability of competent talent for cruise ships	30	Q2, 2021 (Target 1) Q4, 2025

10.3 Domestic research | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.3.1	Establish Maritime Knowledge Cluster to drive coordinated and collaborative research		
10.3.1.1	Create task force with stakeholders across institutes (IITs, IMUs, MTIs, CEMS, NTCPWC, CICMT, Maritime Law), Maritime industry to setup cluster & on-going co-ordination to identify, allot & track R&D topics		Q4, 2020
10.3.1.2	Strengthen IMU research focus and partner with 15+ domestic and global institutes for collaborative research	-	
	- Onboard/ Partner with 10+ domestic institutes e.g. IITs, IISc, MNLU, NALSAR, NLU (Orissa), GMU etc. for specialized research domains		Q2, 2021
	- Onboard 5+ global institutes out of prioritized list of 10 research universities (E.g. Bergen university, Erasmus university, IMLI etc.)		Q2, 2021
10.3.1.3	Allocate 50+ research topics across 5 strategic maritime thrust areas - (1) World class port development; (2) Navigation and sea traffic management; (3) Fleet building and design; (4) Health, Safety, and Environment; and (5) Maritime law, policy & governance across member institutes	5	Q2, 2021
10.3.1.4	Create online platform for on boarding partners, publication of papers, knowledge sharing and collaboration	5	Q4 2021
10.3.1.5	Onboarding 10+ industry players across 5 sub-segments of ports, ship-building, dredging and logistics targeting 60%+ industry funded projects	-	Q4, 2022

10.3 Domestic research | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.3.2	Drive research innovation and technology commercialization through establishing a living lab facility in partnership with NTCPWC & CICMT with a major port		
10.3.2.1	Set-up Living Lab in partnership with NTCPWC, CICMT and IMU at one of the 3 major ports (across Mumbai, Vishakapatnam and Chennai)	50	Q4, 2022
10.3.2.2	Evaluate set-up of additional living lab at potential locations		Q4, 2026
10.3.2.3	Leverage existing incubators in CICMT, NTWPWC, and NINI to promote maritime innovation	-	Q4, 2021
10.3.2.4	Work with MoPSW to set-up National Marine Incubation Centre as national marketplace of research institutes, startups, VC firms and maritime / logistics industry		Q4, 2025

10.4 E-governance system | Activities and milestones

	Key activities	Total cost (Cr)	Target
10.4.1	Digitize and upgrade CoC assessment mechanism of seafarers through end-end digitization of evaluation, assessment and certification process		
10.4.1.1	End- End Digitization of CoC assessment	25	Q4 2022
10.4.1.2	Organize mandatory pre-departure training for all Indian Seafarers prior issuance of CDC and CoC	-	Q4, 2021
10.4.2	Modernize and digitize Recruitment and placement licensing system and implement stringent governance to regulate and improve functioning of RPSLs	10-15	Q4, 2021
10.4.3	Build online system for grievance redressal and complaint registration with regular monitoring to have timely redressal of grievances basis clear SOP	5-10	Q4, 2021

Appendix – Waterways: Cargo

5 key use cases of Digital platform for National Waterways

Sync Platform between LSPs and terminal operator

- Exchange of information on volume, type of cargo, space requirement etc. between LSP and terminal operator
- Current initiatives - **PANI : Portal for Navigational Information** And **River Information System (RIS)**

Cargo tracking and booking system

- System to inform cargo owners of status of cargo, cost and transit time etc.
- Current initiatives - **CAR-D : Port for Cargo handled on the National Waterways** And **IBP Permission Portal**

Platform for asset capacity sharing between LSPs

- Multiple assets like crates, ships, barges, etc operated by multiple operators will lead to unequal capacity utilization
- Current initiatives - **Forum of Cargo Owners & Logistics Operators (FOCAL)**

Multi Modal Integration

- Platform to exchange information with other transport entities like railways, ports, roadways, DFCs, etc required
- Also integrate with admin portals like ICEGATE, RIS, FOCAL to ensure seamless processing

Digital Control Center

- To manage key processes like traffic, terminal performance and incidence management efficiently
- Current initiatives - **Management Information & Reporting Solution (MIRS)**

National waterways initiatives

16 operational waterways

7 new waterways to be developed

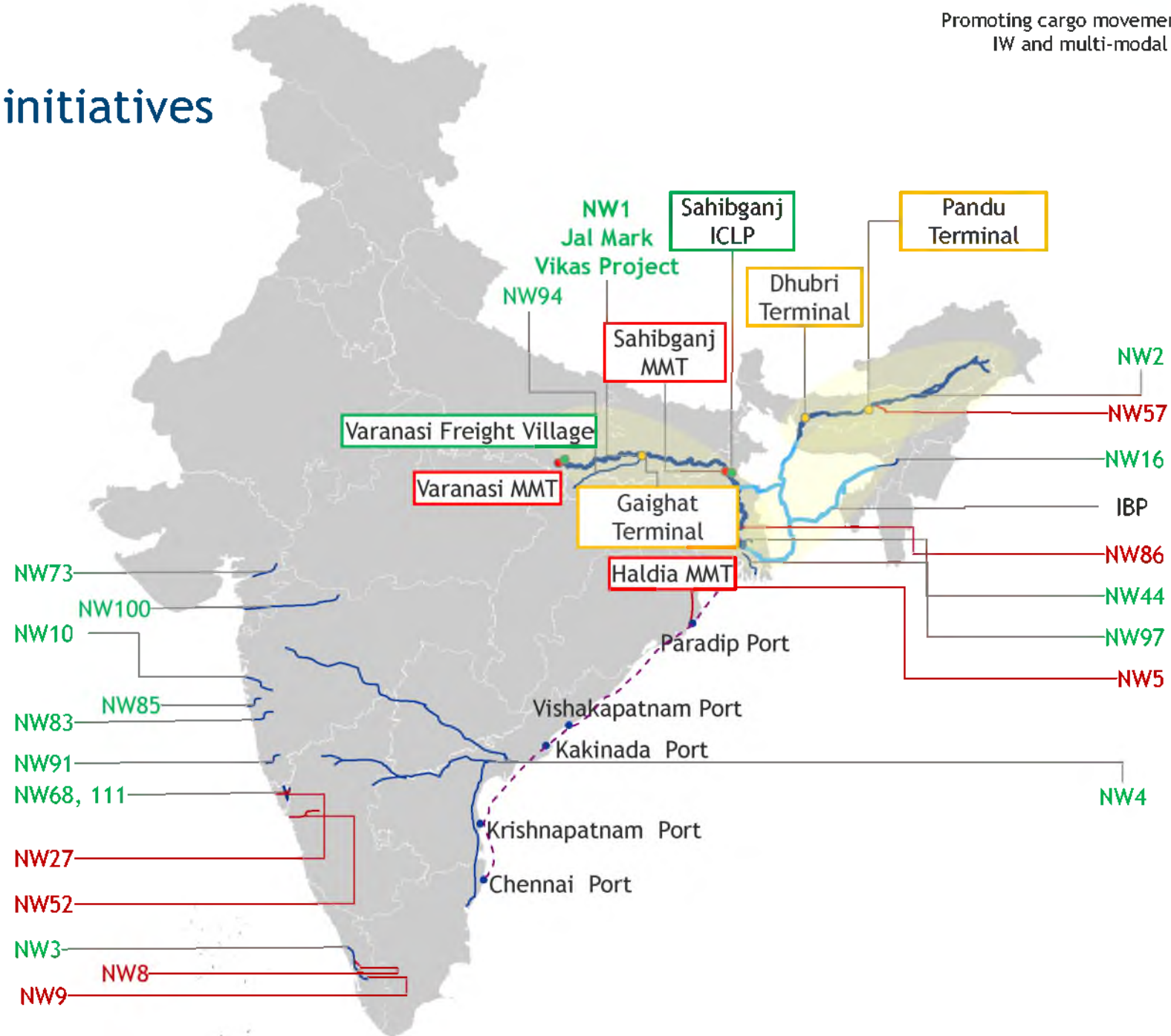
Eastern Waterways Connectivity Transport Grid (EWaCTG)

3 Multi-modal Terminals

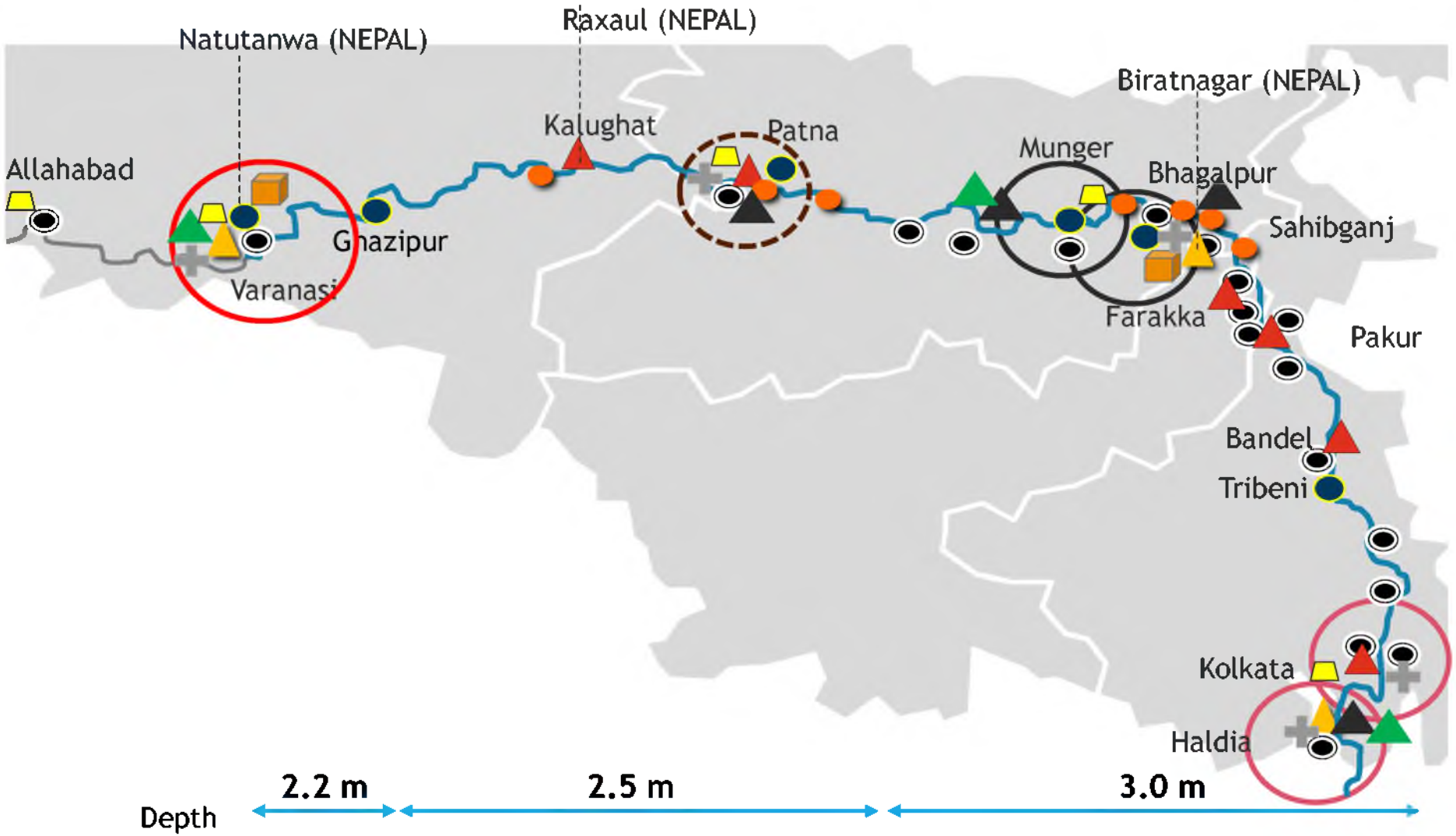
Freight Village at Varanasi and ICLP at Sahibganj

PPP for 3 additional Terminals

Coastal Integration



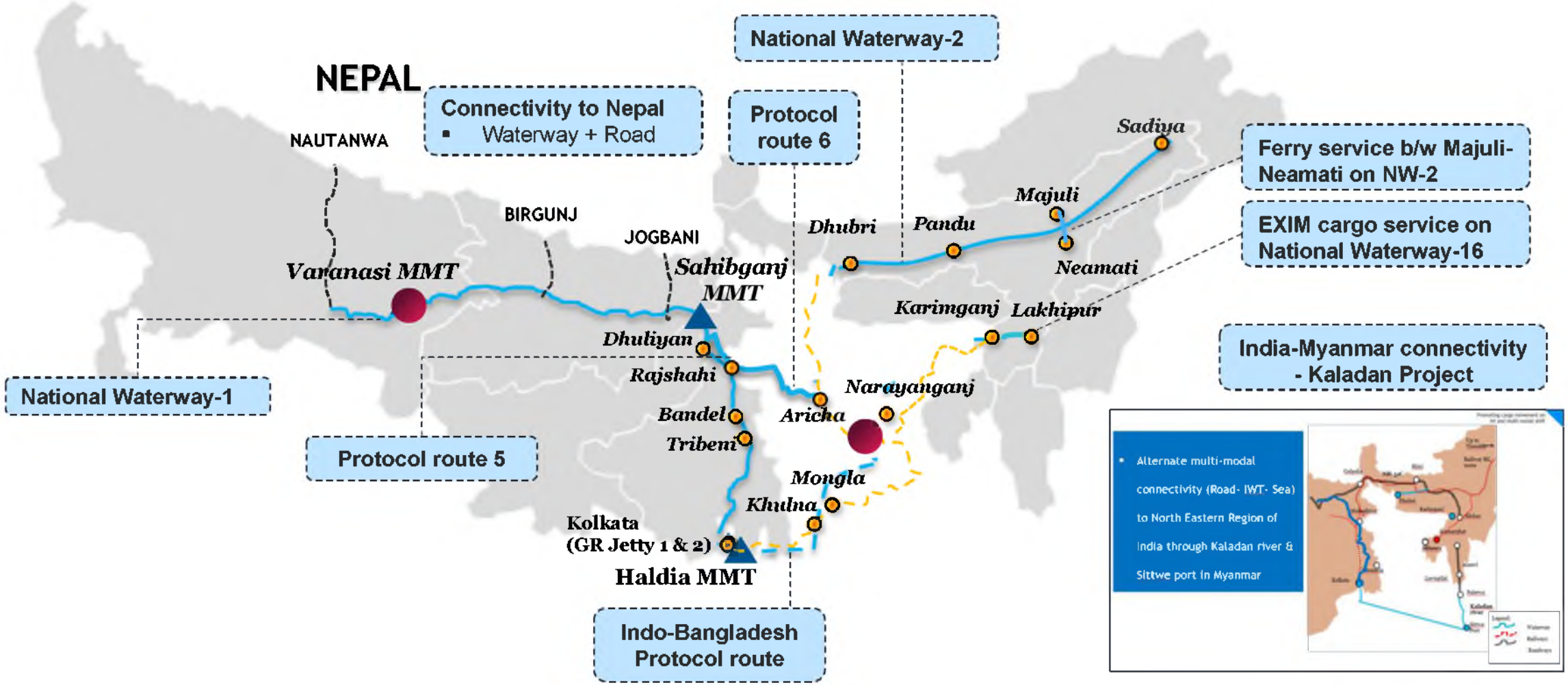
Arth Ganga| Master Plan



1. Multimodal Terminals
2. Freight Village and Logistics Hubs
3. Intermodal terminals
4. Water ambulance stations
5. Floating terminals
6. Ro-Ro terminals
7. Small community jetties
8. Ferry locations
9. Iron Ore jetties
10. Fertilizer jetties
11. Tourism hubs/ jetties

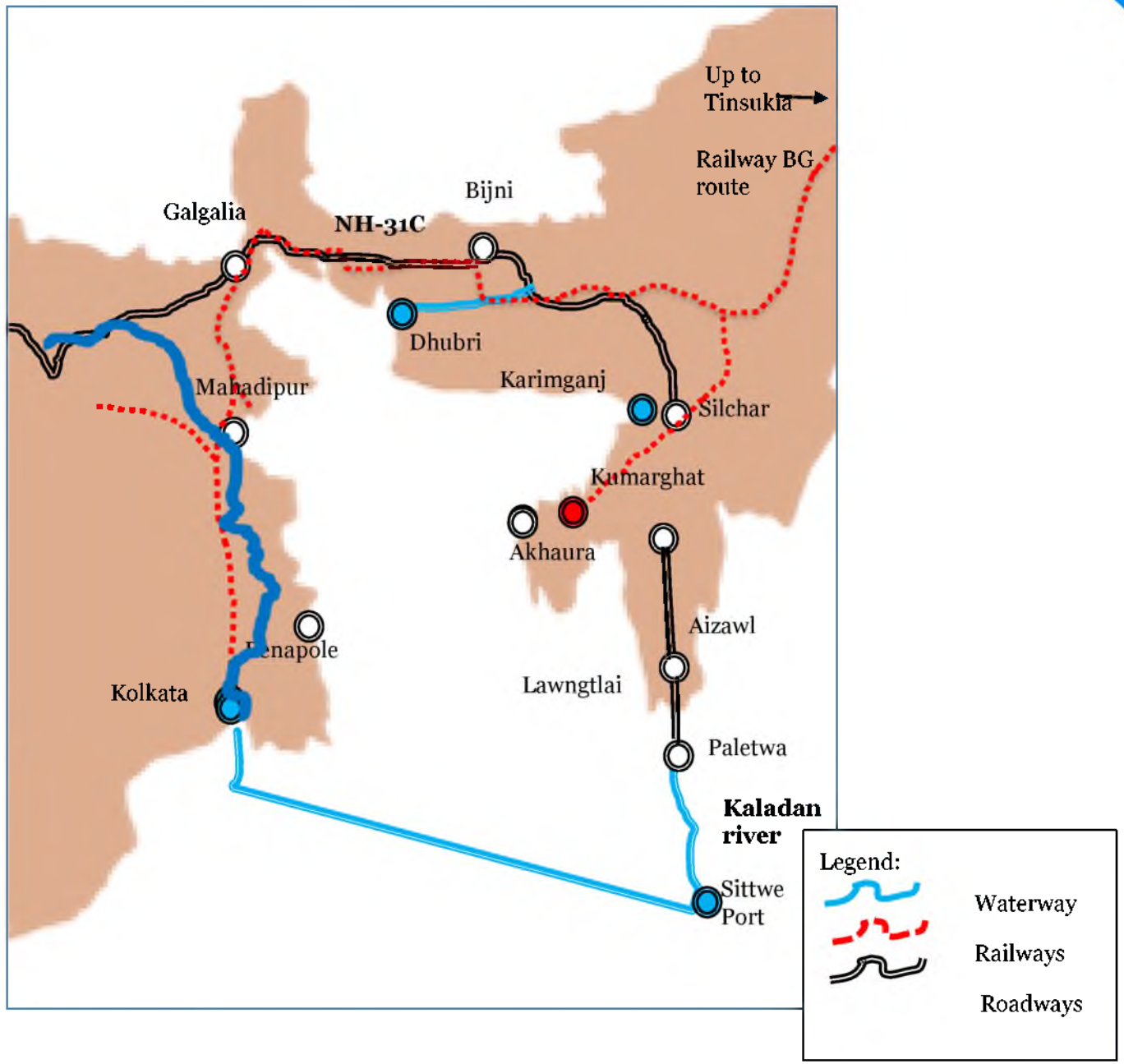
Towards INR 1000 Cr. economy….

EASTERN WATERWAYS CONNECTIVITY - TRANSPORT GRID



*Map not to scale

- Alternate multi-modal connectivity (Road- IWT- Sea) to North Eastern Region of India through Kaladan river & Sittwe port in Myanmar



Nepal Bound Cargo:
Transportation of Nepal bound cargo via Haldia Port (currently being transported via Vishakapatnam / Kolkata Port)

Bangladesh Bound Cargo:
Haldia MMT is strategically located to cater Bangladesh bound cargo from various parts of India including Vishakapatnam & Sahibganj

Coastal connectivity to support domestic trade

Key Commodities:

- Plastic Granules
- Coal
- Fly ash
- Iron Ore
- Limestone
- Stone Chips
- Petroleum
- Fertilizers
- Iron & Steel
- Food Products
- Project Cargo

11.1 Cargo on IW and Multi-modal shift | Activities and milestones

	Key activities	Total cost (Cr)	Target
11.1	Operationalize 23 waterways by 2030 through infrastructure enhancement (10 out of 16 functional and 7 new waterways), fairway development, navigational aids and RIS provisioning		
11.1.1	National Waterway 1 -		
	- Construction & operationalization of Haldia multi-modal terminal	4221 (for development of all 17 waterways)	Q1, 2021
	- Signing of Concessionaire agreement of Haldia & Varanasi MMT		Q1, 2021
	- Development of navigation lock at Farakka along NW 1		Q2, 2021
	- Completion of Dredging Farakka - Kahalgaon section (Mar-22)		Q1, 2022
	- Navigational Aids deployment & RIS stations operationalization		Q2, 2022
	- Concessionaire agreement for Sahibganj MMT and Gaighat Terminal		Q3, 2022
	- Completion of Dredging Sultanganj - Mahendrapur section (Mar-23)		Q1, 2023
	- Completion of Dredging Mahendrapur - Barh section (Mar-23)		Q1, 2023
	- Development of an integrated vessel repair and maintenance complex near Sahibganj multi modal terminal		Q4, 2023
	- 3 intermodal cargo terminals to enhance connectivity and reduce cost of cargo - Kalughat, Tribeni, Ghazipur		Q4, 2023
	- Completion of Freight Village at Varanasi and ICLP at Sahibganj		Q4, 2024

11.1 Cargo on IW and Multi-modal shift | Activities and milestones

Key activities	Total cost (Cr)	Target
11.1.2 National Waterway 2 and 16 -		
- Award of work for construction of Jogighopha terminal	4221 (for development of all 17 waterways)	Q1, 2021
- PPAC approval of Pandu Ship repair facility		Q1, 2021
- Award of work for construction of Jogighopha terminal		Q1, 2021
- Award of work for Pandu ship repair facility		Q2, 2021
- Boundary wall at IWAI parcels at Pandu, Neamati & Dibrugarh		Q2, 2021
- Signing of Concessionaire agreement of Pandu & Dhubri Terminal		Q1, 2022
- Upgradation of Badarpur & Karimganj		Q1, 2022
- Award of Karimganj & Badarpur terminals on PPP basis		Q1, 2022
- Construction & Operationalization of Pandu Ship repair facility		Q2, 2023
- Completion of work for construction of Jogighopha terminal		Q4, 2023
- Widening of road from Pandu to NH including land acquisition		Q1, 2024
- Award for improvement of existing approach road for Dhubri Terminal		Q4, 2023
- Completion of improvement of existing approach road for Dhubri Terminal		Q4, 2024

11.1 Cargo on IW and Multi-modal shift | Activities and milestones

	Key activities	Total cost (Cr)	Target
11.1.3	Other 14 National Waterways (NW5, NW9, NW86, NW8, NW-27, NW68, NW111, NW3, NW97, NW10, NW44, NW4, NW57 & NW52)		
	- SFC approval for undertaking development of proposed waterways	4221 (for development of all 17 waterways)	Q1, 2021
	- Operationalization of four no's of floating pontoon on NW-4		Q1, 2021
	- Providing Floating pontoons in Goa Waterways and additional navigational aids if required (NW-27,68 & 111)		Q4, 2021
	- Facilitation of navigational aids in NW-4 (Phase-I: 80 Kms)		Q1, 2022
	- River Information System on Goa Waterways (NW-27,68 & 111)		Q2, 2022
	- Providing floating pontoons on NW-97 along with additional navigation aids and River information system		Q1, 2023
	- Providing floating pontoons on NW-10, 86, 57 & 52 (one pontoon on each waterway)		Q4, 2023
	- Providing navigational aids and River Information System on NW-8 & 9		Q4, 2023
	- Establishing river information system on NW-3		Q4, 2023
	- Development of Four Ro-Ro terminals on NW-4 along with River information system (need basis)		Q4, 2024
11.1.4	Techno-economic feasibility for development of additional waterways	20	Q2, 2022

11.2 Cargo on IW and Multi-modal shift | Activities and milestones

	Key activities	Total cost (Cr)	Target
11.2	Capitalize additional cargo and ferry potential by building multi-modal connectivity with 4 neighboring countries through infrastructure development, fairway development and ecosystem development		
11.2.1	Bangladesh		
	- Fairway development from Sirajganj to Daikhowa stretch in Jamuna river, and from Ashuganj to Zakiganj stretch in Kushiiyara	91	Q1, 2022
	- Award of work for construction of Maia Terminal		Q1, 2022
	- Award of work for construction of Sonamora Terminal		Q2, 2022
	- Completion of study for undertaking Maia - Aricha fairway development		Q3, 2022
	- Construction & operationalization of Maia Terminal		Q2, 2023
	- Construction & operationalization of Sonamora Terminal		Q3, 2024
11.2.2	Nepal (Ecosystem development)		
	- Proposal to get MMTs at Varanasi and Sahibganj Customs notified	20	Q4, 2022
11.2.3	Bhutan (Ecosystem development)	20	Q4, 2022

11.6 Cargo on IW and Multi-modal shift | Activities and milestones

	Key activities	Total cost (Cr)	Target
11.6	Leverage private participation for terminal development and operations- Ro-Ro (OMT model); Ferry (DBFOT model) and Inter-modal/Multi-modal terminals (EOT/OMD models)		
11.6.1	Establish dedicated PPP cell	20	Q4, 2021
11.6.2	Award of terminals for Haldia MMT, Varanasi MMT on EOT Basis		Q4, 2021
11.6.3	Award of 3 terminals for Sahibganj MMT on OMD basis & Pandu terminal, Dhubri terminal.	474	Q2, 2022
11.6.4	Award of Gaighat terminal on EOT basis		Q3, 2022
11.6.5	Award PPP concession for upcoming cargo terminals[1] across 15 waterways basis detailed assessment	10	Q4, 2025

Appendix – Waterways: River Cruise

GANGA-BHAGIRATHI-HOOGLY
(NATIONAL WATERWAY - 1)

Allahabad

Varanasi

Chapra

Bhagalpur

Patna

Kolkata

BRAHMAPUTRA
(NATIONAL WATERWAY - 2)

ARUNACHAL PRADESH

Sadiya

Dibrugarh

Majuli

Sivsagar

Tezpur

Kaziranga National Park

Manas National Park

Pobitora Wildlife Sanctuary

Guwahati

Dhubri

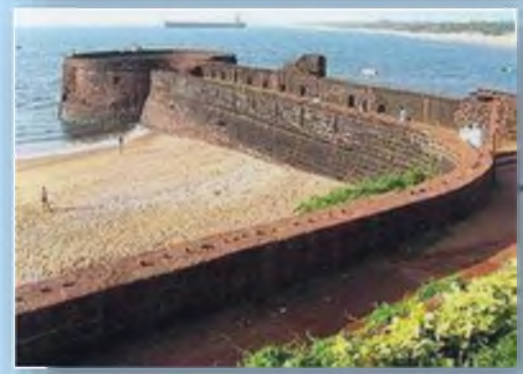
NAGALAND

MANIPUR

BANGLADESH

MANDOVI
(NATIONAL WATERWAY - 68)

In proximity to
**Anjuna, Baga,
Calangute,
Candolim**



Aguada Fort

Santa Monica Jetty

Dr. Salim Ali
Bird Sanctuary

Basilica of
Bom Jesus

Panaji

WEST COAST CANAL, CHAMPAKARA AND UDYOGMANDAL CANALS

(NATIONAL WATERWAY - 3)

Udyogmandal Canal

Kochi

Willingdon

Champakkara Canal

Alappuzha

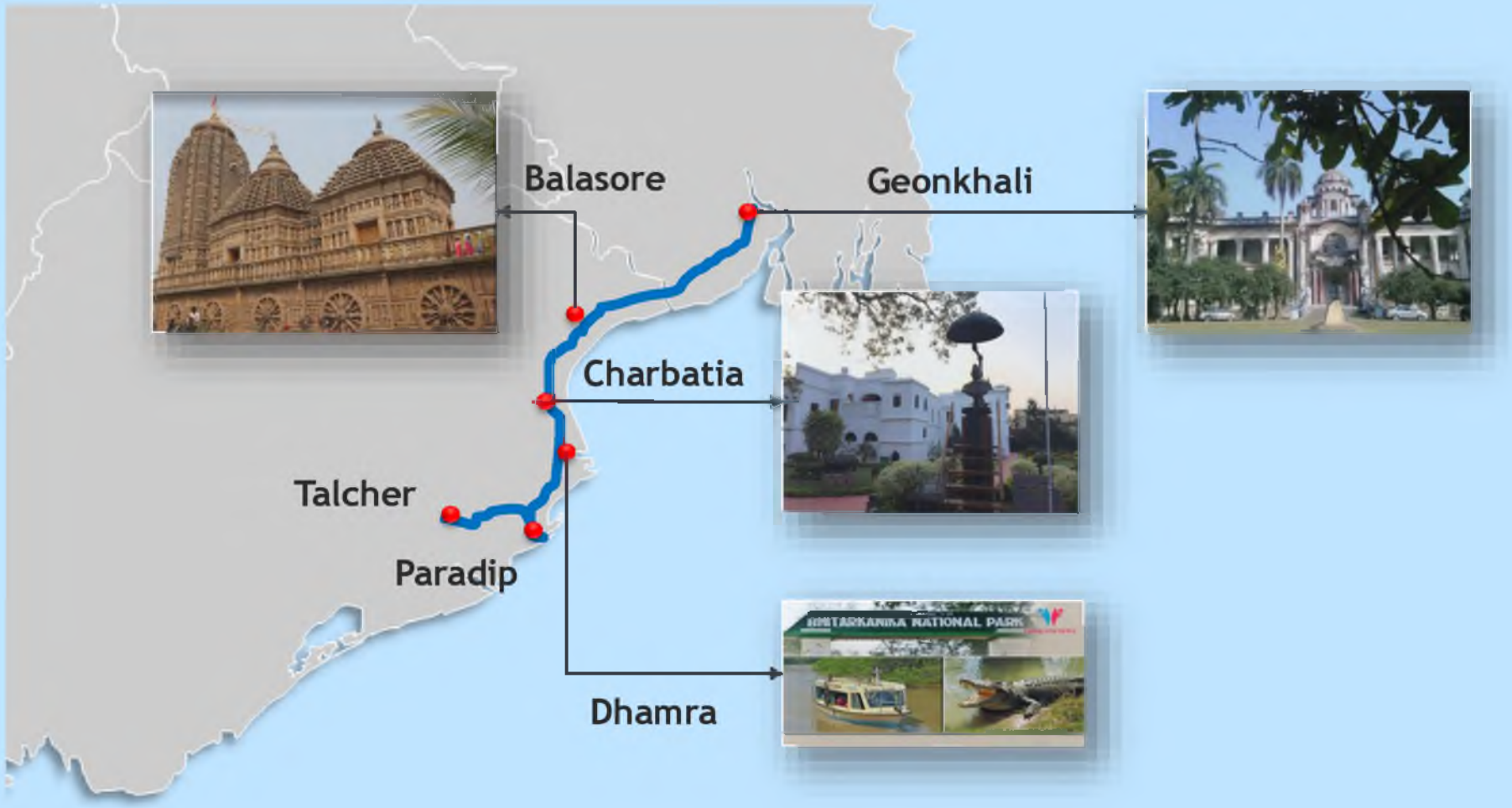
Thrikunnapuzha

Kayamkulam

Chavara

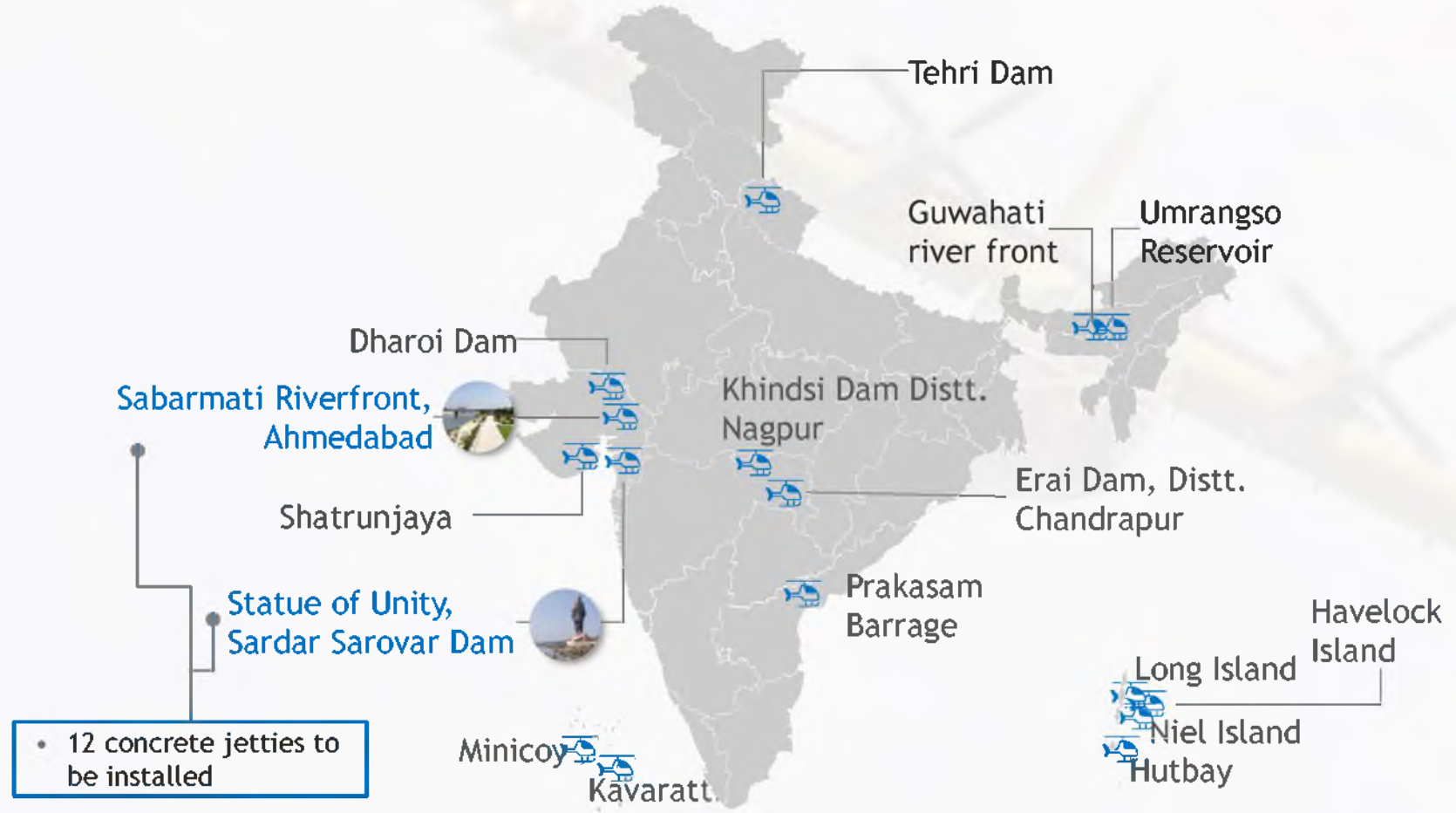
Kollam

EAST COAST CANAL
(NATIONAL WATERWAY - 5)



Waterdromes development in partnership with MoCA under RCS

16 potential locations identified



- 12 concrete jetties to be installed

Development of waterodromes under Udaan scheme

Joint activities undertaken by IWAI, AAI, DGLL, IIT Madras (NTCPWC)

Activities undertaken by IWAI/ coastal development body

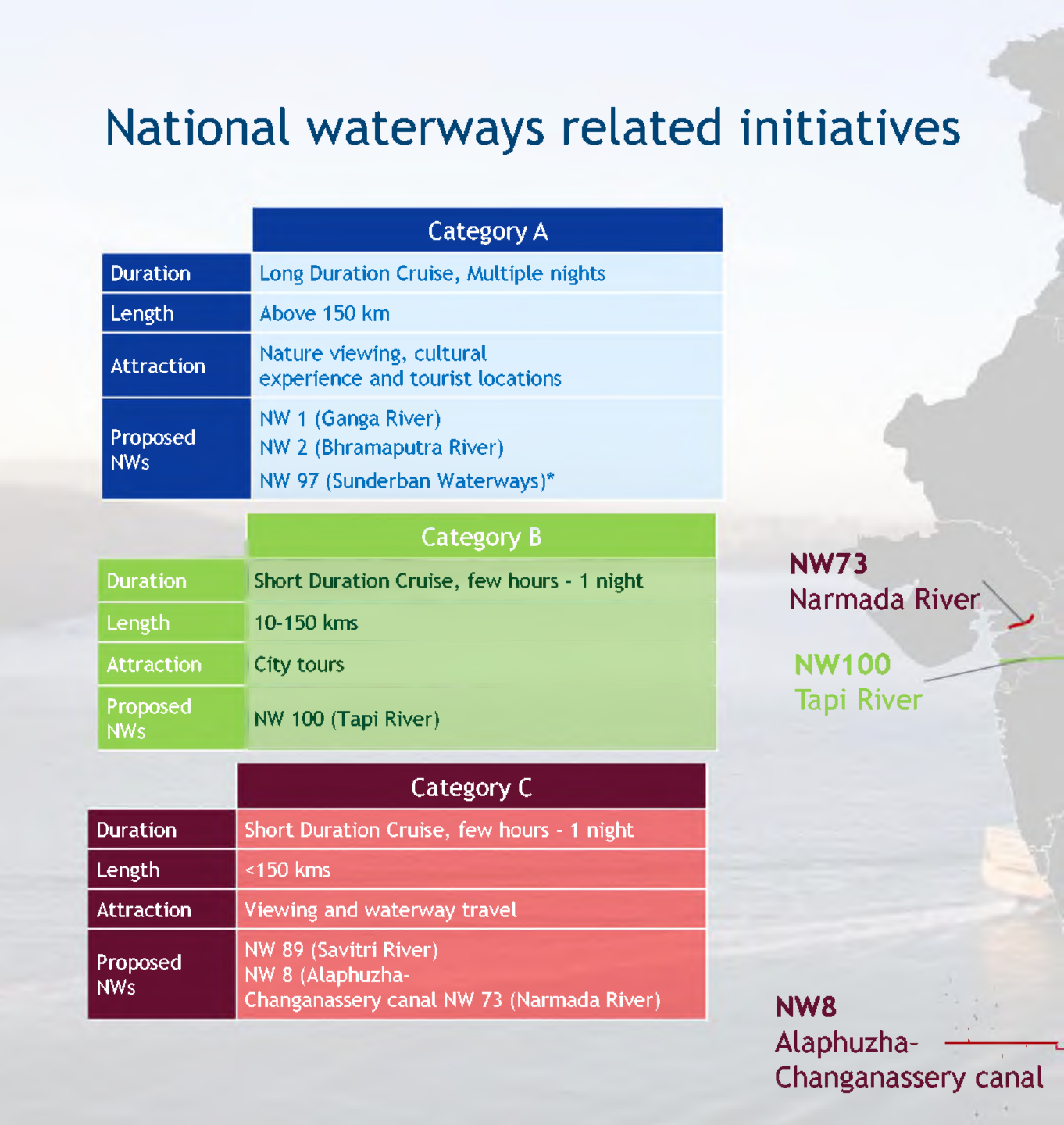
- Hydrographic survey
- Supply and installation of floating and concrete jetties
- Steel walkways
- Installation of marking buoys

National waterways related initiatives

	Category A
Duration	Long Duration Cruise, Multiple nights
Length	Above 150 km
Attraction	Nature viewing, cultural experience and tourist locations
Proposed NWs	NW 1 (Ganga River) NW 2 (Bhramaputra River) NW 97 (Sunderban Waterways)*

	Category B
Duration	Short Duration Cruise, few hours - 1 night
Length	10-150 kms
Attraction	City tours
Proposed NWs	NW 100 (Tapi River)

	Category C
Duration	Short Duration Cruise, few hours - 1 night
Length	<150 kms
Attraction	Viewing and waterway travel
Proposed NWs	NW 89 (Savitri River) NW 8 (Alaphuzha-Changanassery canal NW 73 (Narmada River)




NW1
Ganga River
NW2
Bhramaputra
River
NW97
Sunderban Waterways

12.1 - 12.2 River Cruise | Activities and milestones

	Key activities	Total cost (Cr)	Target
12.1	Supporting MOCA program in development of water aerodromes for seaplane movement across prioritized 16 locations to enhance tourism and connectivity1		
12.1.1	Gujarat	24	Q3, 2021
12.1.2	North - East cluster	16	Q4, 2021
12.2	Development of terminal infrastructure and creation of concrete and floating pontoon jetties across the identified circuits for cruise operations2		
12.2.1	Development at NW 1 and NW 2 along identified circuits	28	Q2, 2022
12.2.2	Development of NW 100 for night cruises	16	Q4, 2022
12.2.3	Development of NW 97, NW 8 and NW 73	48	Q1, 2023

Appendix – Waterways: Urban transport

Four levers proposed to drive synergies across Centre and State

1

Leverage Arth Ganga model

Co-ordinated development with involvement of State Governments of Uttar Pradesh, Bihar, Jharkhand and West Bengal

2

Facilitate State Govt. by vessel deployment

Provide Ro-Pax and Ro-Ro vessels to States to enhance connectivity for passenger and goods across State

Assist in development of Ro-Ro infrastructure - Ro-Ro jetties, terminals etc.

3

Development of community jetties

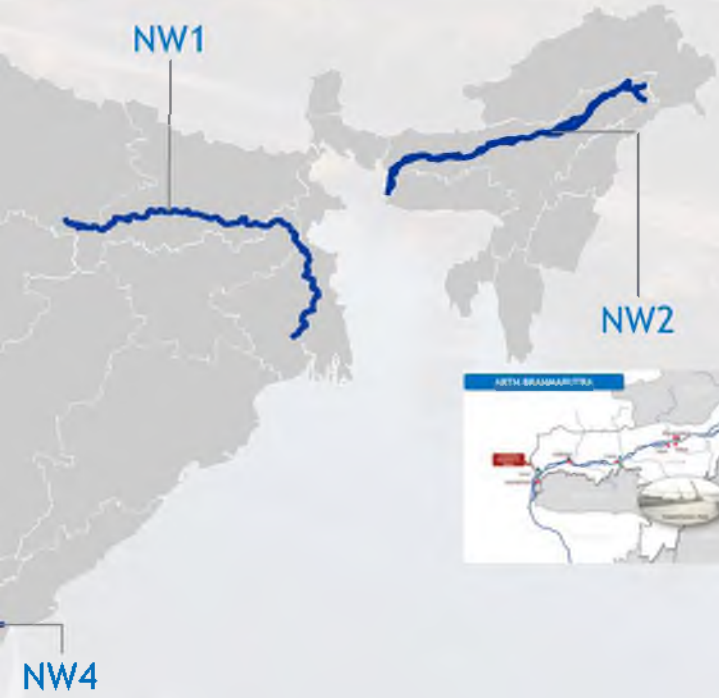
Build/ provide community jetties to States as per their requirement and recommendation

4

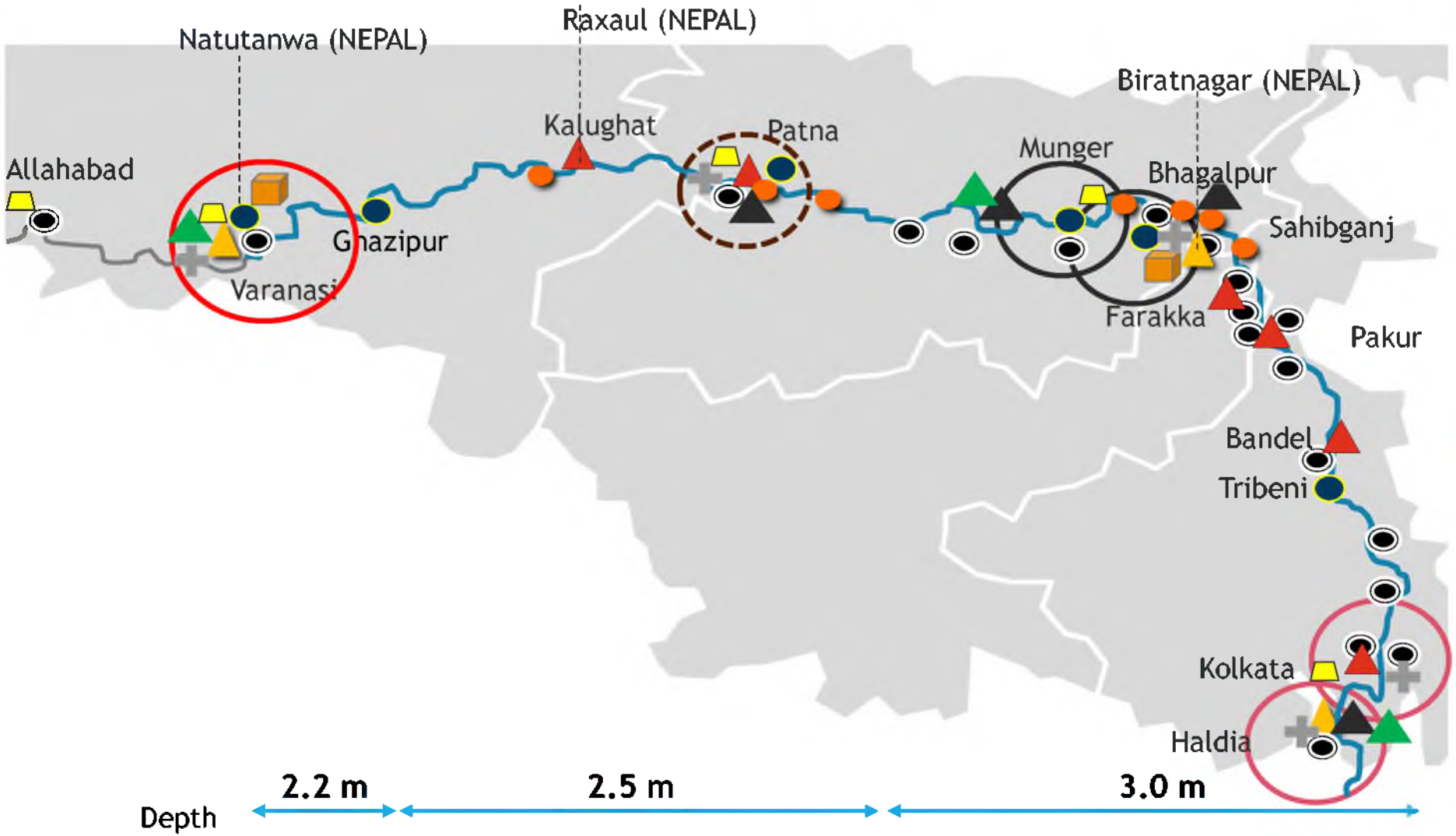
Connectivity with Logistic hubs / Industrial Clusters

Development of freight village at Varanasi and and Sahibganj by formation of SPV with State Governments

Develop urban water transport system


NW1
NW2
NW4

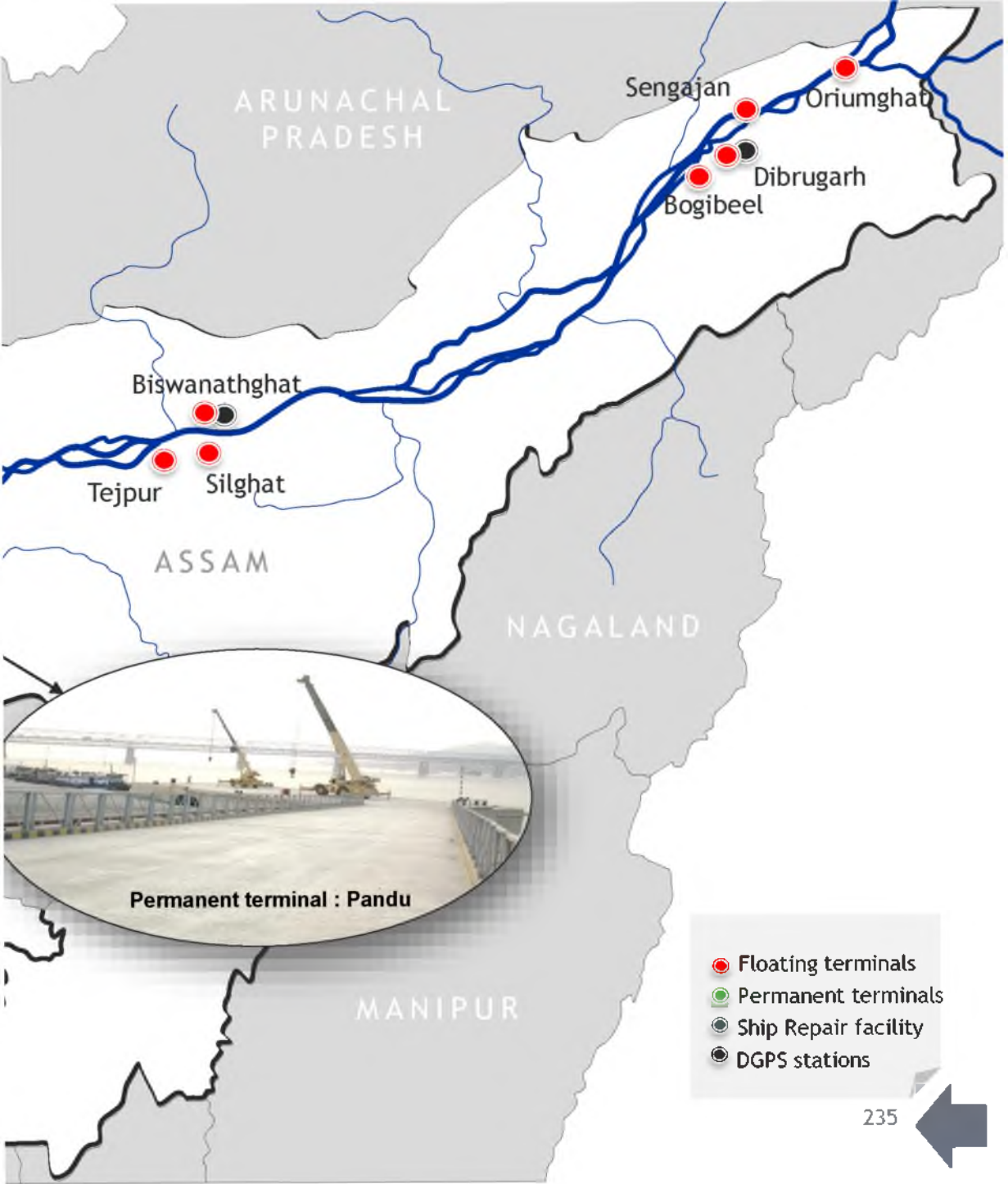
Arth Ganga| Master Plan



1. Multimodal Terminals
2. Freight Village and Logistics Hubs
3. Intermodal terminals
4. Water ambulance stations
5. Floating terminals
6. Ro-Ro terminals
7. Small community jetties
8. Ferry locations
9. Iron Ore jetties
10. Fertilizer jetties
11. Tourism hubs/ jetties

Towards INR 1000 Cr. economy….

ARTH BRAHMAPUTRA


ARUNACHAL PRADESH
Sengajan
Oriumghat
Dibrugarh
Bogibeel
Biswanathghat
Tejpur
Silghat
ASSAM
NAGALAND
MANIPUR
Permanent terminal : Pandu
Floating terminals
Permanent terminals
Ship Repair facility
DGPS stations

Kochi - Metro transportation linked with Ferry terminals

15 routes (around 78 Kms in length) connecting 10+ islands

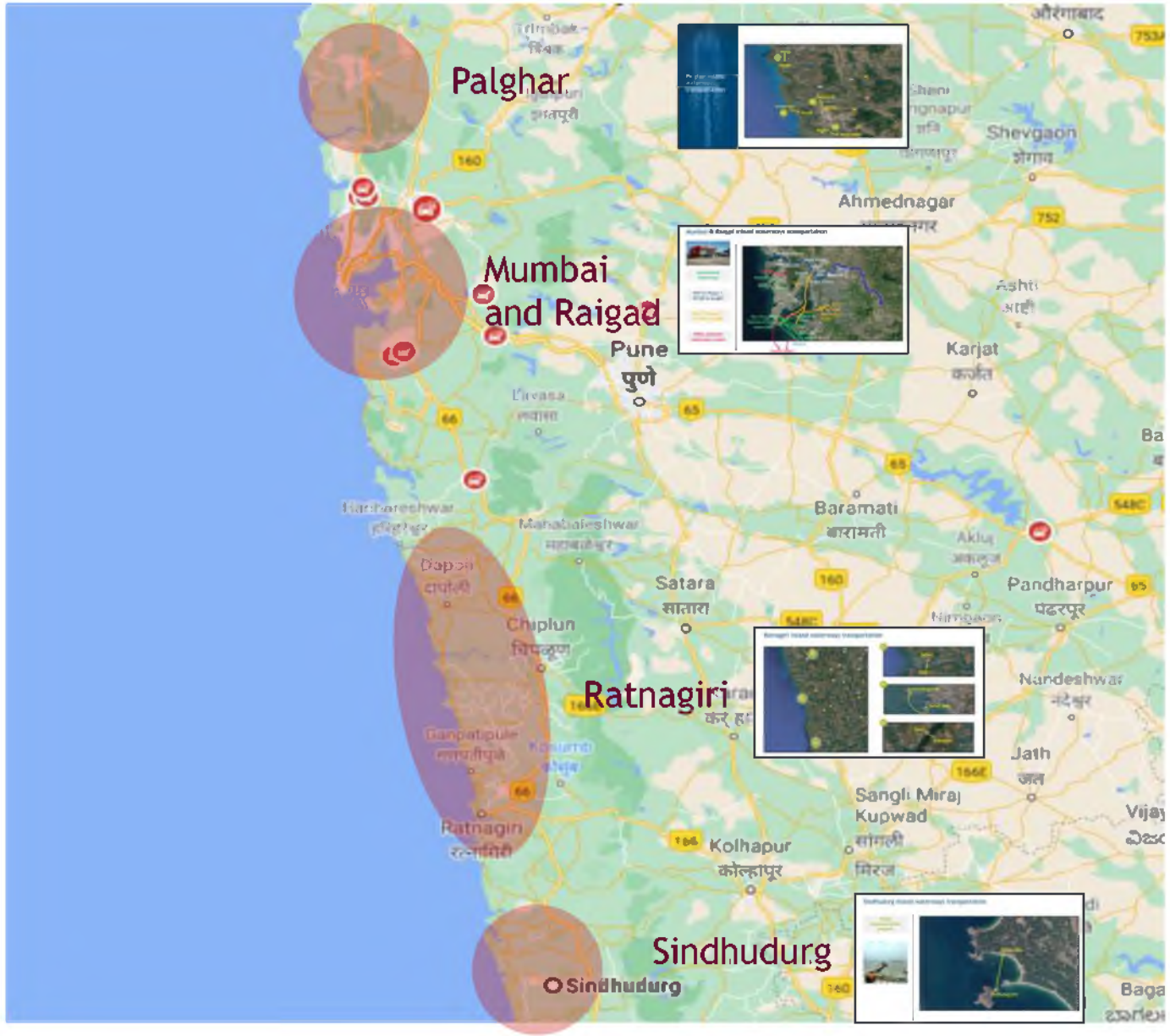
45 terminals and 78 boats planned

Route Network - Phase 1

Route Network - Phase 2

Ro-Ro Vessels at Willingdon Island

Maharashtra waterways transportation



Palghar waterways transportation


Nandore
Manor
Tamsai
Chahada
Vaitarna River
Haloli
Gaitare
Varai
Mykhop
Tandulwadi
Dhekale
Saphale
Vaitarna River
Vedhi
Kharmendi
R2
Kharmendi
Vaitrana
Bhinar
Virar
Usgaon
Arnala
Tungareshwar
National Park
Vasai Virar
Chinchoti
R4
Poman
Naigaon
Navghar
Panju Island

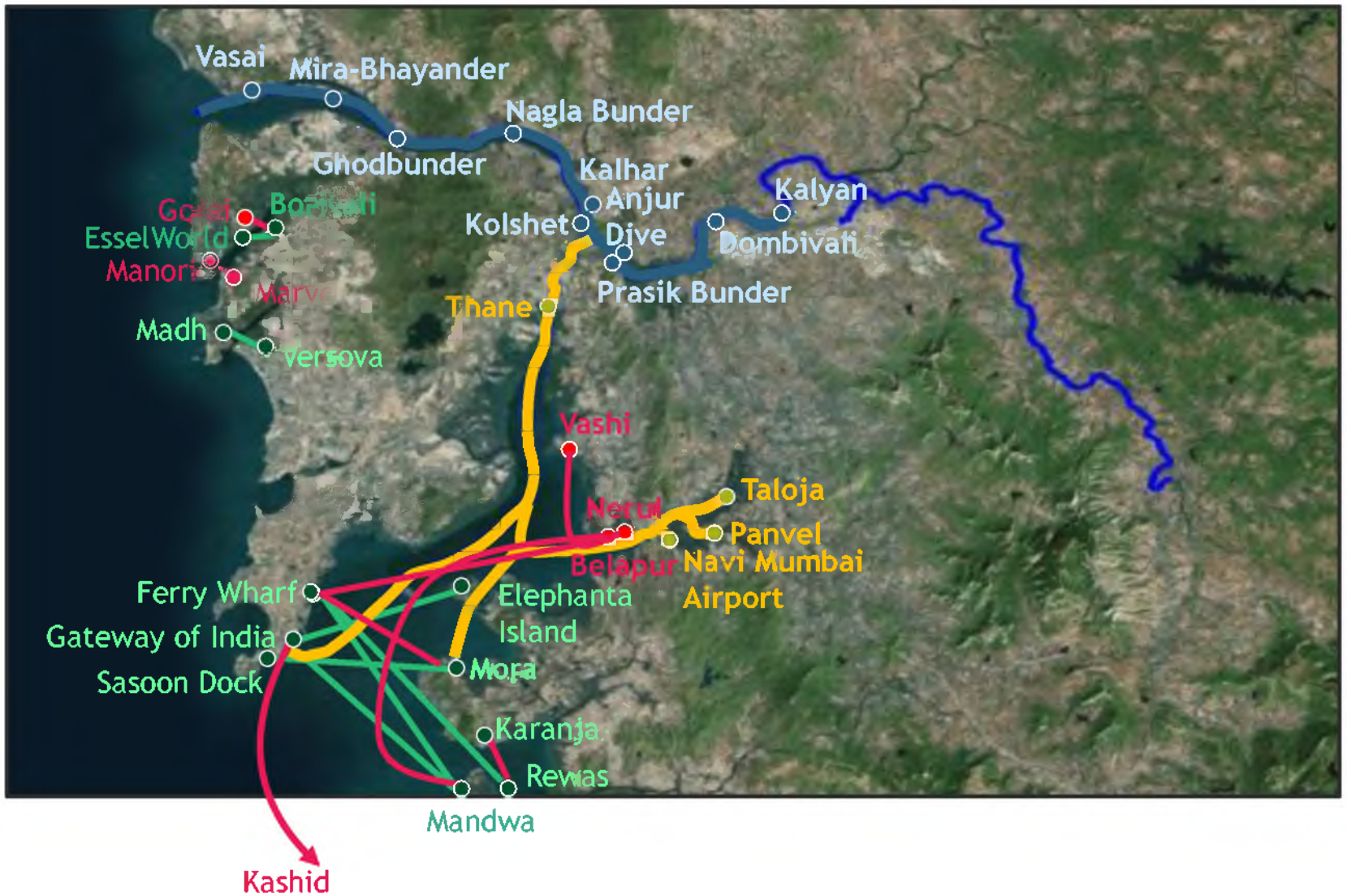
Mumbai & Raigad waterways transportation

Operational waterways

NW-53 Phase 1:
50 KM in length

NW-53 Phase 2:
93 KM in length

Other planned waterways routes



Ratnagiri waterways transportation

R1


Toradi
Ambadawe
Babe Temple
Kelika Devi
Mandir, Ghumari
Padmavati Mandir

R2

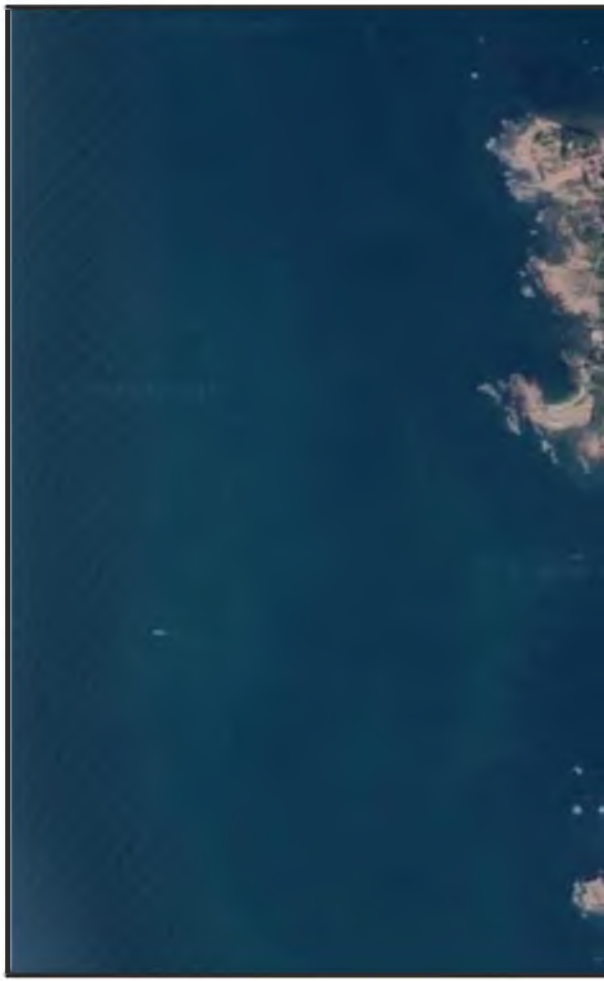

Suvarnadurga Fort
Suvarnadurga Fort
Harnai Jetty
Radha Krushna Mandir
Kanakdurg

R3


Dabhol
Bhairi Bhavani Mandir
Balapir Dargah
JAMA MASJID
VANKAR MOHALLA
Veldur Jetty
Anjanvel Lighthouse
Veldur
Bhairi Bhavani mandir
Ram mandir

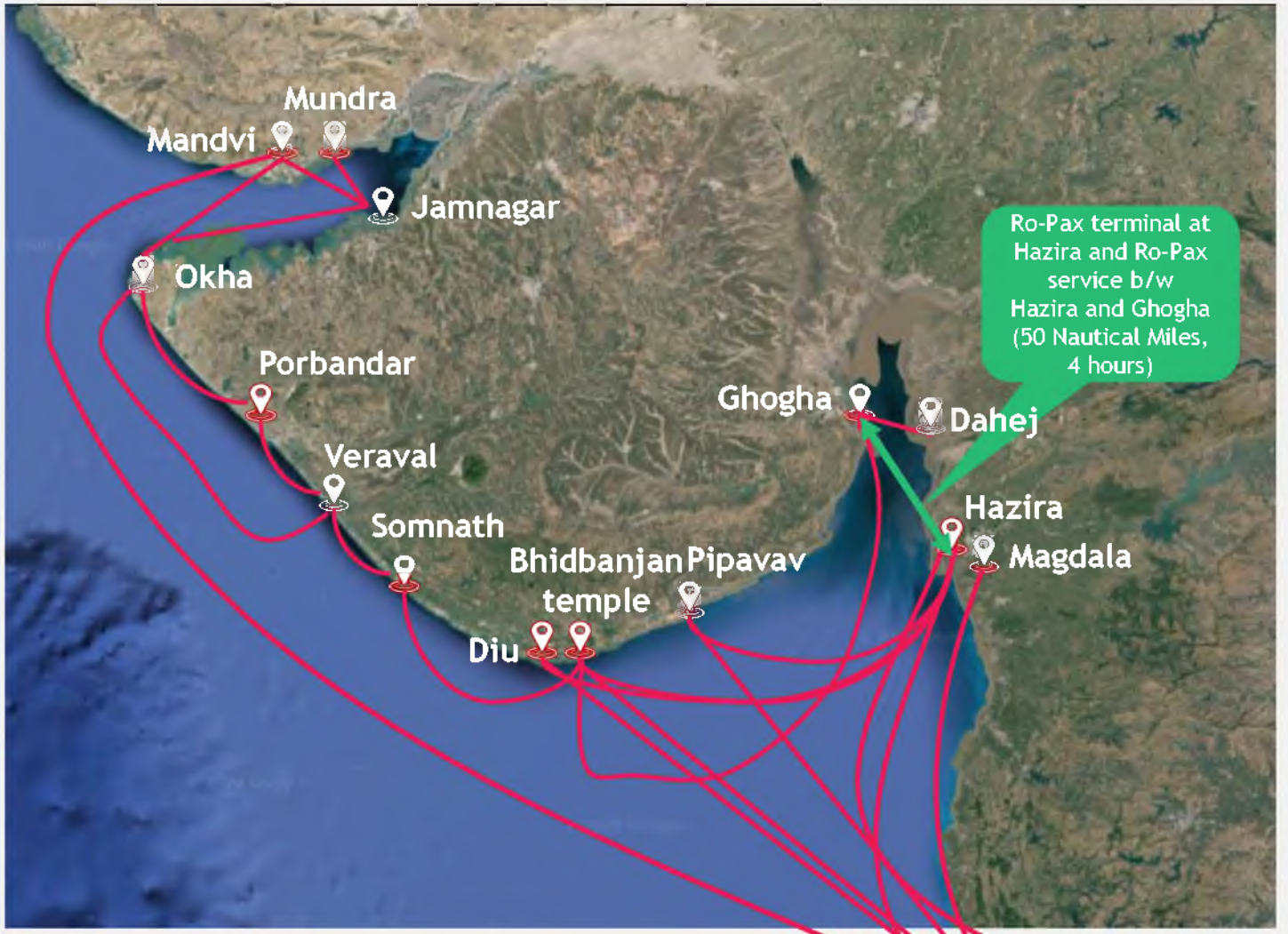
Sindhudurg waterways transportation

Under implementation projects




Malvan Jetty
Sindhudurg fort

Gujarat waterways transportation



Operational waterways

Planned / in-progress waterways

Goa waterways transportation

Five routes operational / in-progress

Other 8 jetties planned:

1. Chorao Island
2. Usgao Pale
3. Driver Island
4. Sinquirim
5. Maritime school jetty
6. Cortalim fishing jetty
7. Cumbharuja ferry point
8. Chapora

Locations identified for Ro-Ro / Ro-Pax services

40+ potential locations identified

Ferry service connecting Mandvi-Okha

Ferry service connecting Okha-Porbander-Pipavav-Hazira-Ghogha-Dahej with Mumbai

Ferry service connecting Mandvi-Porbandar-Mumbai-Raigad-Sindhudurg

Ferry services near Mumbai

Ferry services in Goa

Ferry service connecting Udupi-Mangalore

Ferry service connecting Kollam and Mahe to Lakshadweep

Ferry service connecting Karaikal-Jaffna

13.1 – 13.2 Urban Water transportation | Activities and milestones

	Key activities	Target
13.1.1	Comprehensive study for Arth Ganga (includes detailed engineering design & traffic potential study)	
13.1.1.1	Tender document finalization and NIT/ RFQ issue	Q4, 2020
13.1.1.2	Bid evaluation, NOC approval and LOA issue	Q1, 2021
13.1.1.3	Construction completion and operationalization	Q3, 2021
13.1.2	Develop 10+ Ro-Ro terminals in partnership with State government	
13.1.2.1	Tender document finalization and NIT/ RFQ issue	Q4, 2020
13.1.2.2	Bid evaluation, NOC approval and LOA issue	Q1, 2021
13.1.2.3	Construction completion and operationalization	Q1, 2022
13.2	Develop Ferry terminals across 60+ locations in partnership with State government on Arth Ganga model	
13.2.1	Tender document finalization and NIT/ RFQ issue	Q3, 2021
13.2.2	Bid evaluation, NOC approval and LOA issue	Q1, 2022
13.2.3	Construction completion and operationalization	Q1, 2023