2026

Coastal Shipping in India

Potential for growth and Action Framework

Committee on Costal Shipping

Ministry of Ports, Shipping and Waterways

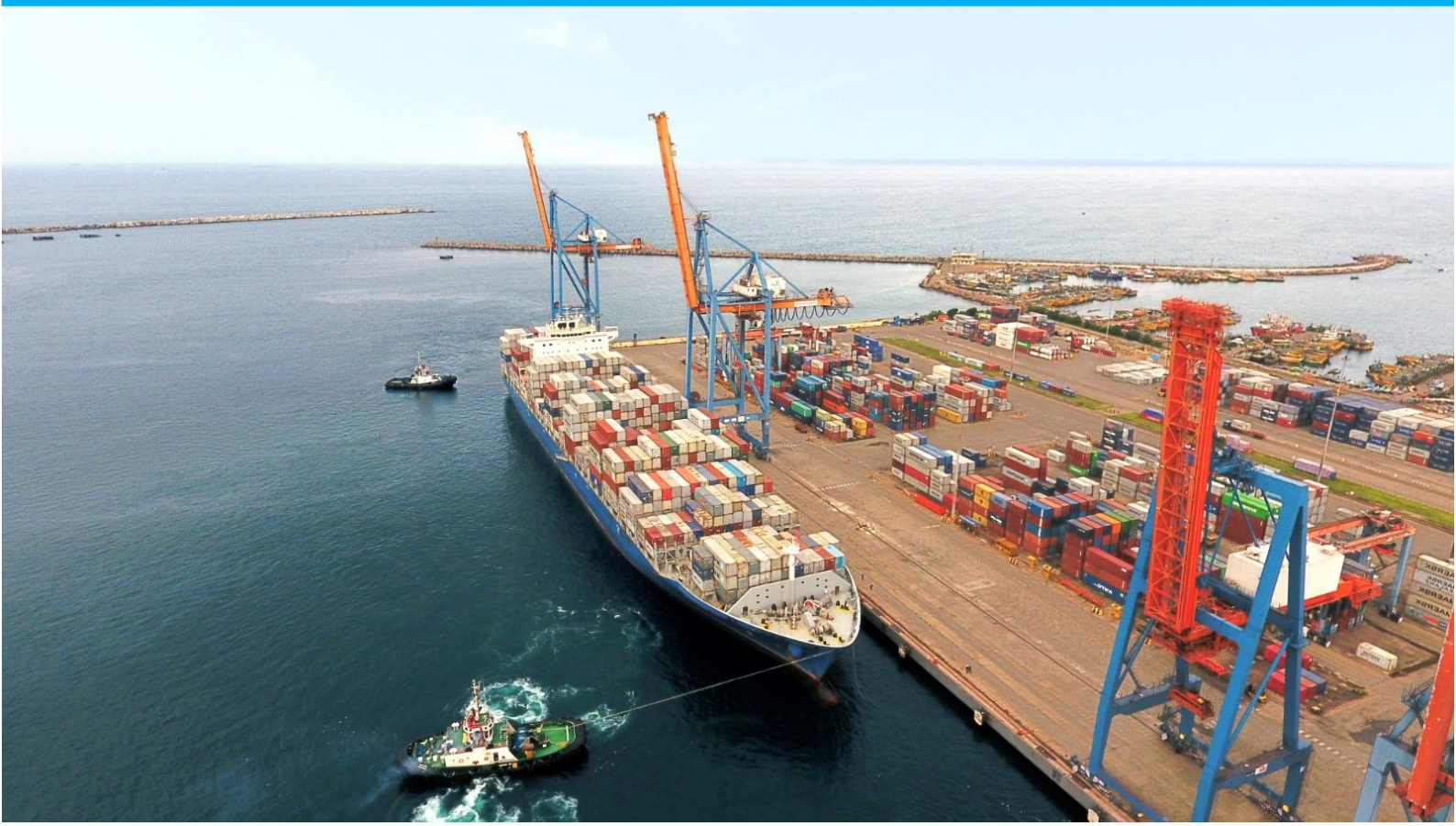
January 2026

सत्यमेव जयते

Ministry of Ports,
Shipping & Waterways
Government of India

Action Framework for Coastal Shipping in India

Enhancing Logistics Efficiency, Cost Competitiveness, and Sustainable Freight Mobility in the Country



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Introduction and Background

1. Introduction and Background

1.1. Coastal Shipping in India

Coastal shipping refers to the movement of domestic cargo and passengers by sea along a country's coastline, between ports located within national territorial waters. In the Indian context, coastal shipping constitutes a critical component of domestic logistics, leveraging the country's extensive coastline of more than 11,000 km, 12 Major Ports, and over 200 notified non-major ports.

In FY 2024-25, the total coastal cargo throughput across Indian ports reached 339 MT, continuing the steady upward trend observed over the past decade. Of this, Major Ports accounted for ~196 MT, representing nearly 58% of the total coastal cargo, while Non-Major Ports contributed ~143 MT (42%). Over last decade, coastal cargo volumes have shown consistent growth, rising from 161 MT in FY 2013-14 to 339 MT in FY 2024-25, marking a strong increase of ~110% over the period @CAGR 7%.

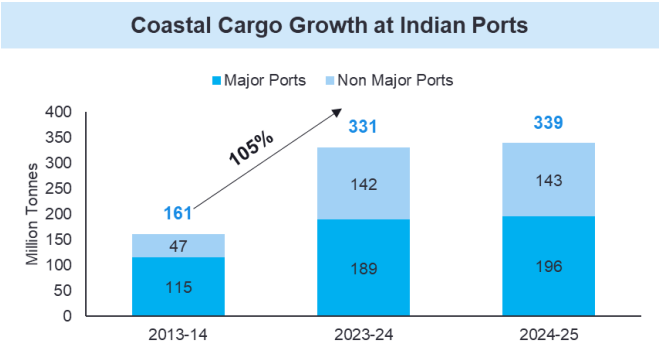


Figure 1: Coastal growth at Indian Ports

Source: IPA and TRW Data

India's coastal shipping sector currently handles a wide range of bulk, break-bulk, liquid bulk, and limited containerised cargo. Key commodities transported through coastal routes include coal, iron ore, petroleum products, fertilizers, cement, food grains, steel, and project cargo. Despite its natural advantage and inherent cost and environmental efficiency, coastal shipping's modal share in India remains modest when compared to road and rail transport, as well as global benchmarks in countries with comparable coastlines and industrial geography.

Table 1: Coastal + IWT modal share of total domestic freight (%)

S. No.	Country / Region	Coastal + IWT modal share of total domestic freight (%)
1	Japan	~34%
2	Italy	~28%
3	People's Republic of China	~24%
4	Australia	~17%
5	Brazil	~17%
6	Bangladesh	~16%
7	USA	~12%
8	Thailand	~12%
9	Germany	~11%
10	United Kingdom	~11%
11	France	~9%
12	Canada	~7%
13	**India**	**~6.0–6.4%**

Source: ADB Report on Action plan for promotion of Coastal Shipping in India, Committee Analysis

Studies and policy documents highlight that India has not yet fully utilised its coastal waterways for domestic freight movement, despite waterborne transport being significantly more energy-efficient and environmentally sustainable than land-based alternatives.

The existing coastal fleet is characterised by a limited number of modern cargo vessels, ageing tonnage, and a very small containerised coastal fleet, which constrains the sector's ability to scale rapidly in response to growing domestic logistics demand.

1.2. Importance of Coastal Shipping in India's Logistics System

Coastal shipping offers several strategic advantages for India's transport and logistics ecosystem. It provides a cost-effective mode for moving bulk and long-haul cargo, particularly over distances exceeding 500 km, where road and rail transportation face rising congestion, capacity constraints, and higher external costs. International experience and Indian studies consistently indicate that coastal shipping can deliver lower unit transport costs, reduced fuel consumption per tonne-kilometre, and significantly lower greenhouse gas emissions compared to road transport.

From a national perspective, greater reliance on coastal shipping can contribute to:

- Reduction in logistics costs, which remain relatively high in India compared to global peers.
- Decongestion of over-utilised rail corridors and national highways.
- Improved energy efficiency and lower carbon intensity of freight movement.
- Enhanced resilience of supply chains through modal diversification.
- Support to regional and port-led industrial development along coastal states.

Coastal shipping also aligns closely with India's commitments on climate action and sustainable development, as maritime transport emits substantially lower emissions per unit of cargo compared to road transport. This has led to coastal shipping being recognised as a key lever for achieving green logistics and decarbonisation objectives in the transport sector

1.3. Rationale for this study

Over the past decade, a range of policy initiatives, fiscal incentives, and procedural reforms have been implemented, resulting in a steady expansion of coastal shipping in India. These measures have contributed to improved awareness, increased utilisation across select commodities, and gradual growth in coastal cargo movement. However, to scale up coastal shipping and achieve the ambitious targets envisaged under national maritime vision frameworks, it is necessary to further strengthen and accelerate development efforts.

Persistent structural, operational, and market-related challenges—such as fragmented demand, limited availability of suitable vessels, gaps in last-mile connectivity at ports, procedural bottlenecks, and incomplete integration with multimodal logistics systems—need to be addressed in a coordinated and sustained manner.

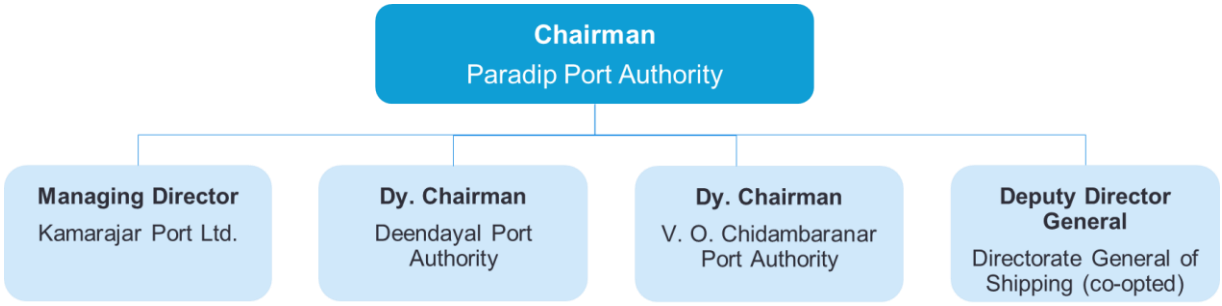
Existing studies and policy frameworks have largely addressed coastal shipping either as a sub-component of broader maritime or logistics strategies or from a sector-specific perspective. While these efforts have generated valuable insights, there remains a need for a consolidated, implementation-oriented action framework that:

- Integrates international best practices with Indian operational realities.
- Identifies commodity-wise and corridor-wise viability of coastal shipping.
- Examines origin-destination (O-D) pairs to determine economically feasible routes.
- Quantifies the potential benefits in terms of logistics cost reduction, congestion relief, and environmental gains.
- Recommends targeted policy, regulatory, and facilitation measures to accelerate adoption by industry stakeholders.

The present study seeks to address these gaps by providing a comprehensive, data-driven action framework for the promotion of coastal shipping in India, anchored in empirical analysis, stakeholder consultations and aligned with national maritime vision documents.

1.4. Committee on Coastal Shipping and Its Mandate

In recognition of the strategic importance of coastal shipping and the need for a focused review, the Ministry of Ports, Shipping and Waterways (MoPSW), Government of India, constituted a Committee on Coastal Shipping vide Office Memorandum dated 13 November 2025.



The mandate of the Committee, as notified by the Ministry, includes undertaking a comprehensive study covering the following key aspects:

- Preparation of a master plan for the promotion of coastal shipping in India, keeping in view international best practices.
- Conducting a detailed cost benefit analysis for key commodities transported through coastal shipping.
- Examining origin destination pairs to identify viable coastal routes and assess their economic feasibility.
- Evaluating the potential of coastal shipping to reduce logistics costs, ease congestion on road and rail networks, and enhance environmental sustainability.
- Suggesting policy, regulatory, facilitation, and compliance-related measures to improve efficiency, competitiveness, and adoption of coastal shipping.

The Committee has been tasked with submitting its findings and recommendations within a defined timeline, underscoring the policy priority accorded to coastal shipping by the Government of India.

1.5. Existing Studies and Vision for Coastal Shipping

Several studies and policy documents have examined coastal shipping in India over the years. Notable among these are the Asian Development Bank's study on promotion of coastal shipping, sectoral assessments by maritime institutions, and thematic white papers on green and short-sea shipping. These studies have highlighted the economic and environmental advantages of coastal shipping while also identifying barriers related to infrastructure, fleet composition, regulatory frameworks, and market aggregation.

At the policy level, coastal shipping has been consistently emphasised in national maritime strategies, including Maritime India Vision (MIV) 2030 and Maritime Amrit Kaal Vision (MAKV) 2047. These frameworks recognise coastal shipping as a key instrument for enhancing domestic maritime trade, improving modal balance, and achieving long-term sustainability objectives.

Coastal Shipping Targets under MIV 2030 and MAKV 2047

Maritime India Vision 2030 sets out explicit goals to enhance the modal share of coastal shipping and inland waterways, supported by policy reforms, port infrastructure development, and fleet modernisation. The vision envisages a significant increase in domestic waterborne cargo volumes by 2030, with coastal shipping playing a central role in bulk cargo movement and the gradual introduction of containerised coastal services.

Looking further ahead, Maritime Amrit Kaal Vision 2047 articulates a long-term aspiration to transform India into a global maritime leader. Within this framework, coastal shipping is positioned as a foundational element of a sustainable, multimodal logistics system. MAKV 2047 envisages a substantial scaling-up of coastal and inland waterway cargo volumes, development of modern coastal fleets, greater integration with ports and logistics parks, and alignment with green shipping and decarbonisation pathways.

Table 2: Vision for coastal shipping as per MAKV 2047

Parameter	Baseline (FY2024-25)	2030 Target	2047 Target
Coastal Cargo Volume	~169 MTPA*	~230 MTPA	~1,300 MTPA
Coastal Cargo Throughput of Ports	~339 MTPA	~460 MTPA*	~2,600 MTPA*
Growth Multiple (w.r.t. Current)	1.0x*	~1.35x*	~7–8x*
Share in Domestic Freight Movement	6%	7.5%	12%

*Source: MIV 20230 and MAKV 2047 | *Derived Values*

Note: The coastal cargo volumes presented in the above table refer to unique coastal cargo moved (MMTPA) along the Indian coastline. This metric represents the actual quantity of domestic cargo transported through coastal shipping, counted once at the national level.

It is clarified that coastal cargo throughput reported by Indian ports is a different metric. Port throughput data typically records the same coastal cargo multiple times, as the cargo is handled at:

- *the origin port (loading), and*
- *the destination port (unloading),*

resulting in coastal cargo throughput being approximately twice the unique coastal cargo volume. In certain operational configurations—such as intermediate transhipment, multi-port calls, or hub-and-spoke coastal services—the same cargo may be handled more than twice, leading to even higher reported throughput.

Accordingly, coastal cargo throughput figures at ports should not be directly equated with national coastal cargo volumes, and the two metrics must be interpreted distinctly for planning, target-setting, and performance assessment purposes.

These targets provide the strategic backdrop against which the present master plan has been formulated, translating high-level vision into actionable strategies, prioritised corridors, and implementable policy recommendations.

02

Overview of Coastal Shipping in India

2. Overview of Coastal Shipping in India

2.1. Coastal Cargo Handling Performance

As discussed earlier, In FY 2024-25, the total coastal cargo throughput across Indian ports reached 339 MT, continuing the steady upward trend observed over the past decade. Of this, Major Ports accounted for ~196 MT, representing nearly 58% of the total coastal cargo, while Non-Major Ports contributed ~143 MT (42%). Over last decade, coastal cargo volumes have shown consistent growth, rising from 161 MT in FY 2013-14 to 339 MT in FY 2024-25, marking a strong increase of ~110% over the period @CAGR 7%.

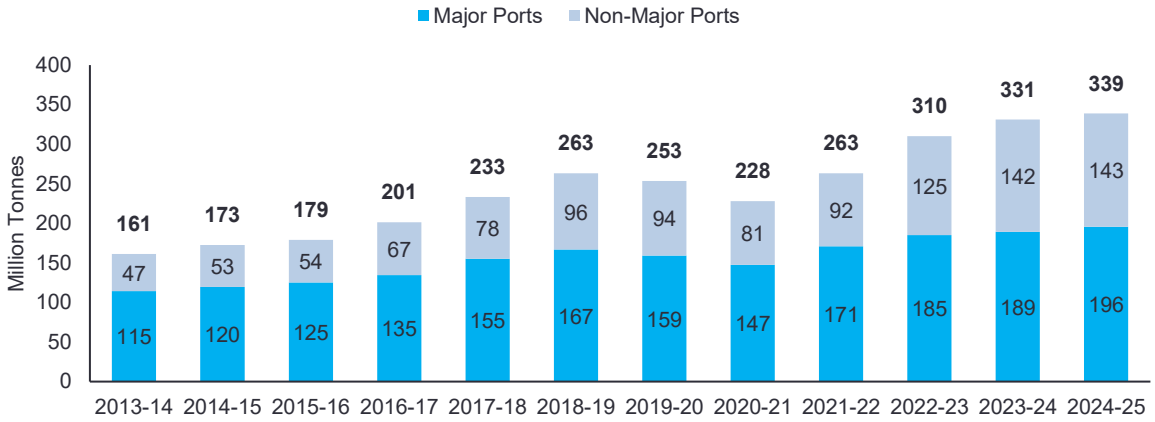


Figure 2: Coastal Cargo handling Performance

2.1.1. Coastal Cargo Growth at Major Ports

Coastal cargo handled at India's Major Ports has recorded a steady expansion over the last decade, increasing from about 115 million tonnes (MT) in 2013–14 to around 196 MT in 2024–25. This represents an absolute growth of approximately 70% over the period, translating into a compound annual growth rate (CAGR) of about 5% per annum across eleven years.

The growth has been driven primarily by increased coastal movement of bulk commodities such as coal, petroleum products, iron ore, and fertilizers, supported by rising domestic energy demand and industrial consumption across coastal and hinterland states.

Table 3: Coastal Cargo Growth at Major Ports

S. No.	Port	Cargo Volume ('000 Tonnes)	Cargo Volume (Million Tonnes)	Share (%)	Major Coastal Commodities
1	PPA	63,693	63.7	33%	Coal, Iron ore, IO Pellets, POL
2	MbPA	22,346	22.3	11%	POL, Iron Ore and Cement & clinkers, Others
3	KPL	19,687	19.7	10%	Thermal coal, POL, Containers, others
4	VPA	19,333	19.3	10%	Iron ore & Pellets, POL, Thermal Coal, Containers, others
5	DPA	15,753	15.8	8%	Crude, POL, Salt, Containers, others
6	CoPA	12,546	12.5	6%	POL, Steel, cement, containers, Others

S. No.	Port	Cargo Volume ('000 Tonnes)	Cargo Volume (Million Tonnes)	Share (%)	Major Coastal Commodities
7	VOCPA	11,986	12.0	6%	Th. Coal, POL, salt and containers
8	NMPA	8,680	8.7	4%	Iron ore, Crude & POL, containers, others
9	ChPA	6,158	6.2	3%	POL, Containers, iron & steel products
10	JNPA	6,026	6.0	3%	POL, Cement, break-bulk, Containers, others
11	SMPA	5,095	5.1	3%	SMPA-K: Gen. cargo, iron and steel, agro products, containers, Others
12	MgPA	4,374	4.4	2%	SMPA-H: POL, Coal, Chem & Petrochem. Containers, Others
	Total	**1,95,676**	**195.7**	**100%**	Iron ore, POL, Bauxite, coking coal, iron & steel, others

Source: IPA and TRW, MoPSW

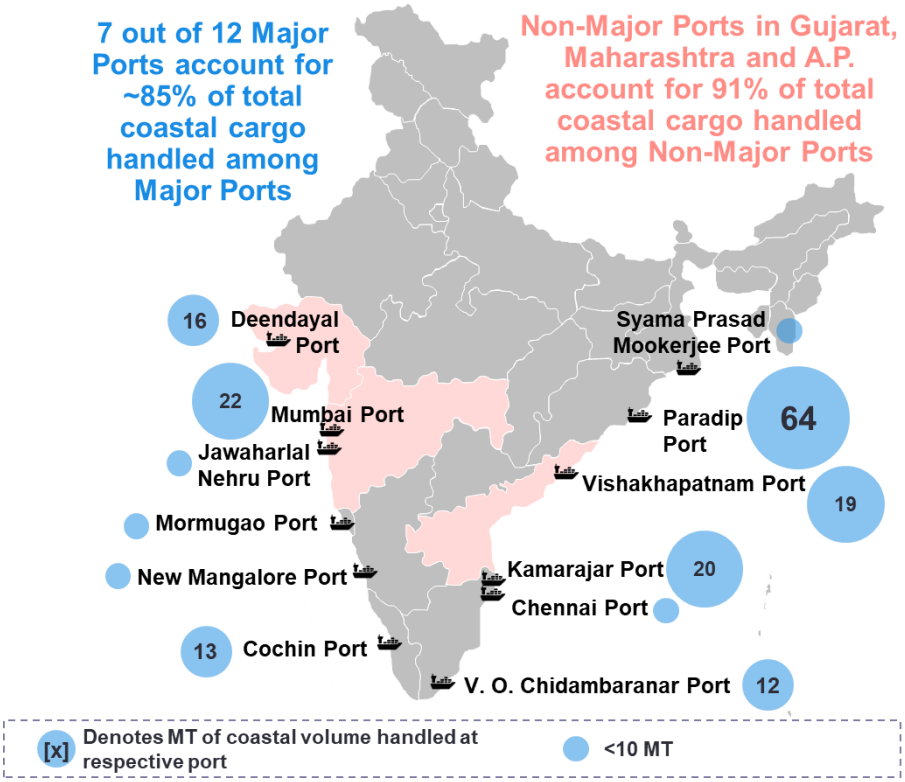


Figure 3: India's coastal cargo is highly concentrated
Source: IPA and TRW Data

2.1.2. Coastal Cargo Growth at Non-Major Ports

Coastal cargo handled at Non-Major Ports has witnessed a sharp and sustained increase over the last decade, rising from about 47 million tonnes (MT) in 2013–14 to around 143 MT in 2024–25. This corresponds to an absolute growth of >200%, translating into a compound annual growth rate (CAGR) of about 11% over the eleven-year period.

The accelerated growth at non-major ports has been driven by the rapid expansion of private port capacity, improved operational flexibility, and the proximity of these ports to coastal industrial clusters, power plants, refineries, and consumption centres.

Table 4: Coastal Cargo Growth at Non-Major Ports

S. No.	State / UT	Coastal Cargo Volume Handled at Non-Major Ports 2024-25 (MT)	Share (%)
1.	Gujarat	49.75	34.98%
2.	Maharashtra	42.21	29.68%
3.	Andhra Pradesh	33.45	23.52%
4.	Odisha	8.69	6.11%
5.	Puducherry	5.43	3.82%
6.	Others	2.67	1.88%
	Total	**142.22**	**100.00%**

Source: Update on India Port Sector 2023-24, Transport Research Wing, MoPSW

2.2. Key Commodities handled in Coastal Shipping

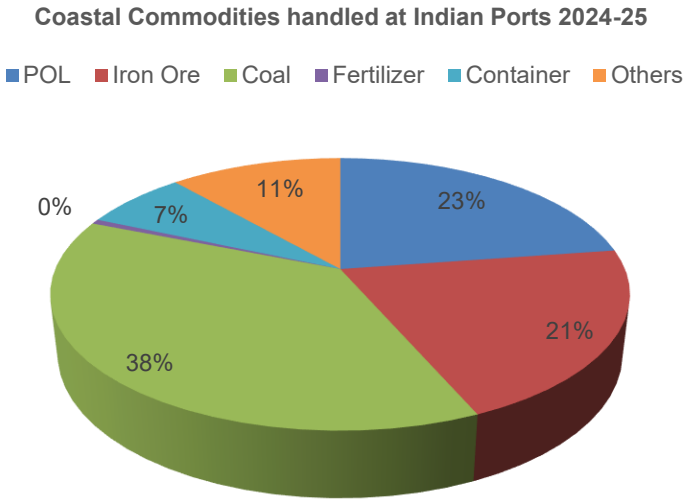


Figure 4: Coastal Commodities handled at Indian Ports 2024-25
Source: Transport Research Wing Data

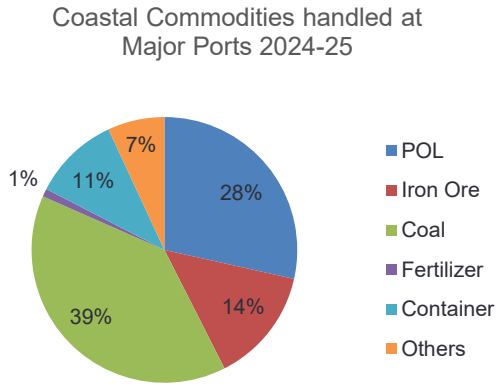


Figure 5: Coastal Commodities handled at Major Ports 2024-25
Source: Transport Research Wing Data

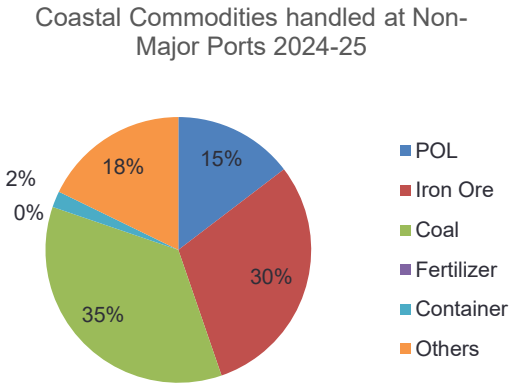


Figure 6: Coastal Commodities handled at Non-Major Ports 2024-25
Source: Transport Research Wing Data

The commodity profile of costal cargo is strongly skewed towards bulk and liquid bulk cargoes, reflecting the inherent suitability of coastal shipping for high-volume, low-value and long-haul movements.

Coal emerged as the single largest coastal commodity, accounting for 116.7 MMT (around 35%) of total coastal cargo, driven by large-scale movement of thermal coal from eastern ports to power plants along the west and south coasts.

Petroleum and Oil Products (POL) constituted the second largest segment at 78.9 MMT (24%), supported by regular and predictable movements between refineries, import terminals, and coastal consumption centres. **Iron ore and pellets** accounted for 83.2 MMT (25%), with a notable dominance of non-major ports reflecting the proximity of private ports to mining and steel-making clusters and the operational flexibility offered by these ports.

Containerised coastal cargo, though modest in comparison to bulk commodities, reached 20.6 MMT, with Major Ports handling nearly 90% of this volume, highlighting the role of established container terminals and scheduled services in supporting coastal containerisation.

The "Others" category, comprising cement, building materials, steel, foodgrains, and miscellaneous break-bulk cargo, accounted for 31.8 MMT, with a higher share at non-major ports due to their alignment with coastal industrial clusters and project cargo requirements. Fertilizer movement through coastal shipping remained negligible during the year, largely due to policy, pricing, and supply-chain structuring factors.

Table 5: List of Other Commodities moved via Coastal Shipping

S. No.	"Others" Category	Commodity
1	Agricultural Cargo	Vegetable Products, Foodgrains, Salt, Sugar
2	Break Bulk / General Cargo	Drilling Pipes, General Cargo, Industrial Other Products, Machinery & Equipment
3	Cement	Cement and Clinker
4	Chemicals	Caustic Soda Lye, Phosphoric Acid, Sulphuric Acid, Bitumen
5	Construction Materials	Gravel, Sand, Stone Aggregate, Stone Dust
6	Other Metals/Minerals/Ores	Bauxite, Bentonite Clay, Feldspar, Gypsum, Laterite, Lead Metal, Manganese Ore, Metal Scrap, Mixed Metals & Ores, Silica Sand, Zinc Concentrate, Zinc Concentrate / Laterite Mix
7	Project Cargo	Over-Dimensional / Heavy Lift Cargo
8	Ro-Ro	Automobiles and other Roll-on / Roll-off Cargo
9	Steel	Iron & Steel Materials, Mill Scale (Steel Manufacturing Residue), Slag (Steel / Iron Slag), Steel Products

Source: Analysis of primary data by Major Ports

Key Observations:

- ***Coal and POL products*** account for a substantial share of coastal traffic, as they involve large, regular movements between production or import hubs and coastal consumption centres such as power plants, refineries, and industrial clusters, making coastal shipping cost-effective and operationally reliable.
- ***Iron ore, cement, and building materials*** are similarly suited to coastal transport given their bulk nature and the significant cost advantages of moving long-haul volumes by sea compared to road or rail.
- ***Fertilizers and foodgrains*** have increasingly adopted coastal shipping to support balanced regional distribution and reduce pressure on rail corridors, particularly for movements between eastern ports and western or southern consumption markets.
- In addition, ***select containerised coastal cargo***, such as tiles, cement, agri-products, and consumer goods, has emerged where shippers can aggregate volumes and benefit from predictable coastal services.

2.3. Coastal Shipping Routes in India

2.3.1. Coastal Shipping Pattern

Coastal shipping in India is primarily structured around inter-regional cargo movement between the East Coast, West Coast, and South Coast, reflecting the geographic separation between resource-rich regions, industrial clusters, and major consumption centres. These coast-to-coast movements form the backbone of coastal trade and are dominated by bulk and liquid bulk commodities that benefit from economies of scale and long-haul cost advantages offered by sea transport.

The East Coast functions predominantly as a source region for coastal shipping, owing to the concentration of coal mines, iron ore belts, and mineral-based industries in eastern India. Large volumes of thermal coal, iron ore, and iron ore pellets are shipped from eastern ports to power plants, steel plants, and industrial clusters located along the West Coast and South Coast. East-to-West and East-to-South movements together account for a significant share of coastal bulk cargo, particularly coal for power generation and iron ore for steelmaking, where rail capacity constraints and long inland distances make coastal shipping an efficient alternative.

The West Coast serves both as a major consumption region and redistribution hub. It receives substantial coastal volumes of coal, iron ore, and fertilizers from the East Coast, while also acting as an origin for petroleum and oil products (POL) produced at refineries located along the western seaboard. POL cargoes are frequently moved from the West Coast to ports on the South and East Coasts to supply coastal states, industrial users, and hinterland markets connected to these ports. In addition, the West Coast handles significant movement of cement, building materials, steel, and containerised domestic cargo, reflecting the dense industrial and urban agglomerations in western India.

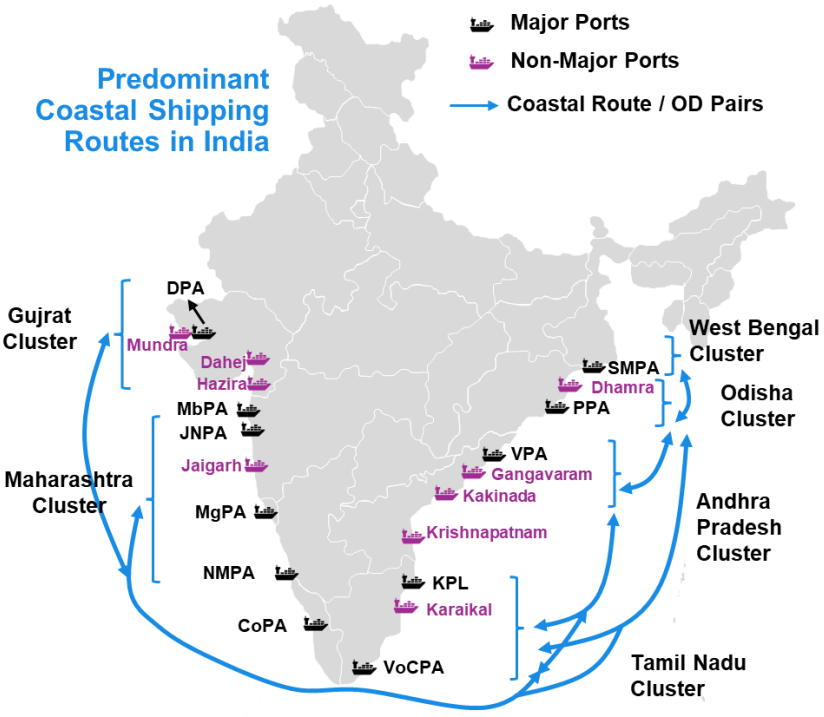


Figure 7: Predominant coastal shipping routes in India

The South Coast primarily functions as a net receiver of coastal cargo, driven by high demand from power plants, refineries, manufacturing hubs, and urban consumption centres in southern states. Large volumes of coal and POL products are transported to the South Coast from both the East and West Coasts. At the same time, select ports on the South Coast also act as origins for containerised

and break-bulk coastal cargo, including cement, steel products, and agri-based commodities, catering to inter-regional trade with the West Coast.

In addition to inter-coastal flows, intra-coastal movements within the West Coast and within the East Coast are also observed, particularly for POL products, building materials, and short-haul bulk cargo, where coastal shipping competes directly with road transport. However, the strongest economic case for coastal shipping continues to lie in longer-haul inter-coastal movements, where scale, cost savings, and environmental benefits are most pronounced.

2.3.2. Codification of Coastal Routes

The codification of coastal routes in India has been designed to create a simple, intuitive, and scalable framework that supports planning, facilitation, and promotion of coastal shipping, without constraining operational flexibility.

The methodology adopts a cluster-pair based approach, wherein each coastal route is defined as a connectivity link between two identified Port Clusters. Under this framework, a coastal route represents a logical coastal corridor reflecting aggregated cargo movement potential, shared hinterlands, and regional logistics linkages, rather than a single physical sailing path.

The methodology recognises that multiple services (direct, feeder-based, commodity-specific) may operate along the same cluster-pair route. Such service-level distinctions, if required in future, can be addressed through operational or scheme-specific classifications without altering the base route code. This ensures that route codification remains a planning and facilitation construct, **not a regulatory or navigational restriction**.

Mapping of Port Clusters

Port clusters have been mapped as the foundational building blocks for coastal route codification. The clustering methodology is geography-driven, cargo-oriented, and inclusive of both Major Ports and cargo-handling Non-Major Ports.

The primary criterion adopted for clustering is geographical proximity, with ports located within an approximate 200 km coastal stretch grouped into a single Port Cluster. This distance threshold reflects practical coastal shipping considerations such as sailing time, hinterland overlap, cargo aggregation potential, and operational feasibility. Administrative boundaries have not been treated as rigid constraints; ports located near state boundaries have been clustered together where geographical continuity and logistics logic justify such grouping.

Each Port Cluster represents a regional coastal cargo aggregation unit, typically characterised by:

- shared or overlapping hinterlands,
- complementary port functions (bulk, liquid, container, Ro-Ro),
- existing or potential coastal cargo flows, and
- scope for coordinated development of coastal services.

Both Major and Non-Major Ports within a cluster are treated as integral components of the same coastal ecosystem, recognising the critical role played by non-major ports in bulk cargo handling, industrial supply chains, and short-haul coastal movements.

Special treatment has been applied for island territories:

- All ports in Andaman & Nicobar Islands have been grouped into a single cluster, and
- All ports in Lakshadweep have been grouped into a single cluster,

given their insular geography, limited number of ports, and distinct operational characteristics.

Each cluster has been assigned a simple alphanumeric code, generally based on the state identifier and a sequential number (e.g., GJ1, MH3, TN1), to ensure clarity, ease of reference, and administrative usability.

Clusters have also been classified by relative importance (High / Medium / Low) based on:

- presence and scale of Major Ports,
- cargo volumes and diversity handled by Non-Major Ports,
- strategic relevance for national EXIM and domestic coastal cargo, and
- role in supporting industrial corridors and energy supply chains.

Table 6: Mapping of Port Clusters

S. No.	Cluster Name	Cluster State(s)	Cluster Code	Major Port(s)	Non-Major Ports	Importance
1	Kutch & Gulf of Kutch Cluster	Gujarat	**GJ1**	Deendayal Port Authority (Kandla)	Mundra (Old), Adani Ports & SEZ Ltd. (GAPL – Mundra), Navlakhi, Jakhau, Okha, Sikka, Bedi, Salaya	High
2	Central Gujarat Cluster	Gujarat	**GJ2**	—	Pipavav (GPPL), Pipanav (Victor), Jafarabad, Bhavnagar, Alang, Sachana, Porbandar, Veraval	High
3	South Gujarat / Gulf of Khambhat Cluster	Gujarat	**GJ3**	—	Dahej, Hazira (HPPL & AHPPL), Magdalla, SPPL (Chhara)	High
4	Mumbai–JNPA Cluster	Maharashtra	**MH1**	Mumbai Port Authority; Jawaharlal Nehru Port Authority (JNPA)	Dharamtar (Alibag), Karanja, Revdanda, Ulwa–Belapur (Panvel), Bhiwandi	High
5	Central Konkan Cluster	Maharashtra	**MH2**	—	Dabhol, Jaigad, Ratnagiri	Medium
6	Southern Konkan–Goa Interface Cluster	Maharashtra, Goa	**MH3**	Mormugao Port Authority	Bankot, Rajpuri / Dighi, Redi, Panaji	High
7	Karnataka Cluster	Karnataka	**KA1**	New Mangalore Port Authority	Old Mangalore, Karwar	High
8	North Kerala Cluster	Kerala	**KL1**	—	Azhikkal, Kozhikkode, Beypore	Medium

S. No.	Cluster Name	Cluster State(s)	Cluster Code	Major Port(s)	Non-Major Ports	Importance
9	Central & South Kerala Cluster	Kerala	**KL2**	Cochin Port Authority	—	High
10	Chennai Metropolitan Cluster	Tamil Nadu	**TN1**	Chennai Port Authority; Kamarajar Port Authority (Ennore)	Kattupalli	High
11	Central Tamil Nadu Cluster	Tamil Nadu	**TN2**	—	Cuddalore, Nagapattinam, Thirukkadaiyur	Medium
12	South Tamil Nadu Cluster	Tamil Nadu	**TN3**	V.O. Chidambaranar Port Authority (Tuticorin)	Koodankulam	High
13	North Andhra (Vizag–Kakinada) Cluster	Andhra Pradesh	**AP1**	Visakhapatnam Port Authority	Gangavaram, Kakinada Anchorage Port, Kakinada Deepwater Port, Rava Port	High
14	South Andhra (Nellore) Cluster	Andhra Pradesh	**AP2**	—	Krishnapatnam	High
15	Odisha Cluster	Odisha	**OD1**	Paradip Port Authority	Dhamra, Gopalpur	High
16	Haldia–Kolkata Cluster	West Bengal	**WB1**	Syama Prasad Mookerjee Port Authority (Kolkata–Haldia)	—	High
17	Karaikal Cluster	Puducherry	**PY1**	—	Karaikal, Chemplast Sanmar (Karaikal)	Medium
18	Andaman & Nicobar Islands Cluster	Andaman & Nicobar Islands	**ANI1**	—	Port Blair, Campbell Bay, Diglipur (Port Cornwallis), Swaraj Dweep (Havelock), Shaheed Dweep (Neil Island), Hut Bay, Katchal (East Bay), Car Nicobar	Medium

S. No.	Cluster Name	Cluster State(s)	Cluster Code	Major Port(s)	Non-Major Ports	Importance
					(East), Mayabunder, Nancowry Harbour (Camorta), Rangat (Elephinstone Harbour)	
19	Lakshadweep Cluster	Lakshad weep	**LD1**	—	Agatti	Low

Study Team Analysis

Coastal Route Codification Structure

A Coastal Route is defined as the connectivity corridor between two Port Clusters. Accordingly, coastal routes are not defined as individual sailing paths or port-pair services, but as logical coastal corridors along which one or more services, vessel types, and commodities may operate.

This approach ensures that route codification remains:

- aligned with Origin–Destination (OD) analysis,
- relevant for cargo aggregation and service design, and
- flexible for future operational and policy interventions.

The coastal route code follows a simple and intuitive structure:

CR–<Origin Cluster Code>–<Destination Cluster Code>

Where:

- CR denotes Coastal Route,
- the two cluster codes identify the connected Port Clusters.

Each unique cluster pair constitutes one coastal route, irrespective of the number of services, ports, or commodities operating between them.

Routes are treated as bidirectional; for example, CR-GJ1–MH1 represents cargo movement both from Gujarat to Maharashtra and from Maharashtra to Gujarat.

Illustrative Examples

CR-GJ1–MH1	Represents the coastal corridor between the Kutch & Gulf of Kutch Cluster and the Mumbai–JNPA Cluster. This route captures coastal movement potential between major industrial and EXIM hubs such as Kandla/Mundra and Mumbai/JNPA, including bulk, containerised, and liquid cargo.
CR-TN1–AP1	Represents the coastal corridor between the Chennai Metropolitan Cluster and the North Andhra (Vizag–Kakinada) Cluster. This route is relevant for coastal movement of containers, thermal coal, petroleum products, and industrial raw materials.
CR-KL2–LD1	Represents the coastal corridor between the Central & South Kerala Cluster and the Lakshadweep Cluster, reflecting coastal and regional supply linkages to island territories.
CR-TN1–ANI1	Represents the coastal corridor between the Chennai Metropolitan Cluster and the Andaman & Nicobar Islands Cluster, capturing strategic and essential cargo movement to island ports.

171 Unique Coastal Routes: Based on the identification of 19 Port Clusters, the methodology results in a total of 171 unique coastal routes, representing the complete universe of potential coastal corridors in India. This complete route matrix has been presented in **Annexure 3** of this report.

2.4. Top 20 Origin–Destination (O–D) Pairs of Coastal Shipping by Cargo Volume

The Top 20 OD pairs of coastal shipping in India (by cargo volume) are presented in table below.

Table 7: Top 20 OD pairs of coastal shipping in India (by cargo volume)

S. No.	Origin Port(s)	Destination Port(s)	Cargo Volume (Mn. Tonne) (FY2024–25)	Commodities	Coastal Route Code
1	Paradip Port	Kamarajar Port	22–25	Coal, POL, Iron Ore	CR-TN1-OD1
2	Paradip Port	Krishnapatnam Port	20–22	Coal, POL, Iron Ore, Fertilizers	CR-AP2-OD1
3	Paradip Port	Tuticorin Port	12–15	Coal, POL	CR-TN3-OD1
4	Paradip Port, Visakhapatnam Port, Dhamra, Gangavaram	Mumbai Port	4.8–5.0	Iron Ore	CR-MH1-OD1
5	Paradip Port	Hazira Port	4.3–4.5	Iron Ore	CR-GJ3-OD1
6	Vadinar Port, Cochin Port, Chennai Port, Sikka Port	Mumbai Port	3.8–4.0	POL	CR-GJ1-MH1
7	Paradip Port	Mormugao Port	3.7–4.0	Coal, POL, Iron Ore	CR-MH3-OD1
8	Dhamra	Kamarajar Port	3.7–4.0	Coal	CR-TN1-OD1
9	Mumbai Port	Chennai Port, Visakhapatnam Port, Vadinar	3.2–3.5	POL	CR-MH1-TN1
10	Paradip Port	Kakinada	2.5–2.8	Coal, POL	CR-AP1-OD1
11	Mumbai Port	New Mangalore Port	2.5–2.8	POL	CR-KA1-MH1
12	Mumbai Port	Mormugao Port, Hazira, Dahej	2.4–2.5	POL	CR-MH1-MH3
13	Deendayal Port	Cochin Port	2.4–2.5	Container, POL	CR-GJ1-KL2
14	Cochin Port	Kamarajar Port	2.2–2.5	POL	CR-KL2-TN1
15	Paradip Port	Mumbai Port	2.0–2.5	Coal, POL, Iron Ore, Fertilizers, Steel	CR-MH1-OD1
16	Paradip Port	Karaikal	2.0–2.5	Coal, Iron Ore	CR-OD1-PY1
17	Chennai Port	Andaman & Nicobar Islands	2.0–2.2	Container	CR-TN1-ANI1
18	Pipavav	Jawaharlal Nehru Port	1.8–2.0	Cement	CR-GJ2-MH1
19	Gangavaram	Tuticorin Port	1.5–1.8	Coal	CR-AP1-TN3
20	Paradip Port	Dharamtar	1.5–1.8	Coal	CR-MH1-OD1

Source: Analysis of primary data by Major Ports

2.5. Coastal Cargo Handling Infrastructure at Major Ports

The development of dedicated coastal berths at Major Ports has been a key operational intervention to promote coastal shipping in India. Dedicated coastal berths are intended to provide assured access, priority berthing, and operational segregation for coastal vessels, thereby reducing turnaround time, improving berth productivity, and enhancing the reliability of coastal services. As of 2024–25, Major

Ports together handled about 196 million tonnes (MT) of coastal cargo, supported by a total of 16 dedicated coastal berths across ports, with varying levels of mechanisation and commodity focus.

Table 8: Coastal cargo handling infrastructure at Major Ports

S. No.	Port	Cargo Volume (MT) 2024-25	Dedicated Coastal Berths	Mech. level at Coastal berths	Major Commodities handled at port
1	PPA	63.7	5	Mech.	Th. Coal, Iron ore, IO Pellets, POL
2	MbPA	22.3	3	Non-Mech.	POL, Iron Ore and Cement & clinkers, Others
3	KPL	19.7	2	Mech.	Thermal coal, POL, Containers, others
4	VPA	19.3	1	Non-mech.	Iron ore & Pellets, POL, Thermal Coal, Containers, others
5	DPA	15.8	NIL	NA	Crude, POL, Salt, Containers, others
6	CoPA	12.5	1	Mech.	POL, Steel, cement, containers, Others
7	VOCPA	12.0	1	Non-Mech	Th. Coal, POL, salt and containers
8	NMPA	8.7	2	Non-Mech.	Iron ore, Crude & POL, containers, others
9	ChPA	6.2	1	Non-Mech.	POL, Containers, iron & steel products
10	JNPA	6.0	2	Non-Mech.	POL, Cement, break-bulk, Containers, others
11	SMPA	5.1	3	1 Mech. (SMPA-H)	SMPA-K: Gen. cargo, iron and steel, agro products, containers, Others SMPA-H: POL, Coal, Chem & Petrochem. Containers, Others
12	MgPA	4.4	NIL	NA	Iron ore, POL, Bauxite, coking coal, iron & steel, others
	Total	195.7	21		

Source: Analysis of primary data by Major Ports

Among the Major Ports, Paradip Port Authority (PPA) has emerged as the largest handler of coastal cargo, handling 63.7 MT in 2024–25 through two fully mechanised dedicated coastal berths. These berths primarily handle thermal coal, iron ore, iron ore pellets, and POL, reflecting Paradip's role as a major origin port for bulk commodities moving to power plants and industrial centres along the west and south coasts. The availability of mechanised coastal berths at Paradip has enabled high-volume, efficient handling of bulk coastal cargo.

Mumbai Port Authority (MbPA) handled 22.3 MT of coastal cargo through three dedicated coastal berths, which are largely non-mechanised. These berths cater to a diversified commodity mix including POL, iron ore, cement and clinker, and other general cargo, supporting both inter-coastal and short-haul coastal movements. Similarly, Visakhapatnam Port Authority (VPA) handled 19.3 MT of coastal cargo with one non-mechanised coastal berth, handling iron ore and pellets, POL, thermal coal, containers, and other cargo, reflecting the multi-commodity nature of coastal operations at the port.

Several ports continue to handle substantial coastal volumes without dedicated coastal berths. Kandla Port (KPL), handling 19.7 MT, and Deendayal Port Authority (DPA), handling 15.8 MT, do not have exclusive coastal berths; coastal cargo at these ports is handled at general cargo or multipurpose berths. This approach allows ports to maximise berth utilisation and operational flexibility, particularly where coastal cargo volumes fluctuate or where commodity mixes overlap with EXIM cargo. Similar arrangements exist at Mormugao Port Authority (MgPA), which handled 4.4 MT of coastal cargo without dedicated coastal berths.

Ports such as Cochin Port Authority (CoPA) and Syama Prasad Mookerjee Port Authority (SMPA) demonstrate a hybrid approach. CoPA handled 12.5 MT of coastal cargo through one mechanised coastal berth, supporting POL, steel, cement, containers, and other cargo. SMPA, with three designated coastal berths, has both mechanised and non-mechanised facilities, with SMPA-Haldia handling POL, coal, chemicals, petrochemicals and containers, while SMPA-Kolkata handles general cargo, iron and

steel, agro-products, and containers. This differentiated configuration allows port-specific optimisation based on cargo characteristics and riverine constraints.

Other ports such as V.O. Chidambaranar Port Authority (VOCPA), New Mangalore Port Authority (NMPA), Chennai Port Authority (ChPA), and Jawaharlal Nehru Port Authority (JNPA) have between one and two dedicated coastal berths, mostly non-mechanised, handling a mix of POL, coal, iron ore, containers, cement, break-bulk, and steel products. These ports play an important role in supporting coastal containerisation and POL distribution, even where full mechanisation is yet to be implemented.

2.6. Policy and Regulatory Reforms Undertaken to Promote Coastal Shipping

Over the past two decades, the Government of India has undertaken a series of policy, regulatory, fiscal, and procedural reforms aimed at promoting coastal shipping as a cost-effective, energy-efficient, and environmentally sustainable mode of domestic freight transport. These interventions have evolved progressively, from early tariff incentives and procedural facilitation to structural regulatory reforms and legislative backing, reflecting the increasing strategic importance accorded to coastal shipping in India's logistics ecosystem.

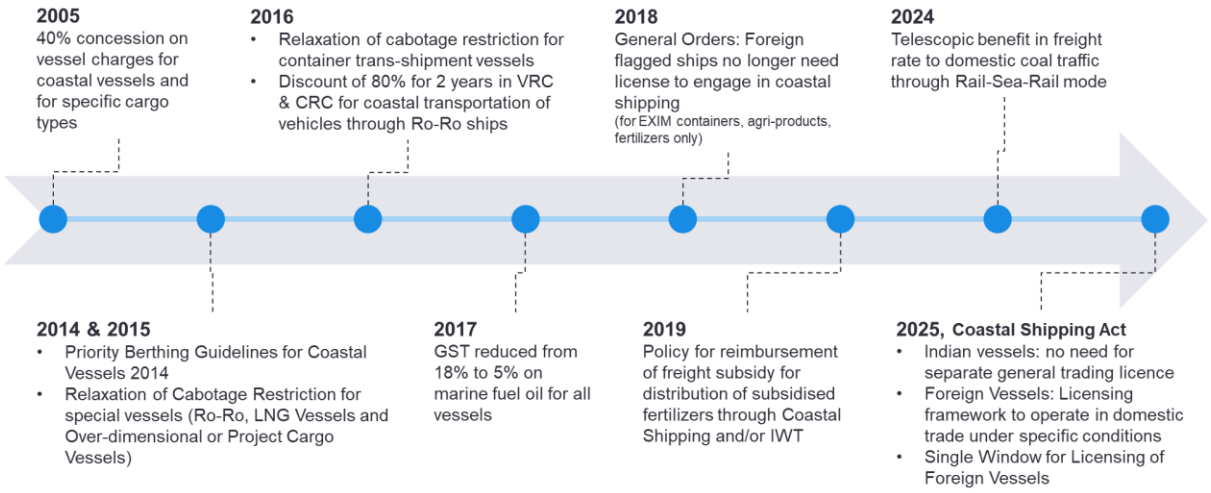


Figure 8: Policy reforms from 2005 to 2025 for India's coastal shipping

2.6.1. Early Fiscal and Tariff Incentives (2005)

One of the earliest targeted interventions to encourage coastal shipping was introduced in 2005, when a 40% concession on vessel-related and cargo-related port charges (other than thermal coal and POL including crude oil) was extended for coastal vessels at Major Ports.

Objective: To reduce the cost disadvantage of coastal shipping vis-à-vis rail and road transport and to incentivise vessel operators and cargo owners to shift domestic cargo to the coastal mode.

Impact: This measure helped improve the initial viability of coastal services, particularly for bulk and liquid cargo, and laid the foundation for recognising coastal shipping as a distinct and incentivised segment within port operations.

2.6.2. Guidelines on Priority Berthing of coastal vessels at Major Ports (2014)

In 2014, the Ministry of Shipping issued guidelines to Major Ports for providing priority berthing to coastal vessels, recognising berth availability and waiting time as key operational constraints affecting the competitiveness of coastal shipping.

Objective: The primary objective of the priority berthing guidelines was to reduce vessel waiting time and turnaround time for coastal vessels, thereby lowering overall logistics costs and improving schedule

reliability for domestic cargo movement. By ensuring faster berthing for coastal vessels, the Ministry sought to incentivise shippers and operators to increasingly adopt coastal shipping over congested road and rail corridors.

Key Provisions:

- Major ports shall accord priority berthing, at least on one berth, to dry bulk /general cargo coastal vessels to enable shippers to transport goods from one port in India to another port in India irrespective of origin and final destination of the cargo. This would be in addition to dedicated berth, for handling of Coastal Thermal Coal already existing in Major Ports, if any.
- Coastal vessels which are be accorded priority berthing shall not be liable to pay priority berthing charges.
- Ports should explore the possibilities of earmarking exclusive berths, storage areas and gates for coastal cargo outside the custom bonded area of the Ports to further facilitate movement of coastal cargoes.

Impact: The priority berthing guidelines helped improve operational predictability and vessel turnaround times for coastal services, particularly for bulk and liquid cargo movements with regular sailing patterns.

2.6.3. Procedural Facilitation and Cabotage Relaxation (2015)

Relaxation of cabotage restrictions for special-purpose vessels, including Ro-Ro vessels, LNG vessels, and over-dimensional/project cargo vessels in 2015.

Objective: To address vessel availability constraints in specialised coastal segments.

Impact: The cabotage relaxations enabled deployment of suitable vessels for niche cargo categories, particularly Ro-Ro services and project cargo.

2.6.4. Promotion of Coastal Ro-Ro and Transshipment (2016)

In 2016, reforms were introduced to encourage coastal Ro-Ro services and container transshipment:

- Relaxation of cabotage restrictions for container transshipment ports.
- Discount of 80% for two years in Vessel Related Charges (VRC) and Cargo Related Charges (CRC) for coastal transportation of vehicles through Ro-Ro ships.

Objective: To promote coastal Ro-Ro services for automobiles and reduce dependence on long-haul road transport, while enhancing India's coastal transshipment capabilities.

Impact: These measures led to the operationalisation of select Ro-Ro routes and demonstrated the feasibility of coastal movement of vehicles, though sustained scale-up remained dependent on demand aggregation and terminal readiness.

2.6.5. Bunkering Cost Rationalisation through GST Reduction (2017)

With the introduction of GST (w.e.f. 1 July 2017), bunker fuel initially attracted GST at 18%, which was seen as increasing operating costs for Indian shipping, including coastal vessels. To address this, the 22nd GST Council meeting held on 6 October 2017 recommended a steep reduction in GST on bunker fuel. The Ministry of Finance, in October 2017, announced GST rate on bunker fuel to be reduced to 5%, both for foreign going vessels and coastal vessels, with CBIC notifications to give effect to this decision.

Objective: To reduce one of the largest operating cost components for coastal shipping and improve the cost competitiveness of Indian-flag vessels.

Impact: The reduction in fuel taxation directly lowered voyage costs, benefiting both coastal and inland waterway operators and improving operating margins, especially for fuel-intensive bulk and tanker operations.

2.6.6. Liberalisation of Coastal Trade for Foreign-Flag Vessels (2018)

In 2018, the Ministry of Shipping issued General Orders to Directorate General of Shipping (DGS) allowing foreign-flagged vessels to engage in coastal shipping (only for certain containers, fertilizers and agri-commodities) without requiring a separate licence, subject to prior intimation and limited to specified cargo categories.

Objective: To address the shortage of suitable Indian-flag vessels, particularly for bulk and liquid cargo, and ensure continuity of cargo movement.

Impact: This reform improved vessel availability in the short term and supported growth in coastal cargo volumes, especially for fertilizers, and agri-commodities, while highlighting the need for long-term domestic fleet augmentation.

2.6.7. Freight Subsidy Support for Fertilizer Distribution (2019)

In 2019, a policy was introduced by Ministry of Chemicals and Fertilizers for reimbursement of freight subsidy for the distribution of subsidised fertilizers through coastal shipping and/or inland waterways.

Objective: To encourage modal shift of fertilizer movement from rail to water, reduce logistics costs, and improve supply reliability to coastal and hinterland regions.

Impact: This intervention strengthened the use of coastal shipping for fertilizer distribution in select corridors, though its effectiveness remained linked to pricing structures and coordination with fertilizer companies and rail logistics.

2.6.8. Freight Rationalisation for Rail–Sea–Rail (2024)

In 2024, a significant reform was introduced by extending telescopic benefits in rail freight rates to domestic coal traffic moved through the Rail–Sea–Rail (RSR) mode.

Objective: To remove the cost penalty associated with multi-leg rail movements and enhance the competitiveness of coastal shipping for coal distribution.

Impact: The measure is aimed to improve the economics of coastal coal movement, particularly from eastern ports to power plants on the west and south coasts, and is expected to unlock additional coastal coal volumes.

2.6.9. Coastal Shipping Act, 2025

A landmark reform was enacted through the Coastal Shipping Act, 2025, providing a dedicated legislative framework for coastal shipping in India. Key provisions include:

- Indian-flag vessels: No requirement for a separate general trading licence to operate in coastal trade.
- Foreign-flag vessels: Introduction of a structured licensing framework to permit participation in domestic coastal trade under specified conditions.
- Establishment of a Single Window system for licensing of foreign vessels.

Objective: To provide regulatory clarity, simplify compliance, improve ease of doing business, and balance the twin objectives of promoting domestic tonnage and ensuring cargo movement continuity.

Impact: The Act marks a shift from ad-hoc relaxations to a rules-based, transparent regime, creating a more predictable environment for operators, investors, and cargo owners, and forming a strong institutional foundation for scaling coastal shipping under the Action Framework.

03

Approach and Methodology for Action Framework

3. Approach and Methodology for Action Framework

The Action Framework for promotion of coastal shipping has been developed through a structured, multi-stage methodology, combining data-driven analysis, stakeholder consultations, global benchmarking, and corridor-level assessment. The approach was designed to ensure that the recommendations are evidence-based, implementable, and aligned with national maritime vision documents, while addressing on-ground operational realities.

3.1. Task 1: Preliminary Mapping and Baseline Analysis

To establish a comprehensive baseline of the current coastal shipping ecosystem in India and assess existing initiatives proposed under earlier studies and national vision documents.

Key Sub-Tasks / Activities

- Review and mapping of recommendations and interventions proposed under:
  - ADB (2019) study on promotion of coastal shipping
  - Maritime India Vision (MIV) 2030
  - Maritime Amrit Kaal Vision (MAKV) 2047
- Compilation and analysis of historical data on coastal cargo handled at Major and Non-Major Ports, including commodity-wise trends and growth patterns
- Assessment of existing port infrastructure relevant to coastal shipping, including coastal berths, mechanisation levels, and port readiness
- Circulation of structured **questionnaires to Major Ports** (Annexure 2) to collect port-level information on coastal cargo handling, infrastructure, processes, incentives, and constraints
- Identification of gaps between policy intent and current on-ground implementation

Outputs

- Baseline assessment of coastal shipping volumes, commodities, and infrastructure
- Port-wise status of coastal cargo handling and facilities
- Identification of key gaps and constraints in the existing coastal shipping ecosystem
- Foundational inputs for subsequent analytical tasks

3.2. Task 2: Consultations and Global Benchmarking

To draw lessons from international best practices and incorporate stakeholder perspectives to inform the design of a robust and practical Action Framework.

Key Sub-Tasks / Activities

- Industry consultations held on 18 Dec 2025 and 23 Dec 2025 with:
  - Coastal vessel operators and shipowners
  - Cargo owners and shippers
  - Port authorities and terminal operators
  - Industry associations and logistics service providers

  The inputs received during stakeholder consultations are annexed to this report (Annexure-I)
- Mapping of **global best practices** in coastal and short-sea shipping, including:
  - Europe (Motorways of the Sea, short-sea shipping networks)
  - China and East Asia (domestic coastal shipping integration with industrial clusters)
  - Japan and other developed maritime economies
- Comparative assessment of India's coastal shipping framework vis-à-vis global peers in terms of policy, infrastructure, fleet, and market structure
- Identification of practices that are adaptable to Indian conditions

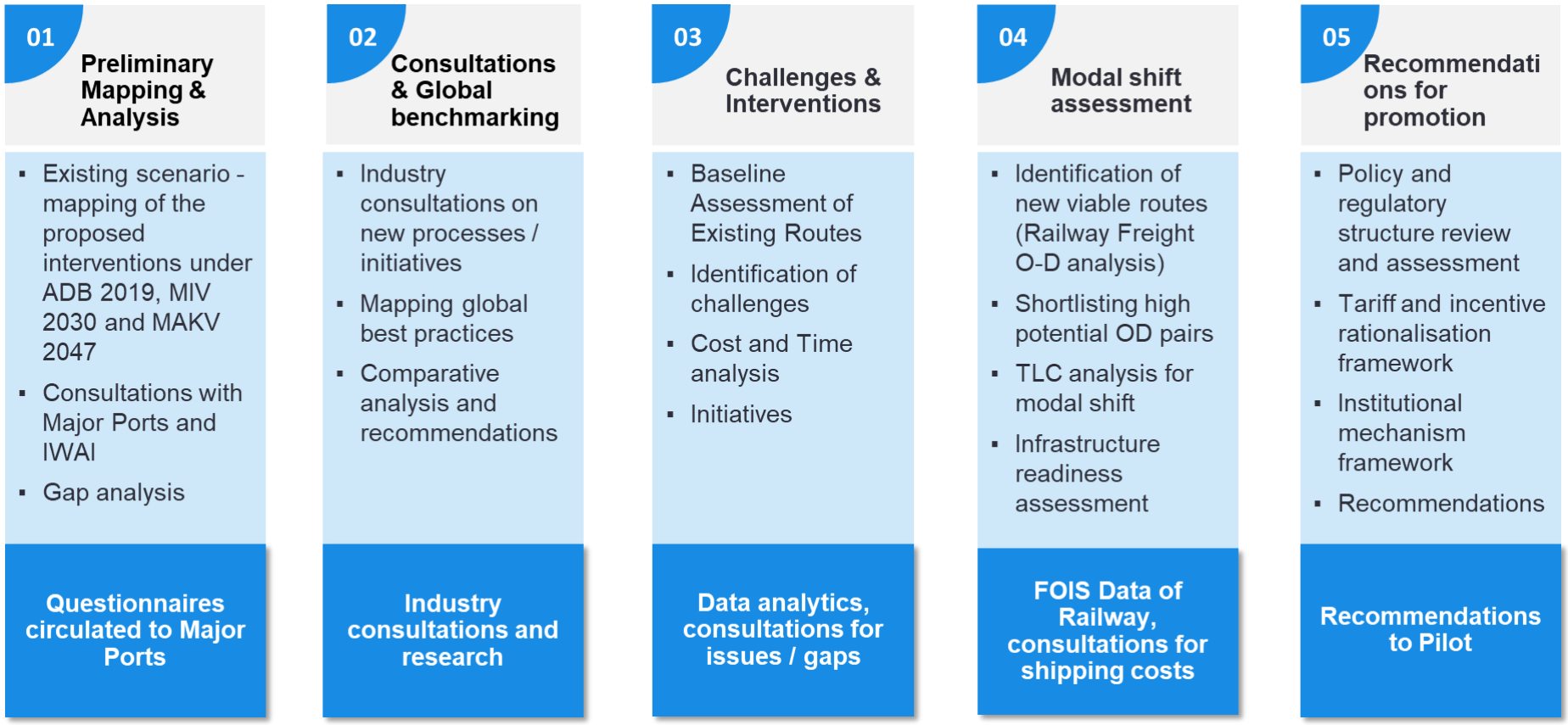


Figure 9: A structured five-stage approach—from baseline mapping and stakeholder consultations to modal shift assessment and policy-led recommendations—for promoting efficient freight movement.

Outputs

- Compilation of global best practices relevant to coastal shipping
- Stakeholder-validated insights on challenges and opportunities
- Comparative benchmarking of India's coastal shipping ecosystem
- Inputs to shape context-specific and scalable interventions

3.3. Task 3: Assessment of Challenges and Identification of Interventions

To systematically identify key challenges affecting coastal shipping and assess potential interventions to address these challenges.

Key Sub-Tasks / Activities

- Baseline assessment of **existing coastal routes and services**, including operational and economic viability
- Identification of challenges across multiple dimensions:
    - Policy and regulatory
    - Port infrastructure and processes
    - Vessel availability and fleet competitiveness
    - Cost structures and transit time reliability
    - Demand aggregation and multimodal integration
- Cost and time analysis for representative coastal movements
- Evaluation of existing initiatives and their effectiveness
- Shortlisting of potential interventions across policy, infrastructure, operations, and institutional mechanisms

Outputs

- Structured problem statement covering key bottlenecks in coastal shipping
- Assessment of intervention areas with the highest potential impact
- Evidence-based rationale for prioritisation of actions under the Action Framework

3.4. Task 4: Modal Shift and Origin–Destination (O–D) Assessment

To identify high-potential corridors and commodities where coastal shipping can achieve meaningful modal shift from road and rail.

Key Sub-Tasks / Activities

- Identification of **new and potential O–D pairs** suitable for coastal shipping using railway freight O–D data and port cargo data
- Shortlisting of high-potential corridors based on:
    - Distance
    - Cargo volume and regularity
    - Commodity characteristics
    - Existing rail and road congestion
- Total Logistics Cost (TLC) analysis comparing coastal shipping with rail and road alternatives
- Assessment of **infrastructure readiness** at origin and destination ports, including berths, storage, connectivity, and handling facilities
- Use of FOIS data from Indian Railways and consultations with stakeholders to validate assumptions and findings

Outputs

- List of high-potential coastal corridors and commodity flows
- TLC-based assessment of modal shift potential
- Identification of infrastructure and operational gaps for each shortlisted corridor

- Inputs for pilot route identification and phased implementation

3.5. Task 5: Recommendations and Action Framework for Promotion

To develop a comprehensive, phased, and implementable Action Framework to accelerate adoption of coastal shipping in India.

Key Sub-Tasks / Activities

- Review of existing **policy and regulatory structures** governing coastal shipping
- Development of a **tariff and incentive rationalisation framework** to improve competitiveness
- Design of institutional mechanisms for:
    - Demand aggregation
    - Corridor-level coordination
    - Monitoring and review
- Formulation of recommendations across:
    - Policy and regulatory reforms
    - Port and vessel infrastructure development
    - Operational and process simplification
    - Institutional and governance arrangements
- Identification of **pilot projects and corridors** for near-term implementation

Outputs

- Comprehensive Action Framework with short-, medium-, and long-term actions
- Clear roles and responsibilities for key stakeholders
- List of recommended pilot initiatives and corridors
- Roadmap for implementation, monitoring, and course correction

3.6. Overall Methodological Strength

The adopted methodology ensures that the Action Framework is grounded in data, informed by stakeholders, benchmarked against global practices, and focused on implementable outcomes. By integrating analytical rigour with practical considerations, the approach provides a strong foundation for scaling coastal shipping in line with national maritime objectives.

04

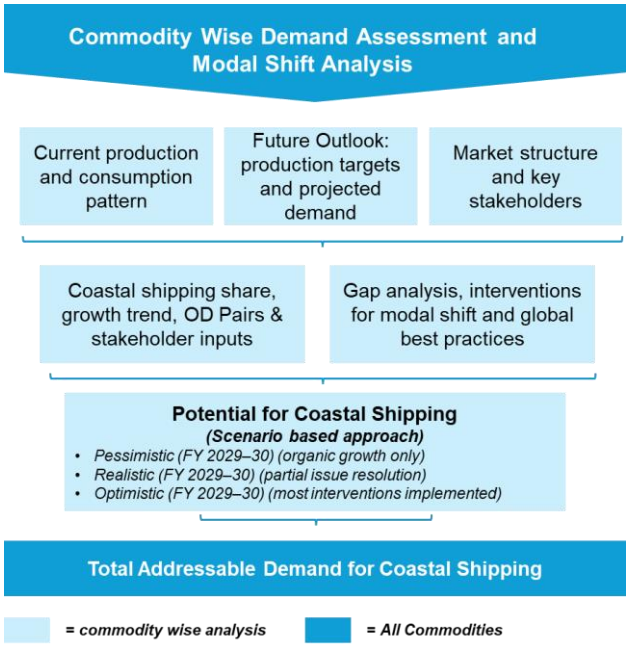
Commodity Wise Demand Assessment & Modal Shift Analysis

4. Commodity Wise Demand Assessment & Modal Shift Analysis

4.1. Commodity selection and assessment methodology

The Indian ports handle variety of commodities for coastal as well as EXIM movements. These commodities can be divided into conventional cargo and non-conventional cargo. Conventional cargo, that includes Coal, Iron ore, POL, and fertilizers contribute close to 80% of the total coastal movements. These commodities are largely captive with movements from mine to plant, plant to silo, plant to tank farm, etc. These commodities have long lead distances across India, resulting in significant coastal volumes, owing to the lower overall logistics cost. The ports have sustained consistent growth of these conventional commodities for coastal movements through mechanization and development of port infrastructure catering the needs of these commodities.

On the other hand, other bulk and break bulk commodities like steel, cement, food grains along with the container and RoRo cargo (automobile) form the bucket of non-conventional coastal commodities at Indian ports. These commodities have significant domestic volumes but limited contributions by coastal movements. The movements of these commodities have lead distances (above 1000 km) within India. However, the existing dominant modes for movements of these commodities are road and rail. The commodities represent latent demand and high potential for coastal movements.



The section assesses the demand and modal mix of individual commodities. The commodities are identified based on their volumes handled at Indian ports. The commodity wise sections include assessment of current production and consumption patterns, market structure and future outlook. The commodity wise assessment concludes with potential for coastal shipping for each commodity, leading to the overall addressable market demand for coastal shipping. The methodology adopted for this assessment is shown in the exhibit here.

4.2. Coal

4.2.1. Commodity Overview

India's electricity demand continues to grow rapidly with economic and industrial expansion. In FY 2024–25, the country's electricity requirement was about 1,829 BU, with peak demand around 250 GW. Against a total installed capacity of 490,061 MW, coal-based power accounts for 216,448 MW, or about 44.2% of total installed capacity, underscoring coal's central role in providing reliable baseload power.[1]

As per the 20th Electric Power Survey, India's electricity demand is projected to increase to 2,473.7 BU by FY 2030–31/2031–32, with peak demand rising to 366.4 GW[2]. This represents a ~35% growth in energy requirement and ~47% growth in peak demand over current levels. Coal is expected to remain critical in meeting this incremental demand, ensuring energy security and grid stability alongside renewable energy expansion.

[1] *Source: Ministry of Power, Power Sector at a Glance "ALL INDIA", FY2024-25*
[2] *Source: Ministry of Power, 20th Electric Power Survey Report, 2022*

In addition to power generation, coal is a key input for steel and cement industries, where it is essential for blast furnace operations and kiln fuel, respectively. With continued infrastructure and industrial growth, coal demand from these sectors is also expected to remain strong, reinforcing its importance in India's energy and industrial landscape.

Consequently, coal will continue to constitute one of the largest bulk commodities handled across India's ports and transport networks, making its efficient evacuation and distribution, especially through cost-effective and environmentally efficient modes such as coastal shipping, a critical element of India's energy and logistics strategy towards 2030.

Coal cargo throughput at Indian ports comprise a mix of imported coal, domestic coastal coal, and captive coal linked to power and industrial units, with routing decisions influenced by hinterland demand centres, logistics cost competitiveness, and capacity availability at unloading terminals.

4.2.2. Current Scenario: Domestic Production / Consumption

The domestic coal production in FY 2024-25 crossed 1000 million tonnes, reaching 1047 MT. The coal production in India has increased consistently over last 10 years. Majority of the coal production in India takes place in the eastern sector, especially Odisha, Jharkhand, Chhattisgarh and eastern parts of Madhya Pradesh, Maharashtra, Telangana. Whereas the consumption of coal for power and other requirements is concentrated in southern and western India.

The exhibit here provides comprehensive picture of coal production and consumption in India, highlighting the importance of coastal shipping.

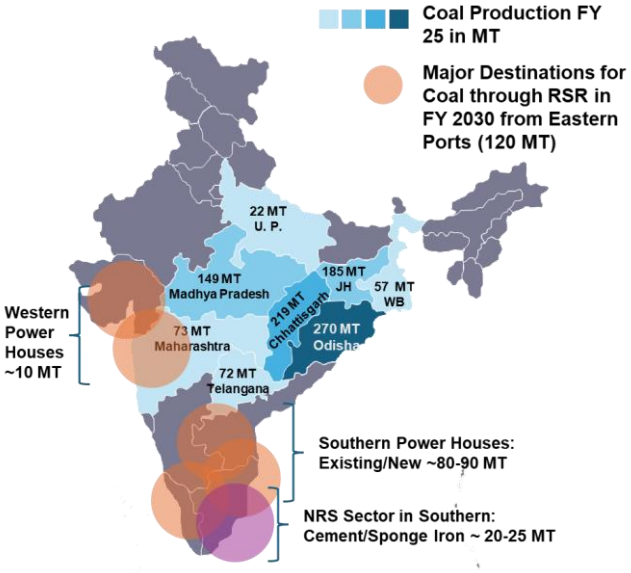


Figure 10: Coastal cargo demand concentrated in a few hinterland states

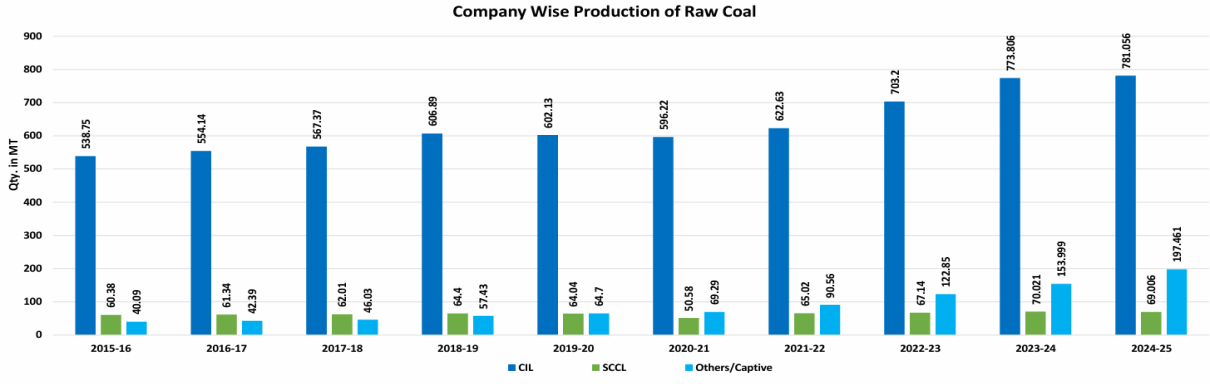


Figure 11: Company wise production of Raw Coal

Source: Coal India Ltd., Production of Coal

The above exhibit presents a strong and sustained increase in India's raw coal production over the last decade, rising from 639.22 MT in 2015–16 to 1,047.52 MT in 2024–25, reflecting a growth of over 64%.

Coal India Limited (CIL) has remained the dominant producer throughout the period, consistently contributing around three-fourths of total production, with output increasing from 538.75 MT to 781.06 MT. Singareni Collieries Company Limited (SCCL) has maintained a relatively stable contribution in the range of 60–70 MT, with a temporary dip in 2020–21 due to pandemic-related disruptions.

A notable structural shift is visible in the rapid growth of Others/Captive producers, whose output expanded from 40.09 MT to 197.46 MT, indicating the increasing role of commercial and captive mining in meeting incremental coal demand.

As the coal is moved majorly to Southern states of Tamil Nadu and the western states of Goa, Maharashtra through coastal shipping, the major consumers of coal in southern and western sector are power companies and state electricity generation companies such as APGENCO, TANGEDCO, UPCL, MAHAGENCO, Adani power, and NTPC. Apart from these, the coal is also procured by cement plants located in the states of Tamil Nadu, southern Andhra Pradesh, northern Karnataka as well as the steel plans located in Tamil Nadu, Karnataka and Maharashtra.

4.2.3. Future Outlook

As per the targets set by Ministry of Coal, the coal generation in India is expected to grow from current 1047 MT to 1510 MT by 2030. The expected growth of domestic production is anchored upon expansion of existing mining capacity, expansion of open cast mines and development of new greenfield mines. Moreover, the additional allocation of commercial blocks is expected to increase the commercial coal mining capacity in states like Odisha, Jharkhand, Chhattisgarh and Madhya Pradesh.

Figure 12: Coal Import Reduction

Further, with rising production of domestic coal since 2015-16 from 650 MT to above 1000 MT in 2024-25, the requirement of coal imports have reduced. The exhibit here presents the reduction of imported coal over last 1 year, from 200 MT to 183 MT, a reduction of 8.4%.

The Ministry of Coal is taking measures to reduce the import dependency. However, coking coal imports will remain unavoidable in the medium term due to quality constraints. The long-term objective is 'import substitution' for thermal coal, thereby improving energy security, reducing forex outgo, and stabilising power tariffs.

The existing dominance of rail in coal movements from mines to thermal power plants, steel plants and cement or paper plants in the hinterlands is expected to reduce over time, considering the over-occupancy of existing railway lines and pressure of handling passenger as well as freight traffic.

The capacity augmentations, doubling and development of dedicated freight corridors are likely to improve the railway's coal carrying capacity. However, barring the East to North movements, majority of these upgrades are likely to increase the capacity of mines to port and port to plant sections. Thereby supporting the growth of coastal movements.

Given the targets set by Ministry of Coal for domestic coal production, constant consumption of coal for power generation and the rising demand of coal in other industries under Non-Regulated Sectors, coal in India is expected to grow at a rate of **7 to 8% per annum** till 2030.

4.2.4. Coastal Shipping

60-65% of the coal produced in India is transported by rail to different parts of the country. The coastal shipping accounts for ~6% of the total coal movements in India. However, out of the total 1602 MT of cargo handled at Indian ports, coal accounted ~24% (close to 388 million tonnes) in FY2024-25. Out of this, around 33% of the coal movements were coastal shipping, i.e., close to ~127 million tonnes. Thus, coal is a substantial and important commodity in terms of coastal shipping in India.

At Major Ports, while the overall coal movements have grown by 55% in last five years, at the CAGR of 5%, the coastal movements of coal have grown by 79% with a higher CAGR of above 7%. Following graph shows the growth trend of coal handled at the Major Ports in India.

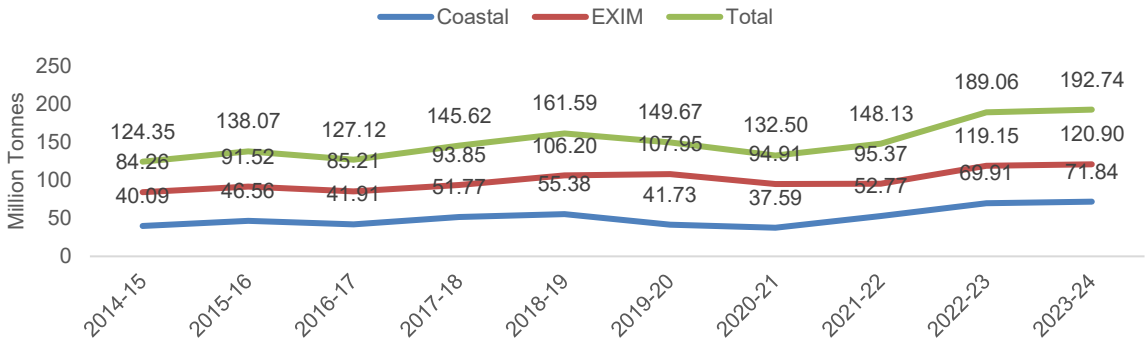


Figure 13: Coal Cargo Growth over last decade
Source: Primary Data from Major Ports

4.2.5. Major OD Pairs

As the eastern sector being dominant in terms of coal production, the majority of coal loading takes place from the ports in Odisha and northern Andhra Pradesh. The major unloading ports are located in southern Andhra Pradesh, Tamil Nadu, Pondicherry and on the western coast. The major OD pairs of coal for the coastal movements in India are as follows:

Table 9: Major OD pairs for coal cargo

S. No.	Loading Port	Unloading Port	Volume FY2024-25 (in Million Tonnes)
1	Paradip Port	Kamarajar Port	23.56
2	Paradip Port	Krishnapatnam Port	18.79
3	Paradip Port	Tuticorin Port	13.95
4	Dhamra Port	Kamarajar Port	3.73
5	Paradip Port	Mumbai Port / Dharamtar Port	3.18
6	Paradip Port	Mormugao Port	1.75
7	Gangavaram Port	Tuticorin Port	1.67

Source: Primary Data from Major Ports

These OD pairs contribute to close to **90% of the total** coastal movements of Coal in India.

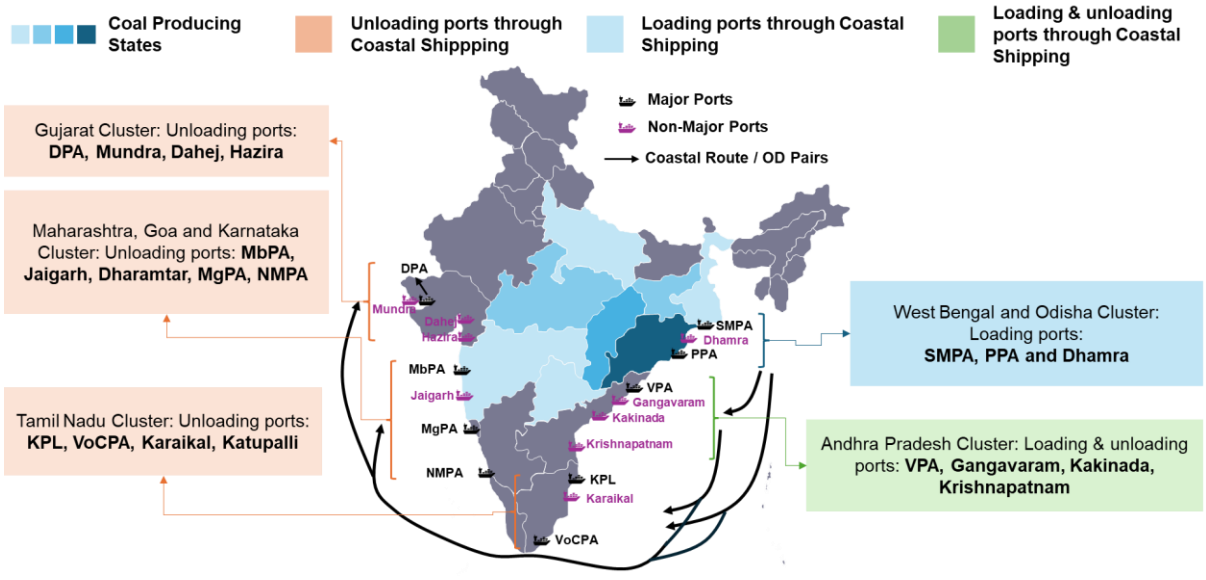


Figure 14: Coastal coal cargo routes

4.2.6. Initiatives undertaken to promote coastal shipping

Telescopic Rail Freight for Rail–Sea–Rail (RSR) Movement of Domestic Coal

To improve the cost competitiveness of coastal shipping for domestic coal movement, Indian Railways introduced the telescopic freight benefit for Rail–Sea–Rail (RSR) mode with effect from 01.04.2025. As per Rates Circular No. 03 of 2025 issued by the Ministry of Railways, the two rail legs involved in RSR movement -

(i) from coal mine to unloading port (first leg) and
(ii) from loading port to the destination power plant (second leg),

are now treated as a single combined rail distance for freight calculation, instead of being charged independently.

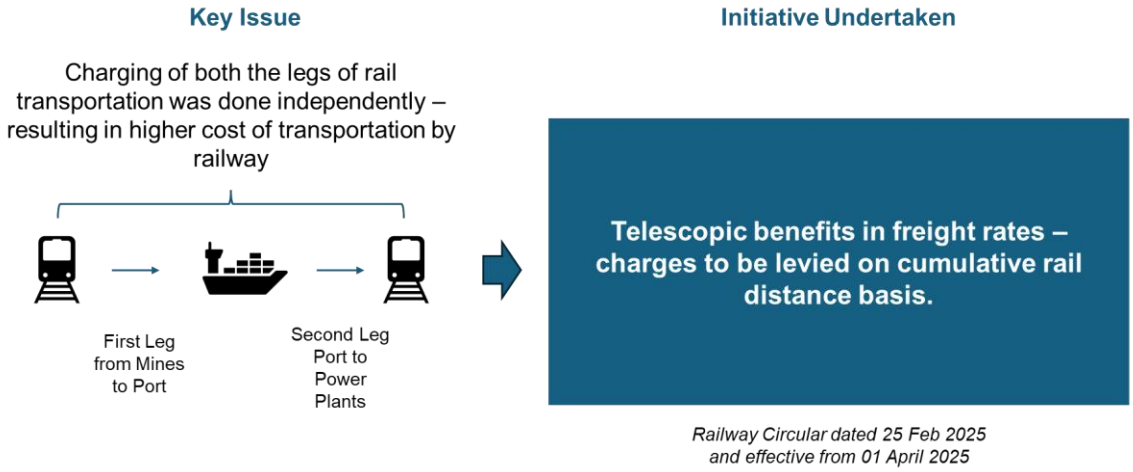


Figure 15: Telescopic freight pricing for RSR

Under this mechanism, while the first leg is charged at the normal applicable rate, the freight for the second leg is calculated using the telescopic principle by deducting the first-leg freight from the freight applicable for the combined distance of both legs. This pilot scheme has been notified for a period of three years (up to 31.03.2028) and is applicable for specified O–D pairs involving coal mines of CIL and its subsidiaries and Central/State GENCOs.

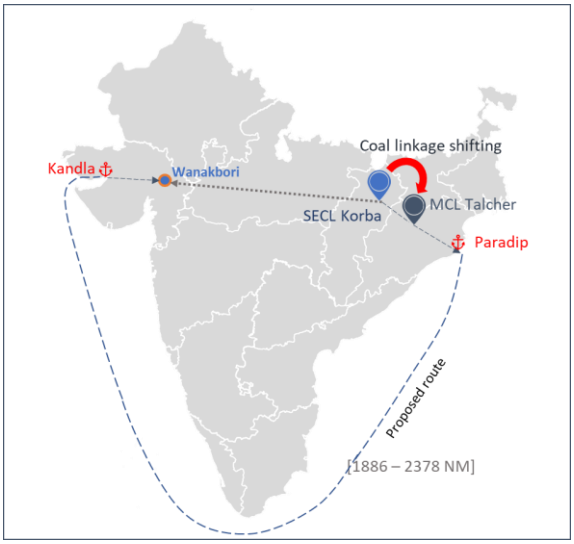
The effectiveness of this measure is already evident. Major power producers such as MAHAGENCO, APGENCO, TANGEDCO, KPCL and NTPC have availed benefits under the telescopic fare regime, resulting in:

- RSR offtake in Q1 of FY 2025-26: 15.238 MT as compared to Q1 in FY 2024-25: 14.082 MT (i.e., growth of 8.21%), and,
- a logistics cost reduction of about ₹218 crore in the current financial year (up to November 2025).

Overall, the telescopic freight policy represents a targeted rail–port–shipping coordination measure aimed at reducing end-to-end coal transportation costs, enhancing the viability of coastal shipping, and easing pressure on long-haul all-rail routes.

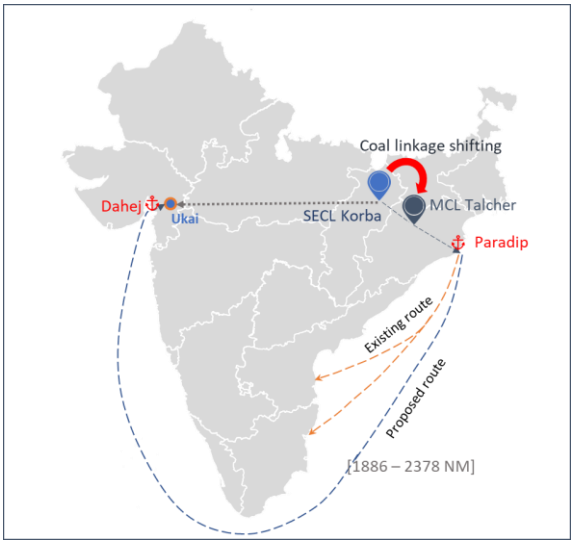
4.2.7. Cost comparison and Potential OD pairs

The cost analysis for movement of coal from MCL mines to Wanakbori and Ukai Thermal Power Stations in Gujarat indicates that while the all rail route is economical, however, with telescopic benefits introduced for RSR movement of coal, the coastal shipping has come par / became more economical. The exhibit and table below provide a comparison of the same.



Transportation of Coal to Gujarat (Wanakbori TPS) via Rail-Sea-Rail (Via Kandla Port)

- All Rail Route – Rs. 2872 per tonne
- RSR via Paradip & Kandla Port – Rs. 3132 per tonne
- RSR via Paradip & Kandla Port (with telescopic fare) – Rs. 2804 per tonne
- **Savings as compared to All Rail Route – Rs. 23 per tonne**



Transportation of Coal to Gujarat (Ukai TPS) via Rail-Sea-Rail (via Dahej Port)

- All Rail Route – Rs. 2706 per tonne
- RSR via Paradip & Dahej Port – Rs. 2750 per tonne
- RSR via Paradip & Dahej Port (with telescopic fare) – Rs. 2459 per tonne
- **Savings as compared to All Rail Route – Rs. 247 per tonne**

Figure 16: Cost comparison for movement of coal

Source: Primary Data from Major Ports and Stakeholder Consultations

Table 10: Cost of transportation of Coal to Gujarat (Wanakbori TPS) via Rail-Sea-Rail (via Kandla Port) & All Rail Route

MCL Coal to Kandla Port	ALL RAIL (MCL Mines)	RSR VIA PARADIP (Split fare)	RSR VIA Paradip (Telescopic fare)
Sea distance to Kandla Port	-	2378 nm	2378 nm
Rly freight - from Talcher (INR)	2827 (1661 kms)	672 (220 kms)	-
Port Handling Charges (INR)	-	210	210
Ocean freight charges – Paradip to Kandla (INR)	-	850 (USD 10)	850 (USD 10)
Kandla port handling charges (INR)	-	345	345
Rly freight - Kandla Port to Plant (INR)	-	1055 (447 km)	-
Railway freight for both legs (telescopic)	-	-	1399
Total coal transportation cost at Plant end (INR)	**2827**	**3132**	**2804**
Freight Savings in RSR over ARR		**Rs -305/ton**	**Rs 23/ton**

Source: Primary Data from Major Ports and Stakeholder Consultations

Table 11: Cost of Transportation of Coal to Gujarat (Ukai TPS) via Rail-Sea-Rail (via Dahej Port) & All Rail Route

MCL Coal to Dahej Port	ALL RAIL (MCL Mines)	RSR VIA PARADIP (Split fare)	RSR VIA Paradip (Telescopic fare)
Sea distance to Dahej Port	-	2187 nm	2187 nm
Rly freight - from Talcher (INR)	2706 (1509 kms)	672 (220 kms)	-
Port Handling Charges (INR)	-	210	210
Ocean freight charges – Paradip to Dahej (INR)	-	765 (USD 9)	765 (USD 9)
Dahej port handling charges (INR)	-	430	430
Rly freight - Dahej Port to Plant (INR)	-	672 (244 km)	-
Railway freight for both legs (telescopic)	-	-	1054
Total coal transportation cost at Plant end (INR)	**2706**	**2750**	**2459**
Freight Savings in RSR over ARR		**Rs - 44/ton**	**Rs 247/ton**

Source: Primary Data from Major Ports and Stakeholder Consultations

4.2.8. Key Issues and Interventions

Coastal shipping has significant potential to improve the reliability and cost-efficiency of long-distance thermal coal movement in India, particularly for supplying power plants located in western and southern regions from eastern coalfields. However, various studies and stakeholder consultations during the coastal shipping workshop have highlighted a set of persistent operational, infrastructure, and coordination-related challenges that constrain the optimal use of coastal routes.

These issues span the entire logistics chain, from mine-to-port rail evacuation and port-side cargo aggregation to vessel availability, destination port constraints, and hinterland connectivity. Addressing these bottlenecks through targeted interventions is essential to unlock the full potential of coastal shipping for coal and to reduce pressure on India's saturated rail corridors.

Table 12: Key issues and interventions for coal

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	**Shortfall in rake allocation for first-mile evacuation**	Allocation of rakes by Indian Railways falls short of indents for coal movement from MCL/ECL to Paradip. **Rake supply is about 31 rakes/day against an operational capacity of ~42 rakes/day**, creating a first-mile bottleneck.	Strengthen coordination among Railways, Coal Companies, Ports and GENCOS. Provide assured or priority rake allocation for coal meant for coastal shipping/RSR mode. Introduce dedicated rake quotas for Paradip-bound thermal coal.
2	**Prioritize RSR over congested long haul rail corridors**	Long-haul rail corridors such as Howrah–Nagpur–Wardha and Bilaspur–Nagpur are among the most congested rail freight routes, leading to rake shortages, delays, and unreliable coal supply through all-rail routes.	GENCOs may prioritise RSR movement for long-distance coal supply on saturated rail corridors to western and southern power plants. GENCOs may sign long term agreements (10-15 years) with ports, with minimum cargo guarantee per year, which will enable ports to develop adequate infrastructure to handle coal cargo.

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
3	**Draft limitations at discharge ports**	While Paradip has draft capability to accommodate Panamax and Capesize-class bulk carriers for coal, non-availability of ~16 m draft at several discharge ports (such as KPL, VoCPA, etc.) restricts deployment of large bulk carriers, leading to underutilisation of Paradip's capacity and loss of scale economies.	Expedite capital dredging at key discharge ports – KPL and VoCPA. Align destination port development plans with deep-draft coastal shipping requirements.
4	**Limited nomination of vessels by GENCOS**	Inadequate or delayed nomination of vessels by GENCOS slows evacuation of coal from ports, leading to congestion and higher dwell time.	Encourage advance and bulk nomination of vessels by GENCOS. Concerned ports may explore service-level agreements or incentives linked to timely evacuation by GENCOs.
5	**Moratorium on GPWIS scheme for rake procurement**	Procurement of GPWIS rakes by Paradip Port could increase coal and iron ore handling by ~17.5 MTPA, but a moratorium on the GPWIS scheme by MoR from 2023–2027 restricts such investments. Estimated investment requirement is ~₹900 crore.	MoPSW may coordinate with MoR to discuss relaxation of the moratorium for concerned ports and allow phased implementation of GPWIS-based rake procurement for coal evacuation.
6	**Rationalization (swapping) of coal linkage patterns for western power plants**	Several power plants in Gujarat and Maharashtra have existing coal linkages with SECL, which is about 600 km from Paradip Port. This leads to preference of rail as a preferred mode of transport on such routes, however, the congestion on these rail corridors limits the freight movement. On the other hand, first mile distance of 600 km from SECL to Paradip Port makes coastal routing uneconomical compared to sourcing from MCL, which is about 200 km from Paradip Port.	MoPSW may coordinate with MoC to undertake linkage rationalisation to align coal sources with coastal shipping economics. • Facilitate coal linkage rationalization between SECL and MCL, enabling power plants in Gujarat and Maharashtra to source coal from MCL, reducing rail haulage by ~400 km and lowering coastal logistics costs for RSR movement of coal. MoC may factor logistics cost and coastal viability in coal linkage decisions.
7	**Environmental restrictions on coal handling at Mumbai Port**	As per stakeholders, there is a demand to handle ~1.5 MT of coal for MAHAGENCO at Mumbai Port, but due to pollution-related restrictions by the State Pollution	MoPSW may coordinate with MoEF&CC and the State Pollution Control Board to expedite issuance of clear norms for coal handling and storage.

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
		Control Board, coal handling at berth is not permitted. Coal is handled only at anchorage through lighterage.	Develop SOPs for environmentally compliant berth-based coal handling and storage at Mumbai Port.
8	**Under-utilisation of coastal shipping for movement of NTPC coal to Andhra Pradesh via Visakhapatnam Port from SMPA (HDC) due to absence of backhaul cargo**	Coal for NTPC Simhadri power plants located in Andhra Pradesh and adjoining regions has an existing linkage of about 1.5 MTPA from collieries of Eastern Coalfields Limited (ECL) in the Asansol–Dhanbad belt. At present, this coal is largely transported through all-rail routes, involving long overland haulage and mobilisation of about 35 rakes per month, resulting in higher logistics costs and congestion on saturated rail corridors. At the same time, coastal shipping on the eastern coast–east coast corridor remains under-utilised, particularly due to the lack of assured return-leg cargo, which adversely affects vessel utilisation and freight economics.	Promote coastal movement of NTPC coal from ECL mines through SMPA (HDC) as the load port and VPA as the discharge port, with onward evacuation to power plants by rail. Facilitate dedicated RSR routing and coordinated rake planning for NTPC coal on the eastern coast–east coast corridor. Leverage return-leg cargo by enabling movement of steel and related cargo of Steel Authority of India Limited (SAIL) from VPA to HDC, followed by rail evacuation to steel plants at Durgapur, Bokaro, etc. Encourage bundled freight contracts combining NTPC coal (southbound) and SAIL steel cargo (northbound) to improve vessel utilisation, reduce unit coastal freight cost, and enhance overall viability of coastal shipping.

Source: Analysis of primary data by Major Ports and Secondary Research

4.2.9. Potential for Coastal Shipping

Coastal coal movement in India has recorded a historical growth of around 7% CAGR over the last decade, reflecting the increasing use of coastal shipping for long-distance coal logistics. Over the same period, overall coal production has grown at a CAGR of about 5.7% during FY 2015–16 to FY 2024–25, with domestic coal production targeted to grow at around 7.5% per annum up to 2030. Considering these trends, a blended annual growth rate of approximately 6.6% is adopted for medium-term projections of coastal coal movement.

It is noted that coastal coal throughput reported at ports counts the same cargo at both loading and discharge ports. Accordingly, the reported coastal coal throughput of 127.4 MT in FY 2024–25 corresponds to an actual coastal coal movement of about 64 MT. Applying the blended growth rate of 6.6%, net coastal coal movement is projected to increase to around 88–90 MT by FY 2029–30 under a pessimistic (organic growth) scenario, assuming no major resolution of existing constraints.

Under a realistic scenario, where a portion of the identified rail, port, linkage, and operational bottlenecks are addressed, an additional 15–20 MT of coal could shift to coastal shipping over and above organic growth. This would increase net coastal coal movement to about 100–110 MT by FY 2029–30.

Under an optimistic scenario, assuming effective and coordinated implementation of the recommended interventions, including improved rake availability, rationalisation of coal linkages, enhanced port and draft availability at discharge ports, and operational flexibility at Paradip, an additional 25–30 MT of coal

could shift to coastal shipping. In this case, net coastal coal movement could reach 115–120 MT by FY 2029–30, delivering meaningful congestion relief on saturated long-haul rail corridors.

Table 13: Potential costal coal demand by 2030

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Modal Share	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	64	127.4	6.1%	—
Pessimistic (FY 2029–30) *(organic growth only)*	88–90	175-180	5.9–6.4%	6.60%
Realistic (FY 2029–30) *(partial issue resolution)*	100–110	200-220	6.7–7.9%	9.5–11.0%
Optimistic (FY 2029–30) *(most interventions implemented)*	115–120	230-240	7.7–8.6%	12.5–13.5%

Source: Analysis of primary data by Major Ports

4.3. Iron Ore

4.3.1. Commodity Overview

India's steel sector has witnessed sustained and structurally strong growth over the last decade, driven by rapid urbanisation, infrastructure expansion, manufacturing growth, and policy-led demand creation. India has emerged as the second-largest producer of crude steel globally, reflecting the scale and momentum of domestic demand growth.

In recent years, this growth has accelerated further. Crude steel production increased from 103.5 MT in FY 2020–21 to 144.3 MT in FY 2023–24, registering a CAGR of about 11.6%, supported by continuous capacity addition and improved utilisation levels[3]. During the same period, domestic crude steel capacity expanded from 143.9 MTPA to 179.5 MTPA, underlining strong investor confidence in India's steel demand outlook.

On the demand side, finished steel consumption grew sharply from 94.9 MT in FY 2020–21 to 136.3 MT in FY 2023–24, a cumulative growth of over 43% in just four years. This growth has been broad-based, led by housing and construction (43%), infrastructure (25%), engineering and packaging (22%), and automotive sectors (9%).

4.3.2. Current Scenario: Domestic Production / Consumption

Domestic iron ore production increased from 258 MT in FY 2022–23 to 275 MT in FY 2023–24, indicating the industry's response to rising steel demand and raw material security imperatives. Major steel producers have increasingly secured captive iron ore mines to mitigate supply risks and price volatility, reinforcing the tight linkage between iron ore logistics and steel plant operations.

The iron ore reserves in India are concentrated in Odisha, Jharkhand, Chhattisgarh, and Karnataka. These top four states account for around 94% of iron ore production[4]. The major distribution of iron ores is concentrated in five zones.

[3] *Source: Ministry of Steel, Annual report 2024-25*
[4] *Source: Draft Logistics Plan for Iron & Steel Sector, Ministry of Steel, September 2023*

Table 14: Iron ore production zones in India

Zone	Description	States
Zone A	Singhbhum in Jharkhand and Barbil–Banspani–Nayagarh belt in Odisha	Jharkhand and Odisha
Zone B	Dantewara & Durg in Chhattisgarh and Chandrapur & Gadchiroli in Maharashtra	Maharashtra
Zone C	Bellary-Hospet belt in Karnataka	Karnataka
Zone D	Goa, Ratnagiri in Maharashtra and North Karnataka	Karnataka and Maharashtra
Zone E	Metamorphosed BIF along the west coast in Karnataka and Kerala	Karnataka and Kerala

Iron-Ore Production, Import & Export (MT)

Table 15: Iron ore production in India

Year	Domestic Production	Export	Import	Total EXIM
2019-20	244	36.63	1.25	37.88
2020-21	205	57.72	0.77	58.49
2021-22	254	26.49	6.68	33.17
2022-23	258	21.17	1.79	22.96
2023-24	277	46.37	4.96	51.33
CAGR	**~3%**	**~6%**	**~41%**	**~8%**

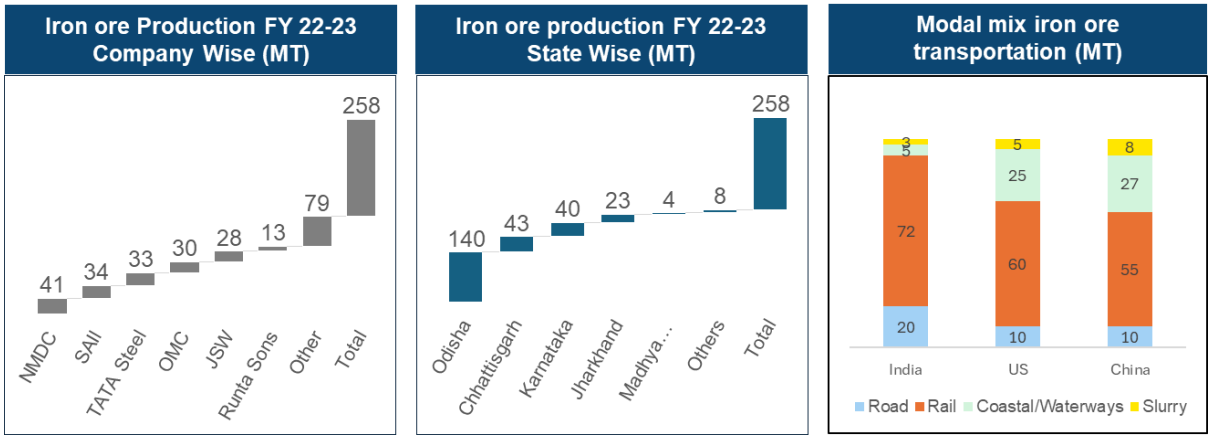


Figure 17: Iron ore production

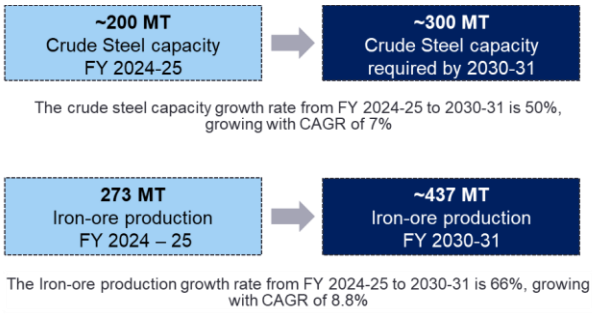
The Iron Ore mines are owned by the Government players such as National Mineral Development Corporation (NMDC), Steel Authority of India Limited (SAIL), Odisha Mining Corporation Limited (OMC), etc. as well as private players such as TATA Steel, Jindal Steel Works Limited (JSW), Runta Sons, etc.

4.3.3. Future Outlook

As per National Steel Policy (NSP) 2017, to support a target of 300 MTPA crude steel capacity and 255 MTPA crude steel production by 2030–31, India will require approximately 437 MT of iron ore annually for domestic steelmaking. This implies a strong and sustained increase in iron ore demand aligned with steel sector expansion.

Given the predominance of blast furnace–basic oxygen furnace (BF–BOF) and coal-based direct reduced iron routes in India's steelmaking process, iron ore remains a non-substitutable, volume-critical input, with limited short- to medium-term scope for material substitution.

The projected scale-up of steel production and iron ore consumption implies a structural increase in bulk iron ore movement across regions, particularly from mineral-rich eastern and central India to steelmaking clusters across western and southern India.



Current Mines	Extra Mines Required by 2030	Total Mines Required
179	114	293

Iron-ore reserves in India

States	Reserves (in MT)	% Share	States	Reserves (in MT)	% Share
Madhya Pradesh	44.7	0.70%	Madhya Pradesh	54.1	0.84%
Chhattisgarh	**1669.6**	**26.04%**	Maharashtra	15.8	0.25%
Goa	122.2	1.91%	**Odisha**	**2798.7**	**43.65%**
Jharkhand	534.6	8.34%	Rajasthän	128.3	2.00%
Karnataka	**1043.5**	**16.28%**	**Total**	**6411.8**	**100%**

Source: *Indian Mineral Book, 2023, Chintan Shivir 2025*

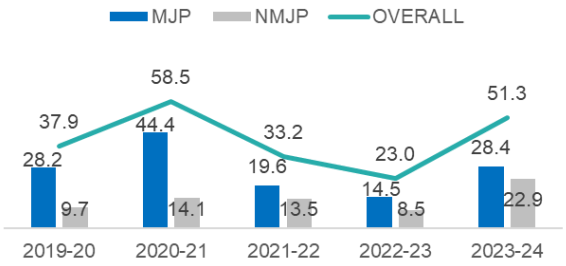
Figure 18: Future outlook of iron ore production in India

4.3.4. Coastal Shipping

Currently, the industry primarily relies on railways for transporting iron ore, with large steel players moving approximately 90% of their iron ore via this mode. Smaller players, however, depend on road transport for 30-40% of their iron ore movement. The average lead distances for these modes are ~400 km for road transport and ~600 km for railway transport[5].

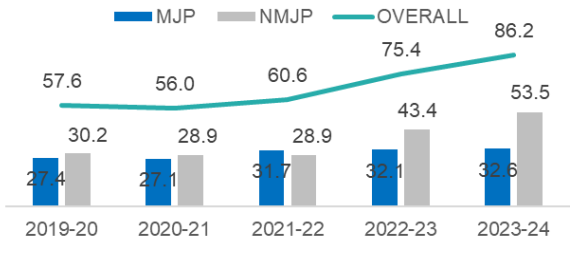
In FY2024-25, the Indian Ports handled ~70.4 MT of iron ore, out of which Major Ports accounted for 27.6 MT (39%) and Non-Major Ports accounted for 42.8 MT (61%).

Iron-Ore EXIM Throughput (MT)



Port Type	CAGR	Growth Rate
MJP	0.2%	0.9%
NMJP	23.9%	135.7%

Iron-Ore Coastal Throughput (MT)



Port Type	CAGR	Growth Rate
MJP	4.2%	17.7%
NMJP	15.4%	77.1%

Figure 19: Iron-ore cargo throughput in Indian Ports

[5] *Source: Draft Logistics Plan for Iron & Steel Sector, Ministry of Steel, September 2023*

4.3.5. Major OD Pairs

Most of the steel plants are located in the central India, closer to the Iron Ore mines. However, significant capacity of steel plants exists on the western coast of India. Due to this geographical division, the coastal shipping of Iron Ore is critical to Indian ports. The exhibit here represents the coastal shipping movements of Iron Ore.

As the eastern sector being dominant in terms of iron ore production, majority of loading takes place from the ports in Odisha and northern Andhra Pradesh. The major unloading ports are located on the western coast of India, with captive or nearby steel plants. The major OD pairs of Iron Ore for the coastal movements in India are as follows:

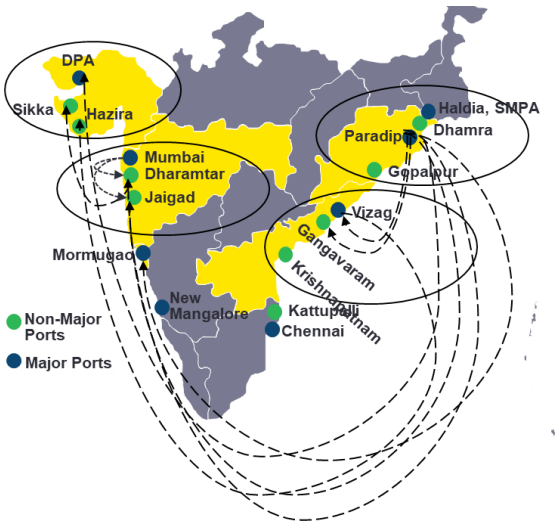


Figure 20: Iron-ore coastal flows

Table 16: Major OD pairs for iron ore

Loading Port	Unloading Port	Volume (FY 2024-25) (in Million Tonnes)
Visakhapatnam Port	Hazira Port	7.57
Visakhapatnam Port	Mumbai Port / Dharamtar Port	4.51
Paradip Port	Hazira Port	4.44
Paradip Port	Mumbai Port / Dharamtar Port	1.92
Visakhapatnam Port	Jaigad Port	1.49
Paradip Port	Krishnapatnam	1.10
Gangavaram Port	New Mangalore Port	0.87
Paradip Port	Jaigad Port	0.82

Source: Primary Data from Major Ports

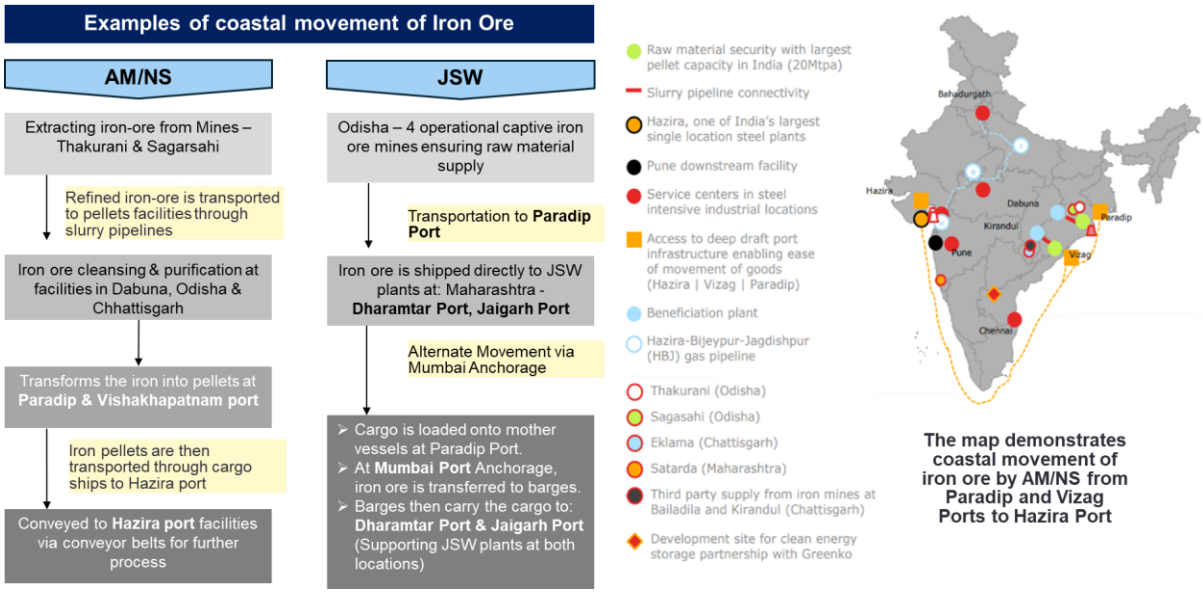


Figure 21: Example: End-to-end coastal logistics models adopted by major steel producers

4.3.6. Initiatives undertaken to promote coastal shipping

To promote coastal shipping of iron ore, the Government of India has adopted a set of enabling policy and facilitative measures. The National Steel Policy 2017 recognises logistics as a key cost driver for the steel sector and underscores the need to diversify bulk raw material movement away from rail and road, given the projected iron ore requirement of about 437 MTPA by 2030–31. Reinforcing this, the Sectoral Plan for Efficient Logistics for the Iron & Steel Sector (2023) identifies iron ore as a suitable commodity for coastal transportation and estimates that a part of the existing road and rail movement can be shifted to coastal shipping, leading to meaningful logistics cost savings.

In addition, coastal iron ore movement benefits from the 40% concession on port charges for coastal vessels, which lowers handling and vessel-related costs at ports and improves the cost competitiveness of coastal shipping. This is further supported by the Priority Berthing Policy for Coastal Vessels (2014), which reduces waiting time and improves turnaround at ports, enhancing the reliability and attractiveness of coastal shipping for domestic iron ore movement.

Pipeline Technology (Slurry Transportation) for handling and evacuation of Iron Ore at Major Ports

The dominance of road and rail in iron ore transportation has led to logistics costs significantly higher than global benchmarks. Limited rail rake availability, congestion at port gates, poor mine-to-port connectivity, short-haul road movements, and deteriorated road conditions increase costs and disrupt operations. Road-based transport also faces growing environmental opposition, regulatory restrictions, and pollution-related concerns due to dust, noise, and emissions.

In this context, slurry pipeline transportation offers a viable alternative for first mile transportation by enabling efficient, large-volume movement of iron ore with minimal handling, lower logistics costs, and substantially reduced environmental impact, thereby improving overall supply chain efficiency.

Given its advantage for the first mile transportation, the Draft Logistics Plan for Iron & Steel Sector has estimated that 27 million tonnes of iron ore cargo can be shifted from road to pipeline systems.

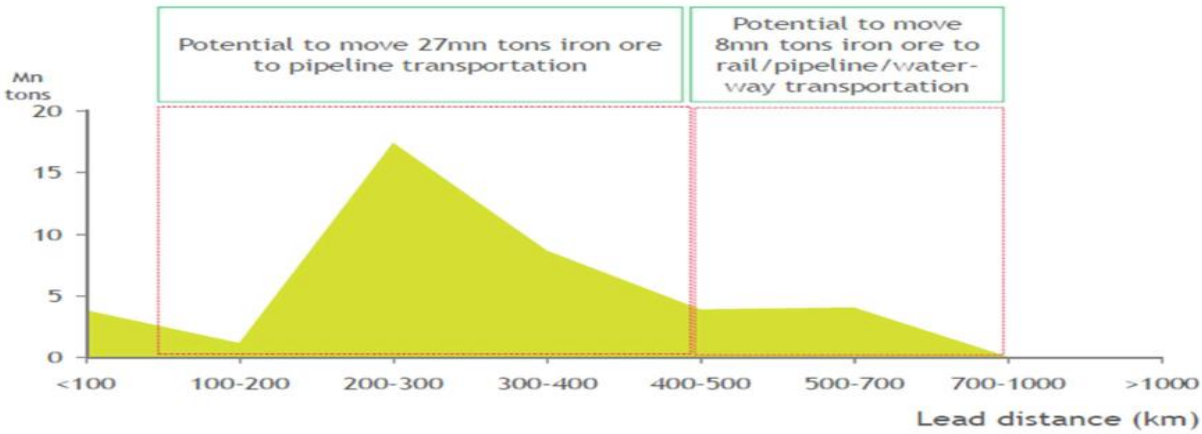


Figure 22: Potential for shift of iron ore cargo from road to pipeline in India

Source: Draft Logistics Plan for Iron & Steel Sector, Ministry of Steel, September 2023

The development of iron ore slurry pipelines linking mines and beneficiation plants directly to palletisation facilities located in close proximity to ports has emerged as a strategic logistics initiative that inherently promotes coastal shipping. By eliminating inland modal choices beyond the port gate, such pipelines effectively **lock iron ore volumes into port-based evacuation systems**, making coastal shipping the most natural and cost-efficient downstream transport option.

Presently in India, there are three functional iron ore slurry pipelines. Two of them are operated by AM/NS India and one by BRPL. The details of the three systems are provided in table below. The current pipeline length in these systems ranges from 200-300 km.

Existing pipeline systems for iron ore transportation in India:

Route	Operator	Length (km)	Capacity
Kirandul – Vizag: Kirandul beneficiation plant to Vizag palletization plant, Visakhapatnam port located ~7km from the palletization plant	AM/NS	267	8 MTPA
Dabuna (Keonjhar) – Paradip: Dabuna beneficiation plant to Paradip palletization plant (palletization plant is in vicinity of Paradip port)	AM/NS	253	12 MTPA
Barbil - Kalinganagar	BRPL	212	4 MTPA

Table 17: Existing pipeline systems for iron ore transportation in India

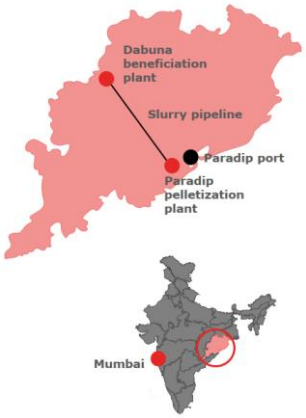


Figure 23: Dabuna (Keonjhar) – Paradip Pipeline System for Iron Ore Transportation

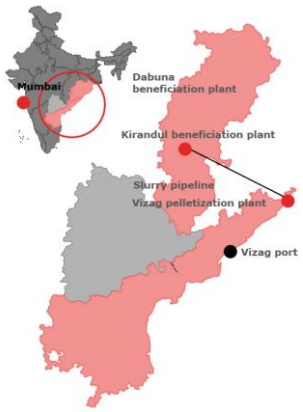


Figure 24: Kirandul – Vizag Pipeline System for Iron Ore Transportation

Transportation of iron ore by pipeline is the cheapest mode in the range of 5km - 500km beyond which rail is cheaper for the 500km-1200km lead distance range. Coastal shipment becomes more economical than rail for lead distances greater than 1200-1300km, depending on the first mile and last mile distances. The exhibit below presents assessment of optimum lead distance for various modes for transportation of iron ore.

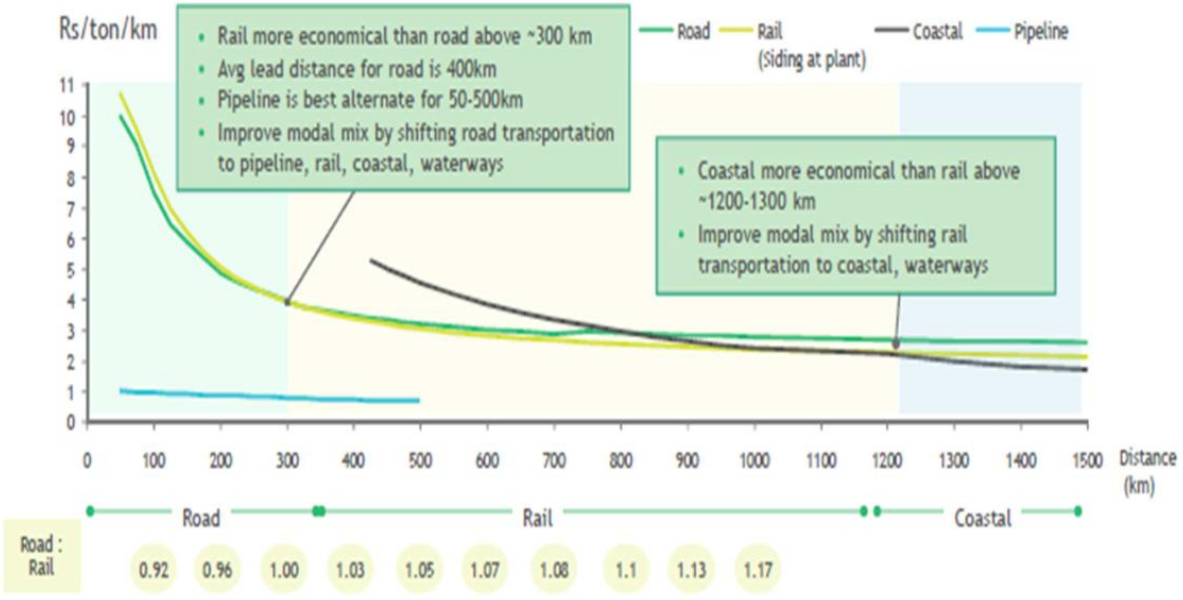


Figure 25: Assessment of optimum lead distance for various modes for transportation of iron ore

Source: Draft Logistics Plan for Iron & Steel Sector, Ministry of Steel, September 2023

4.3.7. Key Issues and Interventions

Despite iron ore being a suitable commodity for coastal shipping due to its bulk nature and long-haul movement requirements, its domestic coastal movement remains limited. Various studies and stakeholder consultations have highlighted a combination of upstream connectivity constraints, port-related bottlenecks, tariff disincentives, and capacity limitations at both loading and destination ports.

Addressing these issues in an integrated manner is critical to unlock the potential of coastal shipping for iron ore and pellets, especially in view of upcoming capacity additions in eastern India and rising demand from western coast steel plants.

Table 18: Key issues and interventions for iron ore and pellets

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	**Rake shortfall for evacuation of iron ore from mines to Ports under Category D allotment by MoR**	As per the Ministry of Railways' rake allotment guidelines, freight traffic is prioritised under Category A, B, C and D, with iron ore movement to ports presently classified under Category D, the lowest priority category. • Category A – National priority (coal for power plants, fertilizers, food grains) • Category B – Core industrial and energy commodities • Category C – Important but less critical traffic • Category D – Low-priority / discretionary traffic, largely market-driven This categorisation results in residual and uncertain rake allocation, particularly during periods of high demand from higher-priority commodities, leading to systemic delays in rake placement for iron ore evacuation to ports and a consequent modal shift towards road transport. **For example: Paradip Port -** rail-handling capacity of 18 rakes per day for iron ore, but rake supply averaged only 3.83 rakes/day in FY 2022–23 and 4.09 rakes/day in FY 2023–24.	MoPSW may coordinate with MoR for **reclassification of iron ore rakes from Category D to Category C** for assured and adequate supply of iron ore/pellet rakes. Upgrading priority would increase daily rake flows, immediately clearing indent backlogs, restoring rail's modal share, and reducing costly road diversion.
2	**Develop iron ore slurry pipeline systems linking mines, plants, and ports**	Iron ore slurry pipeline technology is already operational in India, with three functional pipelines (two by AM/NS India and one by BRPL) of 200–300 km length, and the Draft Logistics Plan for the Iron & Steel Sector estimates that ~27 MTPA of iron ore can be shifted from road to pipeline systems. However, despite handling large iron ore and pellet volumes, major ports have not actively promoted or integrated plant-to-port slurry pipeline systems into their evacuation and coastal shipping strategies, resulting	VPA and PPA (high iron ore volume ports) may collaborate with captive iron ore, palletisation and steel industries to develop plant-to-port slurry pipeline systems under PPP models. *Large upcoming palletisation capacity near Paradip (Thriveni – 24 MTPA, Essar – 14 MTPA, AMNS – 12 MTPA under progress)*

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
		in continued dependence on road and rail for first-mile movement and limited aggregation of captive cargo for coastal shipping.	Such pipelines would enable low-cost, low-emission first-mile evacuation, structurally favour coastal shipping as the downstream mode, and assure long-term captive cargo for ports while reducing dependence on road and rail.
3	**Coastal cargo rebate on CRC not available for iron ore and pellets**	Creates a cost disadvantage for coastal movement of iron ore compared to other bulk commodities	Extend concession on CRC to iron ore and pellets to align incentives with policy objectives of promoting coastal shipping
4	**Rail connectivity to Gandhamardan mines in Odisha**	Gandhamardan iron ore mines in Odisha lack direct rail connectivity, requiring iron ore to be evacuated entirely by long-haul road transport, with transit times of 2 days to nearby ports and 3–4 days to Paradip Port under prevailing operating conditions. This dependence on road-based evacuation leads to heavy congestion on port approach roads, slower turnaround at port gates, and inability to aggregate bulk volumes efficiently at ports, thereby directly constraining the scale, reliability, and economic viability of coastal shipping from Odisha ports.	MoPSW may coordinate with Indian Railways and State Government for development of last-mile rail connectivity (rail sidings / spur lines) linking Gandhamardan iron ore mines to the nearest railway network.
4	**Lack of incentives for using Major Ports at both loading and discharge ends (e.g., Paradip/Vizag to Mumbai)**	Reduces attractiveness of coastal shipping for large steel producers despite high volumes (JSW moves ~9–10 MTPA annually) from Paradip / Vizag Port on east coast to Mumbai Port on West Coast.	Introduce differential port charge incentives for coastal cargo handled at Major Ports at both ends. Harmonise iron ore handling tariffs across ports such as Visakhapatnam Port Authority and Paradip to avoid distortion.
5	**Congestion at Mumbai Port during peak demand; limited draft and dependence on lighterage**	Increases vessel waiting time, turnaround time, and freight costs, reducing reliability of coastal services	Improve anchorage draft from ~11.8 m to ~13.5 m, strengthen traffic management and scheduling at Mumbai Port Authority, and augment mechanised bulk handling capacity
6	**Lack of adequate storage space at Mormugao Port for iron ore and pellets aggregation**	Following the post-2012 decline in iron ore traffic and tightening of environmental norms in Goa, Mormugao Port Authority (MgPA) no longer maintains large contiguous stockyard space for iron ore and pellets. Current handling is constrained by limited environmentally	Develop dedicated storage yards and mechanised stacking, reclaiming facilities at Mormugao Port Authority

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
		compliant storage capacity, restricting bulk aggregation required for coastal shipping. Industry stakeholders expressed need for adequate storage at MgPA for aggregation of iron ore cargo for coastal shipping.	
7	**Presence of shipwrecks in the Mandovi River affecting barge movement to Mormugao Port**	Safety risks, navigational constraints, and higher insurance and operating costs for iron ore barges	Expedite removal of shipwrecks and channel clearance in the Mandovi River to improve navigational safety and reliability of barge-based iron ore transport
8	**Road connectivity between iron mines and railway sidings in Odisha**	Stakeholders have highlighted persistent poor road connectivity and deteriorated road conditions between major iron ore mines and their nearest railway sidings in Odisha, particularly from: • the Gandhamardan mines to Banspani and Jakhapura rail sidings • the Joda–Barbil iron ore cluster to Barbil and Banspani rail sidings • the Koira–Bolani–Kalta mining belt to Bolani and Barsuan rail sidings. These constrained last-mile road links result in truck congestion, delayed rake loading, and limits bulk aggregation required for coastal shipping.	MoPSW, through Sagarmala, may coordinate with Odisha State Govt. for development of adequate road infrastructure connecting the specified iron mine areas with their respective railway sidings.

Source: Analysis of primary data by Major Ports and Secondary Research

NW-5 as an enabler of Coastal Shipping for Iron Ore

The Detailed Project Report (DPR) prepared by IWAI for National Waterway–5 identifies iron ore as a key mineral commodity for inland waterway transport, linking the Kalinganagar industrial cluster with the ports of Paradip Port Authority and Dhamra Port.

As per the DPR, iron ore traffic of about 1.2 MTPA from Kalinganagar industries is projected to move through NW-5 by 2030, forming part of the upstream (inland-to-port) cargo stream. In addition, cargo handled at Paradip Port, including iron ore and pellets—has been assessed for diversion to the waterway, with about 1.48 MTPA of port cargo expected to move through NW-5 by 2030 under moderate growth assumptions.

Overall, the DPR estimates a total cargo potential of about 19.1 MTPA by 2030 on NW-5 under the high-case scenario, with mineral cargo forming a significant share of the traffic. By enabling inland movement of iron ore from steel and palletisation hubs to Paradip and Dhamra, NW-5 anchors bulk

volumes at coastal ports and creates a natural feeder system for coastal shipping, strengthening east-to-west domestic movement of iron ore through an integrated coastal–IWT logistics chain.

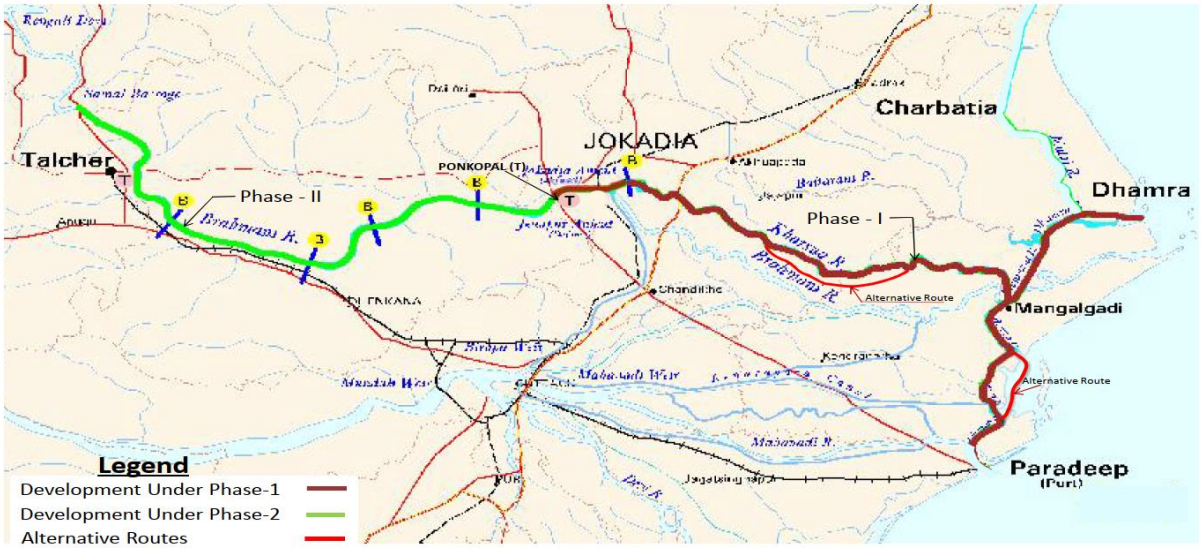


Figure 26: Map of National Waterway 5

4.3.8. Learnings from Global Best Practices

Minas-Rio Pipeline for Iron Ore, Brazil

The Minas-Rio pipeline in Brazil, operated by Anglo American, is the world's longest iron ore slurry pipeline, spanning 529 km from the Minas Gerais mine to the Port of Açu. This state-of-the-art system transports more than 26.5 million tonnes of iron ore annually. It features advanced monitoring and leak detection technologies, ensuring operational efficiency and environmental compliance. The project also incorporates a closed-loop water management system to minimize water usage and environmental impact, making it a benchmark for sustainability in slurry transport.

This configuration eliminates intermediate handling, locks cargo at the port, and ensures predictable, high-volume maritime evacuation. Although much of the movement is export-oriented, the same model supports short-sea and coastal redistribution along Brazil's coastline, demonstrating how pipeline-to-port systems create structurally captive maritime cargo.

4.3.9. Potential for Coastal Shipping

In FY 2024–25, Indian ports handled about 70.4 MT of iron ore, which corresponds to an estimated net coastal iron ore movement of about 35 MT after adjusting for double counting at loading and discharge ports. While iron ore production and steel demand are expected to rise substantially over the medium term, coastal shipping of iron ore has so far been constrained by captive rail-based supply chains, limited first-mile connectivity to ports, and congestion at key discharge locations.

Assuming continuation of current trends, a conservative blended growth rate of about 5.5–6% per annum is considered appropriate for projecting coastal iron ore movement. Under a pessimistic (organic growth) scenario, net coastal iron ore movement is projected to increase to around 46–48 MT by FY 2029–30, reflecting growth largely in line with steel production without significant resolution of existing bottlenecks.

Under a realistic to optimistic range, where select constraints are gradually addressed, such as incremental improvements in rake availability to Paradip and Vizag, limited port-side incentives for coastal cargo, and partial easing of congestion at western coast discharge ports, an additional 6–12 MT of iron ore could shift to coastal routes. This would raise net coastal iron ore movement to about 52–55 MT by FY 2029–30, representing a steady but measured expansion of coastal shipping for iron ore by 2030.

Under an optimistic scenario, assuming coordinated but gradual implementation of recommended interventions including captive or mechanised berths for pellet plants, improved draft and handling capacity at Mumbai and Goa, and better coastal–IWT integration (NW 5), a further 8–10 MT could shift to coastal routes, taking net coastal iron ore movement to about 58–60 MT by FY 2029–30.

Table 19: Potential for Coastal Shipping

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	35	70.4	—
Pessimistic (FY 2029–30) *(organic growth only)*	46–48	92-96	5.5–6.0%
Realistic (FY 2029–30) *(partial issue resolution)*	52–55	104-110	6.8–7.5%
Optimistic (FY 2029–30) *(most interventions implemented)*	58–60	116-120	8.0–8.5%

Source: Analysis of primary data by Major Ports

4.4. POL and Products

4.4.1. Commodity Overview

India's crude oil refining and petroleum product consumption has exhibited a sustained long-term upward trajectory. According to data published by the Petroleum Planning & Analysis Cell (PPAC). Total petroleum product consumption increased from around 201 MMT in FY 2020–21 to 234.3 MMT in FY 2023–24, reflecting a CAGR of about 5.1% over this period. In FY 2024–25, POL consumption further increased to 239.2 MMT.

Further, India's crude oil demand will increase steadily through 2030, primarily to meet the rising requirements of domestic refineries supplying both the domestic market and export-oriented petroleum products. Despite incremental gains in biofuels, gas, and electrification, crude oil will remain the backbone of India's energy and transport system in the medium-term.

4.4.2. Current Scenario: Domestic Production and Consumption

India operates one of the world's largest refining systems, with installed refining capacity of about 258 MMT in FY 2024–25 and actual crude processing of 268 MMT during the year[6]. High capacity utilisation reflects strong domestic demand for petroleum products as well as India's role as a regional refining hub.

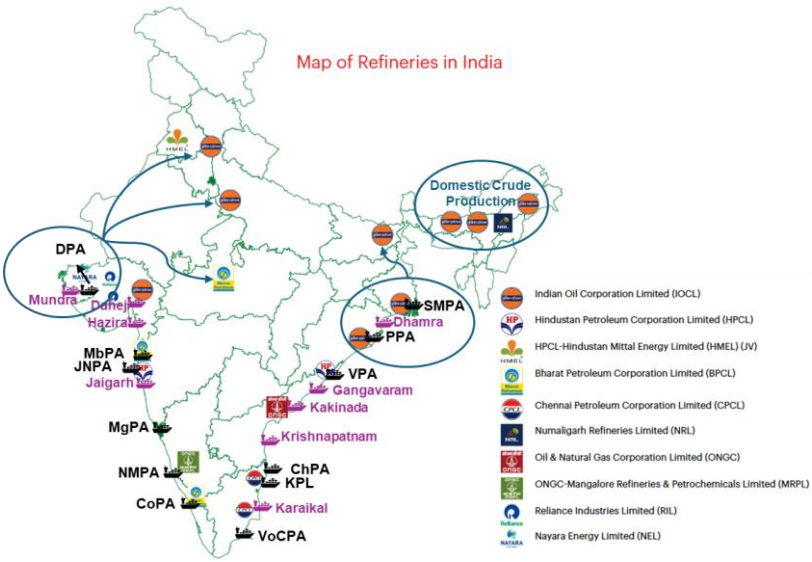


Figure 28: Map of Refineries of India

Despite large-scale refining capacity, India's domestic crude oil production accounts for only 11–12% of total crude processed in Indian refineries. Total indigenous crude oil & condensate production in FY 2024–25 was 28–29 MMT. Import dependence of crude oil is 88–89%, underlining India's structural reliance on imported crude oil.

While crude oil production is constrained, domestic production of petroleum products (POL) has expanded steadily, supported by refinery expansion, upgradation, and improved operational efficiency.

- Total POL production in FY 2024–25: 284 MMT
- POL production in FY 2023–24: 276 MMT
- Over the last five years, POL production has grown at a CAGR of 4–5%.

Table 20: Oil Refineries of India

Sl. No.	Refinery	State	Installed Capacity (MMTPA)	Crude Oil Processed (MMT) 2023–24	Crude Oil Processed (MMT) 2024–25
1	Barauni (1964)	Bihar	6	6.6	6.5
2	Koyali / Vadodara (1965)	Gujarat	13.7	15.2	15.3
3	Haldia (1975)	West Bengal	8	8.1	6.9
4	Mathura (1982)	Uttar Pradesh	8	9.2	8.1
5	Panipat (1998)	Haryana	15	14.3	15.4
6	Guwahati (1962)	Assam	1.2	1	1.2
7	Digboi (1901)	Assam	0.65	0.7	0.8
8	Bongaigaon (1976)	Assam	2.7	3	2.8
9	Paradip (2016)	Odisha	15	15.2	14.7
—	**IOCL – Total**	**—**	**70.3**	**73.3**	**71.6**
10	Manali (1969)	Tamil Nadu	10.5	11.6	10.5

[6] *Source: Data published by the Petroleum Planning & Analysis Cell (PPAC), Oct 2025*

Sl. No.	Refinery	State	Installed Capacity (MMTPA)	Crude Oil Processed (MMT) 2023–24	Crude Oil Processed (MMT) 2024–25
11	CBR (1993)	Tamil Nadu	0	0	0
—	CPCL-Total		10.5	11.6	10.5
12	Mumbai (1955)	Maharashtra	12	15.1	15.5
13	Kochi (1966)	Kerala	15.5	17.3	17.2
14	Bina (2011)	Madhya Pradesh	7.8	7.1	7.7
—	**BPCL – Total**	**—**	**35.3**	**39.5**	**40.4**
15	Numaligarh (1999)	Assam	3	2.5	3.1
16	Tatipaka (2001)	Andhra Pradesh	0.07	0.07	0.07
17	MRPL – Mangalore (1996)	Karnataka	15	16.5	18
—	**ONGC – Total**	**—**	**15.1**	**16.6**	**18.1**
18	Mumbai (1954)	Maharashtra	9.5	9.6	10
19	Visakhapatnam (1957)	Andhra Pradesh	15	12.7	15.3
20	HMEL – Bhatinda (2012)	Punjab	11.3	12.6	13
—	**HPCL – Total**	**—**	**35.8**	**35**	**38.3**
21	Jamnagar (RIL) (1999)	Gujarat	33	34.4	35
22	Jamnagar (SEZ) (2008)	Gujarat	35.2	28.3	30.2
23	Nayara – Vadinar (2006)	Gujarat	20	20.3	20.5
—	**All India Total**	**—**	**258.1**	**261.5**	**267.7**

Source: Primary Data from Major Ports

As can be observed from the above table, collectively, IOCL, BPCL and HPCL account for >140 MMTPA (54% of the total capacity), forming the backbone of India's domestic fuel supply and POL distribution network.

4.4.3. Future Outlook

The Indian Oil Market – Outlook to 2030 provides a consolidated medium-term view of demand evolution across crude oil and major petroleum product categories. The report estimates that India's POL consumption will reach approximately 270–280 MMT by 2030, translating to a CAGR of around 3–3.5% from current levels (239 MMT in FY25).

Further, the report projects that Crude oil demand will reach ~310–330 MMT, and domestic crude production is unlikely to increase materially, implying that incremental demand will be almost entirely met through imports.

In line with the projected consumption / demand, the refinery and production capacity is also planned for expansion to ~335 MTPA, as presented in table below.

Table 21: Future outlook of oil refineries

S. No.	Operator	Refinery	Capacity (MTPA) 2030		
			Current	Post Expansion	Net expansion
1	Reliance	RIL, Jamnagar Refinery, Gujarat	33.0	41.0	8.0
2	Reliance	RPL, Jamnagar Refinery, Gujarat	35.2	35.2	-
3	Nayara	Nayara Energy Refinery, Gujarat	20.0	20.0	-
4	BPCL	Kochi Refinery, Kerala	15.5	18.0	2.5
5	MRPL	Mangalore Refinery, Karnataka	15.0	15.0	0.0
6	IOCL	Paradip Refinery, Odisha	15.0	25.0	10.0
7	IOCL	Panipat Refinery, Haryana	15.0	25.0	10.0
8	IOCL	Gujarat Refinery, Vadodra	13.7	18.0	4.3
9	HPCL	Mumbai Refinery, Maharashtra	12.0	12.0	0.0
10	HPCL-Mittal	Guru Gobind Singh Refinery	11.3	18.0	6.7
11	Chennai Petroleum Corp.	Manali Refinery, TN	10.5	10.5	0.0
12	HPCL	Visakhapatnam Refinery, AP	8.3	15.0	6.7
13	IOCL	Mathura Refinery, UP	8.0	11.0	3.0
14	BORL (Bharat Petro. & Oman)	Bina Refinery, Madhya Pradesh	7.8	11.3	3.5
15	IOCL	Haldia Refinery, West Bengal	7.5	8.0	0.5
16	IOCL	Barauni Refinery	6.0	9.0	3.0
17	IOCL	Numaligarh Refinery, Assam	3.0	9.0	6.0
18	IOCL	Bongaigaon Refinery, Assam	2.7	2.7	0.0
19	IOCL	Guwahati Refinery, Assam	1.0	1.0	0.0
20	CPCL	Nagapattinam Refinery, TN	1.0	9.0	8.0
21	IOCL	Digboi Refinery, Assam	0.7	1.0	0.4
22	ONGC	Tatipaka Refinery, AP	0.1	0.1	0.0
23	BPCL	Mumbai Refinery, Maharashtra	12.0	16.0	4.0
		Total	**258.1**	**334.7**	**76.6**

4.4.4. Coastal Shipping

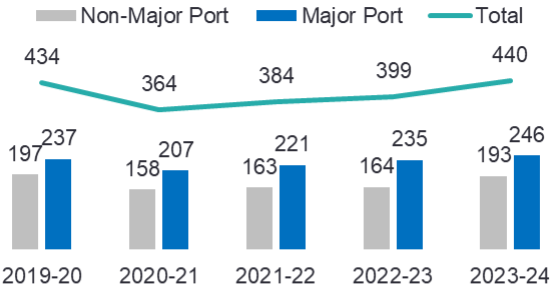
In FY 2023–24, Indian ports handled approximately 439.7 MT of crude oil and POL cargo, of which Major Ports accounted for about 56% (246 MT) and Non-Major Ports for 44% (193 MT). After a sharp contraction in FY 2020–21, total throughput has recovered steadily, reaching its highest level in the last five years.

EXIM cargo dominates crude oil and POL movements, accounting for ~82% (361 MT) of total throughput in FY 2023–24, while coastal movements account for only ~18% (79.1 MT). In FY 2024-25, the coastal movement of POL and products was 77 MT.

Major Ports play a leading role in EXIM handling due to their proximity to refineries, crude oil terminals and deep-draft infrastructure, with EXIM throughput at Major Ports growing at a CAGR of ~1.8% over the last five years, compared to a marginal decline at Non-Major Ports.

In contrast, coastal shipping of crude oil and POL products has stagnated and declined over the last five years, despite the inherently suitable nature of these commodities for coastal movement. Overall coastal throughput declined by about 4% between FY 2019–20 and FY 2023–24. Major Ports recorded a negative CAGR of ~1.0%, while Non-Major Ports witnessed a sharper decline with a negative CAGR of ~1.4%, indicating that coastal POL logistics have not kept pace with domestic production and consumption growth.

POL Throughput of Indian Ports (MT)



Port	CAGR 5 Years	CAGR 3 Years
Major Port	**1.4%**	**4.8%**
Non Major Port	0.3%	7.0%
Total	**0.9%**	**5.7%**

~439.7 MT POL throughput of Indian Ports in FY2023-24

MJP = 56% (246 MT) and NMJP = 44% (193 MT)

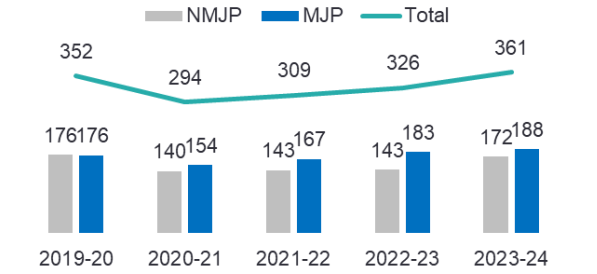
EXIM vs. Coastal (FY2023-24):

- EXIM POL= 82% (361 MT)
- Coastal POL= 18% (79.1 MT)

MJP hold majority market share in both EXIM and Coastal POL

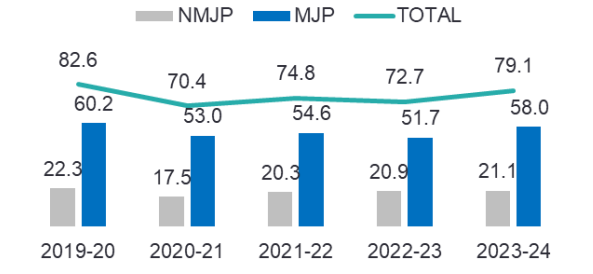
Figure 29: POL Throughput of Indian Ports (MT)

EXIM POL Throughput (MT)



Port Type	CAGR	Overall Growth
MJP	1.8%	7%
NMJP	-0.6%	-2%

Coastal POL Throughput (MT)



Port Type	CAGR	Overall Growth
MJP	-1.0%	-4%
NMJP	-1.4%	-5%

Figure 30: POL Throughput (MT)

4.4.5.Major OD Pairs

Coastal shipping of crude oil and POL products in India is concentrated around a few major, refinery-linked OD pairs along both the west and east coasts. On the west coast, crude oil imports are primarily received at ports such as Kandla–Sikka, Dahej and Mumbai, from where crude is moved coastally to refineries at Mumbai, Mangaluru (MRPL) and Kochi (BPCL).

These west coast refineries also generate significant POL product movements, including inter-coastal flows towards the southern region. On the east coast, POL products move predominantly from refineries at Visakhapatnam (HPCL), Chennai/Manali (CPCL) and Paradip (IOCL) towards consumption centres in eastern India, including Haldia and Kolkata, with additional short coastal and riverine movements (e.g., Budge Budge).

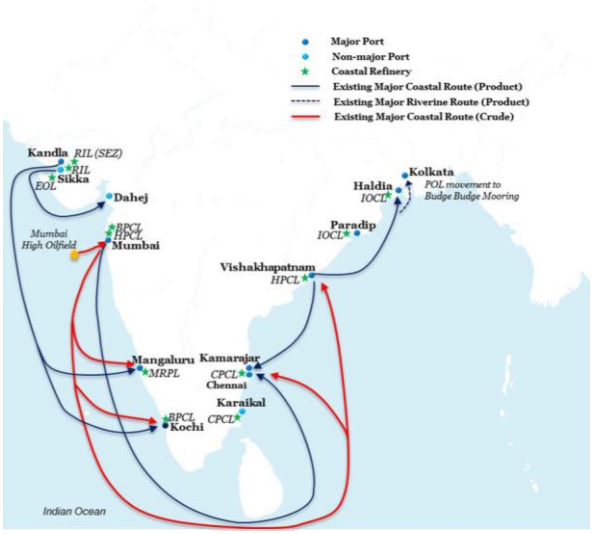


Figure 31: Major OD Pairs

Overall, the major coastal OD pairs reflect a refinery-to-refinery and refinery-to-market pattern, with crude flows largely west-coast oriented and POL product flows spanning west–south, east–south, and east–east coastal corridors, underscoring the strategic role of coastal shipping in balancing regional petroleum supply.

The major OD pairs corresponding to Crude Oil and POL product movements are given in the following table:

Table 22: The major OD pairs corresponding to Crude Oil and POL product movements

Loading Port	Unloading Port	Volume (in million tonnes)
Mumbai Port	Southern Ports (NMPA, Chennai, Visakhapatnam, Cochin)	7.41
Western Ports (Gujarat)	Mumbai Port	3.84
Cochin Port	Kamarajar Port	2.27
Cochin Port	Haldia Port	1.59
Visakhapatnam Port	Mundra Port	1.42
Bombay High Fields	Mumbai Port	0.94

Source: Primary Data from Major Ports

4.4.6. Pipeline Network Development in India

India has developed an extensive pipeline-based distribution system for crude oil and petroleum products, led primarily by public sector oil companies. Over the years, pipelines have emerged as the preferred mode for bulk, continuous and safe movement of crude oil from ports to refineries and for evacuation of POL products from refineries to inland demand centres.

The pipeline infrastructure is highly integrated with coastal ports and refineries, particularly along the west and east coasts, enabling direct receipt of imported crude and onward movement of refined products. Crude oil pipelines are largely radial in nature, connecting ports and producing fields to refineries, while product pipelines form a dense grid linking refineries with major consumption centres across the country.

As of November 2025, India's pipeline network spans over 10,000 km for crude oil and about 24,000 km for POL products, underscoring the scale of investment by oil PSUs and the strategic role of pipelines in India's petroleum logistics system.

Figure 32: Pipeline Network in India

Table 23: India's Crude and Product Pipeline Infrastructure Snapshot

Company	Crude Oil Pipelines – Length (km)	Crude Oil Pipelines – Capacity (MMTPA)	Product Pipelines – Length (km)	Product Pipelines – Capacity (MMTPA)
ONGC	1,284	60.6	–	–
Oil India Ltd. (OIL)	1,196	9	–	–
Cairn (Vedanta)	688	10.7	–	–
HMEL	1,017	11.3	–	–
IOCL	5,322	53.8	13,344	76.1
BPCL	937	7.8	2,600	22.6
HPCL	–	–	5,439	42.6
Others*	–	–	2,399	10.2
Total	**10,443**	**153.1**	**24,436**	**153.2**

**Note: Others include GAIL and Petronet India Ltd.; HPCL and BPCL pipelines are included only under product pipeline data, as per PPAC reporting.*

4.4.7. Key Issues and Interventions

Key Infrastructure Projects already being undertaken for Liquid Cargo Handling

- ***Kamarajar Port capacity augmentation of the Marine Liquid Terminal:*** Kamarajar Port is undertaking a significant expansion of its existing Marine Liquid Terminal, doubling its handling capacity from 3 MMTPA to 6 MMTPA to cater to rising demand for petroleum products and LPG in the Tamil Nadu and southern hinterland.
- ***Syama Prasad Mookerjee Port - Floating LNG Terminal at Haldia Dock Complex (Ongoing):*** SMP Kolkata has awarded a long-term licence to a consortium for development of

a Floating Storage Regasification Unit (FSRU)-based LNG terminal at Haldia Dock Complex. The project will initially support ~1.5 MMTPA regasification capacity, expandable to 3 MMTPA, and is targeted for commissioning in the latter half of 2027. Further, a proposal for "Development of Concrete Jetty and other facilities for Liquid Cargo Handling" at Budge Budge is planned in the FY2025–26.

- ***Visakhapatnam Port Oil Refinery / OSTT Berth Enhancements (Recently completed):*** Visakhapatnam Port Authority has recently commissioned the new Oil Refinery Berth-2, strengthening its crude/POL handling capabilities within the Inner Harbour. Ancillary improvements at the Oil Storage Tank Terminal (OSTT), including modern fire-fighting and safety facilities, were also inaugurated in mid-2025, enhancing operational readiness and capacity for liquid cargoes.

Further, during the stakeholder workshop on coastal shipping, representatives from the petroleum industry highlighted certain structural, tariff-related and infrastructure constraints that are limiting the growth of coastal shipping for crude oil and POL products. Addressing these issues through targeted policy, tariff and infrastructure interventions could unlock modal shift potential for coastal shipping.

Table 24:Key Constraints and Interventions for Coastal Movement of POL Cargo

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	Absence of coastal cargo discount for POL products	Port users associated with the petroleum industry highlighted that concession on coastal Cargo Related Charges (CRC) is currently extended by ports for several bulk commodities, but POL products are excluded. Given the high-volume and repeatable nature of POL cargo, the absence of such incentives makes coastal shipping less competitive vis-à-vis pipelines and rail.	Extend concession to POL products, at least on a pilot basis. Introduce time-bound or volume-linked incentives for incremental coastal POL volumes. Harmonise the concession across Major Ports to avoid port-specific distortions.
2	Lack of bunkering facilities on the east coast	Indian Oil Corporation Limited (IOCL) indicated strong demand for bunkering services on the east coast, **estimating ~8 VLCCs and ~8 Suezmax vessels per month** requiring bunkering support. Bunkering demand of ~16 large crude tankers per month translates into a minimum viable **bunkering capacity of ~0.8 MTPA, with 1.0 MTPA** recommended for operational resilience.	Detailed demand assessment for setting up dedicated bunkering facilities at suitable east coast ports (e.g. Paradip, Visakhapatnam, Kamarajar) Develop bunkering terminals under PPP mode with oil PSUs and private players Position east coast ports as regional bunkering hubs for coastal and EXIM tankers.

Source: Analysis of primary data by Major Ports and Secondary Research

4.4.8. Potential for Coastal Shipping

In FY 2024–25, Indian ports handled about 77 MT of crude oil and POL cargo under coastal shipping, which corresponds to an estimated net coastal movement of about 38–39 MT after adjusting for double counting at loading and discharge ports. This net volume accounts for only about 15–17% of domestic POL movement, and historical evidence indicates that coastal shipping of crude oil and POL products has remained stagnant or declined marginally over the last five years, in line with stagnation in domestic

crude oil production and a pipeline-centric approach to POL distribution. As a result, incremental domestic petroleum logistics demand has been largely absorbed by pipelines and EXIM flows rather than by coastal shipping.

Looking ahead, domestic POL demand is projected to increase moderately to 270–280 MT by 2030, driven primarily by transport fuels and aviation, while domestic crude oil production is expected to remain constrained. Under a pessimistic (business-as-usual) scenario, where existing structural and operational constraints persist and no targeted policy interventions are undertaken, net coastal shipping of crude oil and POL is expected to grow only marginally to about 41–42 MT by 2030, implying a low CAGR of around 0.5–1.5% and a broadly unchanged domestic coastal share.

Under a realistic scenario, assuming incremental improvements such as extension of coastal tariff concessions to POL products, and modest infrastructure augmentation for bunkering, net coastal volumes could increase to about 45–47 MT by 2030, corresponding to a moderate CAGR of 2–3%.

In an optimistic scenario, with, improved coordination between refineries and ports, string policy push for concessions on coastal tariffs and bunkering facilities, net coastal shipping of crude oil and POL products could reach 50–52 MT by 2030, implying a CAGR of 4–5%.

Table 25: Potential for Coastal Shipping of POL and products

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Mode Share	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	38-39	77	15-17%	—
Pessimistic (FY 2029–30) *(organic growth only)*	41-42	82-84	15-17%	0.5-1.5%
Realistic (FY 2029–30) *(partial issue resolution)*	45-47	90-94	17-18%	2.0-3.0%
Optimistic (FY 2029–30) *(most interventions implemented)*	50-52	100-104	18-19%	4.0-5.0%

Source: Analysis of primary data by Major Ports

4.5. Steel

4.5.1. Commodity Overview

Steel is an important commodity from the perspective of production of high end commodities and capital goods. Over the past few years, India's steel industry has been observing continuous growth in terms of production of crude and finished steel. As steel is a key intermediate good in many industrial sectors, its demand is driven by growth in the infrastructure, construction, and automobile sectors. The current pace of growth in the Indian economy has fuelled up the infrastructure and construction sector, subsequently leading to increase in the demand for steel.

4.5.2. Current Scenario: Domestic Production / Consumption

As discussed earlier, crude steel production increased from 103.5 MT in FY 2020–21 to 144.3 MT in FY 2023–24, registering a CAGR of about 11.6%, supported by continuous capacity addition and improved utilisation levels[7]. During the same period, domestic crude steel capacity expanded from 143.9 MTPA to 179.5 MTPA, underlining strong investor confidence in India's steel demand outlook.

On the demand side, finished steel consumption grew sharply from 94.9 MT in FY 2020–21 to 136.3 MT in FY 2023–24, a cumulative growth of over 43% in just four years. This growth has been broad-

[7] *Source: Ministry of Steel, Annual report 2024-25*

based, led by housing and construction (43%), infrastructure (25%), engineering and packaging (22%), and automotive sectors (9%).

Table 26: India's Crude Steel Capacity, Production and Utilisation Trend

Year	Crude steel		
	Capacity (MT)	Production (MT)	Capacity Utilization (%)
2020-21	143.914	103.545	72
2021-22	154.062	120.293	78
2022-23	161.299	127.197	79
2023-24	179.515	144.299	80
Apr-Dec 2024-25*	196.581@	112.011	57

Source: JPC; *provisional @whole Financial Year

Table 27:India's Finished Steel Production, Trade and Consumption Trend

Total Finished Steel (alloy + non-alloy) (Million Tonnes or MT)

Year	Production	Import	Export	Consumption
2020-21	96.204	4.752	10.784	94.891
2021-22	113.597	4.669	13.494	105.752
2022-23	123.196	6.022	6.716	119.893
2023-24	139.153	8.320	7.487	136.291
Apr-Dec 2024-25*	107.192	7.424	3.600	111.493

Source: JPC; *provisional

Table 28: Indian Crude Steel Production

Indian Crude Steel Production

Sector	Unit	2020-21	2021-22	2022-23	2023-24	Apr-Dec 2024-25*
Public Sector	MT	19.515	22.636	22.429	24.192	17.552
Private Sector	MT	84.030	97.658	104.768	120.107	94.459
Total Production	MT	103.545	120.293	127.197	144.299	112.011
Share of Public Sector	%	19	19	18	17	16

Source: JPC; *provisional

State Wise Capacity Crude Steel FY 22-23 (MT)			
Sate Private Sector	**Capacity**	**State**	**Capacity Public Sector**
Odisha	20.8	Chhattisgarh	7
Jharkhand	16.6	West Begal	4.9
Chhattisgarh	15.7	Odisha	3.8
Maharashtra	18.1	Jharkhand	4.6
Karnataka	14.1	Tamil Nadu	0.18
Gujarat	14.0	Karnataka	0.11
Others	34.06	Andhra Pradesh	7.3
Private Sector	**133.36**	**Public Sector**	**27.93**
Total Number of Units			
Private Sector	**930**	**Public Sector**	**9**

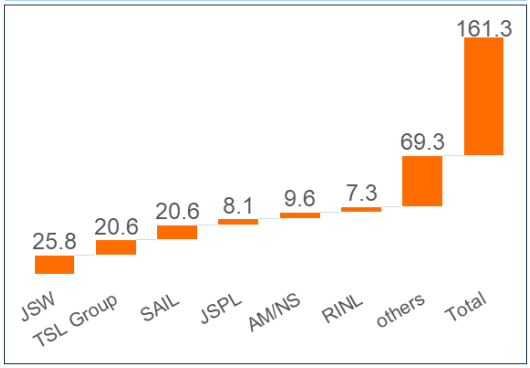


Figure 33: India's crude steel capacity in FY 2022–23 is dominated by the private sector, accounting for over 80% of total capacity.

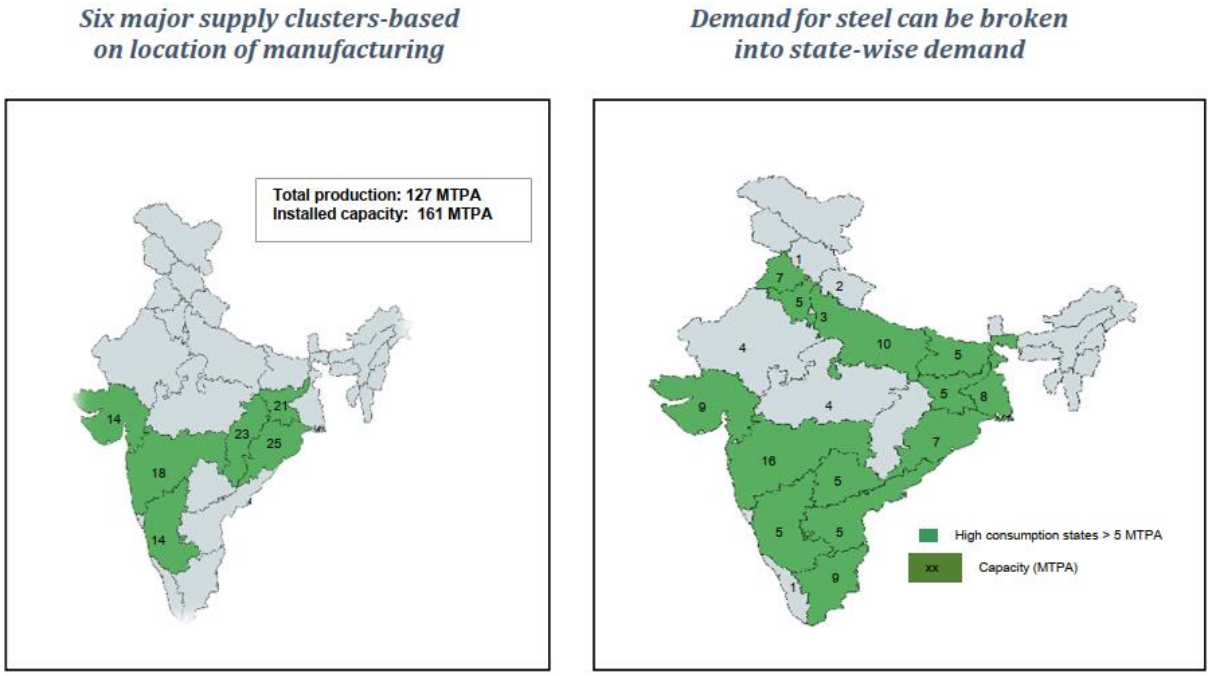


Figure 34: Geographic mismatch between steel production clusters and state-wise consumption demand across India.

Source: Logistics Plan for Iron and Steel 2023

4.5.3. Future Outlook

India's steel sector is projected to scale up significantly by 2030–31, with total crude steel capacity reaching about 300 MTPA and crude steel demand/production at around 255 MTPA, indicating improved capacity utilisation. Finished steel demand/production is expected to reach nearly 230 MTPA, driven by infrastructure, construction, manufacturing, transport, and energy sectors.

On the upstream side, sponge iron production is projected at about 80 MTPA, reflecting the continued dominance of the DRI-based route in India's steelmaking landscape, supported by domestic iron ore availability. Pig iron demand/production is expected to be around 17 MTPA, largely catering to foundries and niche downstream uses, and remaining relatively stable.

From a consumption perspective, per capita finished steel consumption is projected to rise to about 158 kg, higher than current levels but still below the global average, indicating significant headroom for growth beyond 2030. This expanding and geographically dispersed steel production consumption

profile creates strong potential for coastal shipping, particularly for movement of iron ore, coking coal, sponge iron, pig iron, and finished steel between eastern, western, and southern coastal clusters. Leveraging coastal shipping can help steel producers reduce logistics costs, decongest rail corridors, improve supply-chain reliability, and lower carbon emissions, positioning coastal shipping as a critical enabler in supporting the next phase of growth of India's steel sector.

Table 29:India's steel sector outlook for 2030–31 points to 300 MTPA capacity with rising finished steel demand and per capita consumption.

S.No.	Parameter	Projections (2030-31)
1	Total crude steel capacity (in MTPA)	300
2	Total crude steel demand/production (in MTPA)	255
3	Total finished steel demand/production (in MTPA)	230
4	Sponge iron demand/production (in MTPA)	80
5	Pig iron demand/production (in MTPA)	17
6	Per Capita Finished Steel Consumption (in KGS)	158

4.5.4. Coastal Shipping

In FY 2024–25, steel cargo throughput at Indian ports was limited to about 2.5–3.0 Million Tonnes (MT), of which Major Ports handled around 1.8 MT, with the balance handled at non-major ports. When viewed in the context of the total coastal cargo throughput of about 339 MT handled by Indian ports during the year, coastal steel movement accounts for less than 1% (approximately 0.7–0.9%) of total coastal cargo volumes. This highlights that, despite India being one of the world's largest steel producers and consumers, coastal shipping currently plays only a marginal role in the domestic movement of steel.

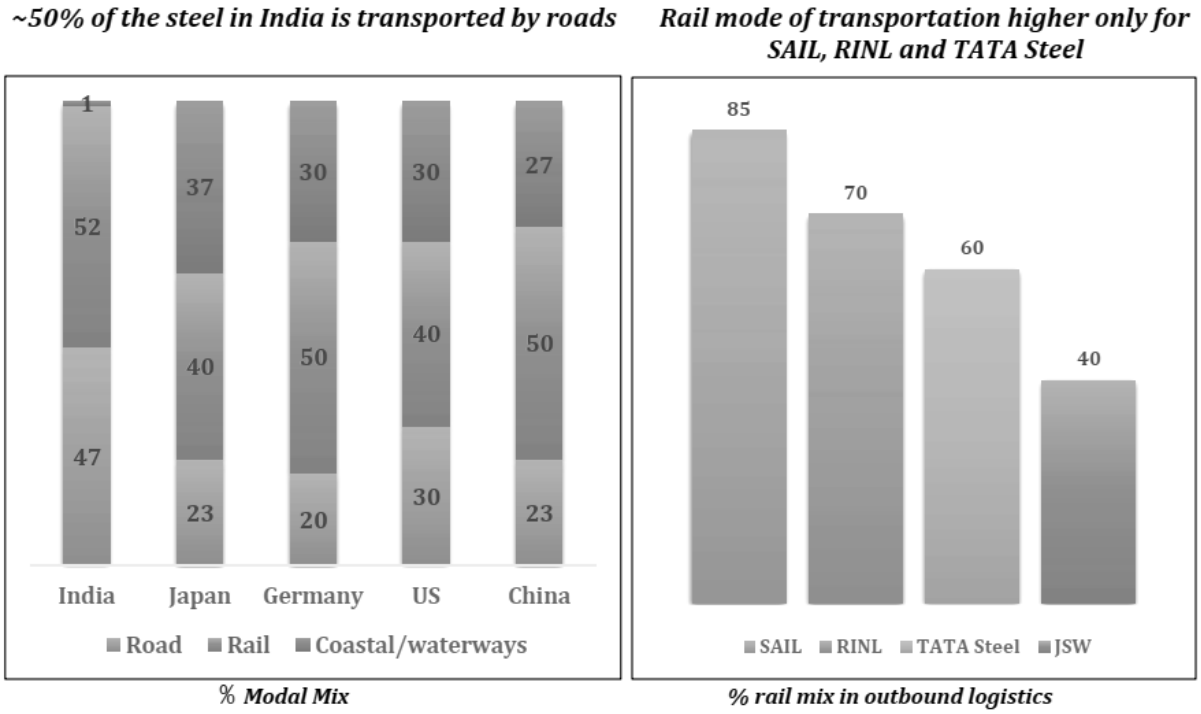


Figure 35: India's steel logistics remain road-heavy, with rail dominance largely limited to a few major producers

The low coastal volume of steel is primarily attributable to structural and operational factors. Steel supply chains in India have traditionally evolved around rail- and road-based logistics, supported by

established rake linkages, plant-to-plant rail corridors, and time-sensitive deliveries to consumption centres. Major long-haul movement of steel is between the steel production clusters in Eastern India to Western and Northern India's auto and capital goods production clusters, major cities and infrastructure project sites.

The large players are predominantly using rail mode for long-haul distribution of steel products, even for the markets situated in proximity of the coast such as Mumbai and Ahmedabad. The small players, on the other hand, are using road mode even for long-haul distribution owing to their small parcel sizes.

As steel production and consumption volumes expand and become more geographically dispersed, this very low coastal share indicates a significant untapped opportunity.

4.5.5. Major OD Pairs

Majority of steel movement is by rail. In the total rail movement, 25% of the total finished steel originated from Odisha, 22% from Jharkhand, 19% from Karnataka and 12% from Chhattisgarh. These movements are destined to the states such as West Bengal (17%), Uttar Pradesh (16%), Maharashtra (15%), Odisha (12%), Tamil Nadu (12%), and Andhra Pradesh (12%)[8].

Apart from rail movements, limited volumes of steel are also moved by coastal shipping, especially from the plants located near to the ports. Coastal movements of Steel are shown in the table below.

Table 30: Coastal steel movements in FY 2024–25 are concentrated on a few low-volume corridors, indicating significant headroom for scale-up.

Loading Port	Unloading Port	Volume (FY 2024-25) (in million tonnes)
Dhamra Port / Paradip	Ports in Maharashtra	0.44
Vishakhapatnam	KPL	0.23
Vishakhapatnam	Karaikal	0.18
Hazira	NMPA	0.15
Dharamtar	Kandla	0.13

Source: Primary Data from Major Ports

4.5.6. Cost comparison and Potential OD pairs

As per the data gathered from the stakeholders and shippers, the coastal shipping of steel through multimodal movements is 10 to 11%. Moreover, the coastal shipping is operationally more economical as compared to rail movements, due to rake availability constraints. The following table represents cost comparisons for movements between Kalinganar steel plant (Odisha) and Khopoli plant (Maharashtra) through Coastal shipping and direct rail movements.

[8] *Source: Increasing rail share in freight transport in India, TERI*

Table 31: Cost comparison (Rail v/s coastal) for Steel movements

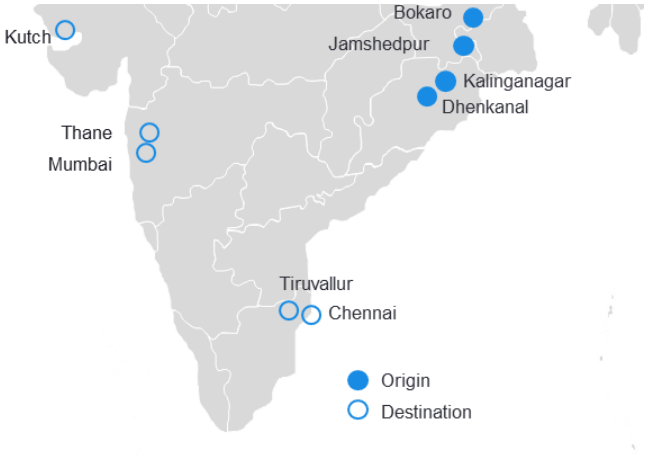
	Coastal Shipping Cost				Railway Transportation Cost	
	Scenario 1 (Rail as first mile mode)		Scenario 2 (Road as first mile mode)		All Rail Route	
Leg	Charges	Rate (INR/T)	Charges	Rate (INR/T)	Charges	Rate (INR/T)
First Mile	Plant to Port (Rail)	456	Plant to Port (Road)	1300	N.A.	
Main Haul	Port Handling (loading)	650	Port Handling (loading)	650	Basic Freight	3,190
	Sea Freight	1,300	Sea Freight	1,300	Surcharge	478
	Port Handling (unloading)	450	Port Handling (unloading)	450	Other Charges	183
Last Mile	Port to Destination (Road)	575	Port to Destination (Road)	575	N.A.	
Total		3,431		4,275		3,851

However, the overall costs of transportation through multi-modal movement involving coastal shipping are only marginally less than the cost for direct rail movements. While the coastal leg of the total movement costs significantly lower than the rail freight, the other charges like loading, unloading, first and last mile increase the overall haulage charges end-to-end. Moreover, the low first mile cost for supply of steel from plant to port corresponds to rail movements, while the same movements by road (plant to port) cost thrice as much as by rail.

Thus, the total cost of multimodal coastal shipping involving road leg for first mile is higher than the direct rail movement, thereby disincentivizing the modal shift to coastal movement. The potential OD pairs for the coastal shipping steel cargo are as follows:

Table 32: Potential OD pairs for coastal movements of Steel

No.	Potential OD Pairs	Volume (in MnT)
1	Jamshedpur- Thane	1.1
2	Dhenkanal- Mumbai	0.5
3	Jamshedpur- Mumbai	0.4
4	Bokaro- Mumbai	0.4
5	Jamshedpur- Tiruvallur	0.3
6	Kalinganagar- Kutch	0.4
7	Kalinganagar- Tiruvallur	0.3
8	Jamshedpur- Chennai	0.3
9	Bokaro- Chennai	0.3
	Total	4.0



As per the discussion with VOC Port, Thoothukudi in Tamil Nadu is emerging as a new steel hub, owing to it's connectivity by rail, road and proximity to southern Tamil Nadu and Kerala. Southern Tamil Nadu holds high potential for coastal movements from eastern ports like PPA and VPA to VOC port.

4.5.7. Key Issues and Interventions

Based on detailed studies and inputs received during stakeholder consultations, certain issues were identified that constrain the growth of coastal shipping of steel cargo in India. These are discussed in detail below.

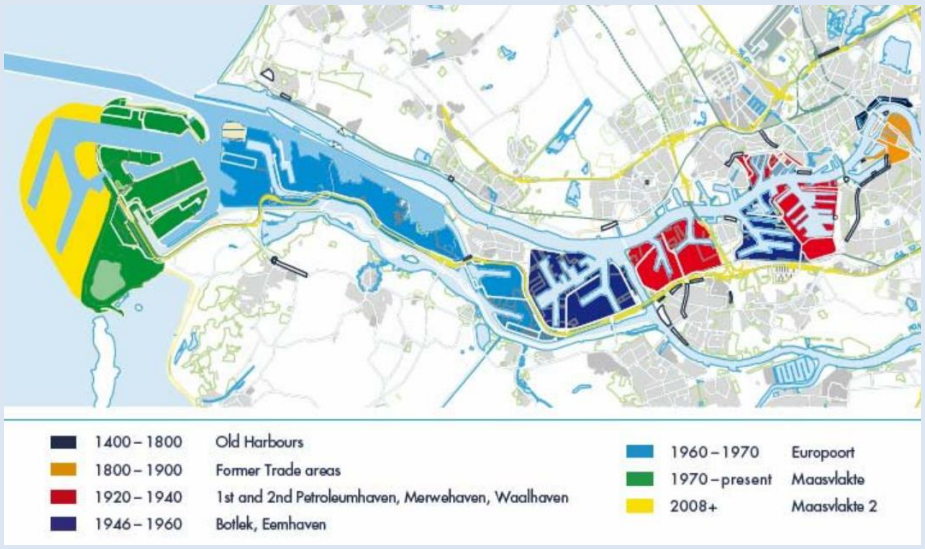
Table 33: Key Issues and Interventions for Steel Cargo

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	Fragmented parcel sizes of steel cargo	Typical steel consignments are in the range of 1,000–3,000 tonnes, whereas coastal vessels require 8,000–12,000 tonnes for economic operations. Lack of aggregation results in underutilised vessels and higher freight rates.	SMPA, PPA and VOCPA may develop port-based steel aggregation yards to consolidate cargo from multiple producers. Ports may explore tie ups with cargo aggregators to enable multi-shipper cargo pooling mechanisms for coastal steel movement.
2	**Lack of specialised steel-handling infrastructure**	Steel is frequently handled at general cargo berths at loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA) with limited mechanisation, leading to longer dwell time and higher risk of cargo damage, especially for HR coils and plates.	Loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA) may develop dedicated steel-handling facilities (coil yards, covered sheds, C-hook cranes, forklifts).
3	**Absence of assured return cargo and under-utilisation of vessels**	Coastal vessels carrying steel often operate one-way, returning empty, resulting in vessel utilisation below ~60% and elevated freight rates.	Ports may explore tie ups with cargo aggregators to facilitate route-based two-way cargo planning, pairing steel with return cargo such as scrap, project cargo, or bulk inputs.
4	**Higher handling charges due to substitution of TRF cranes with HMCs**	Stakeholders highlighted that HR plates and coils moved from DPA (Kandla) to Tuticorin are normally handled using TRF (track / trestle rail-mounted fixed) cranes, which have relatively low handling charges. When TRF cranes are unavailable due to maintenance, Harbour Mobile Cranes (HMCs) are deployed, resulting in significantly higher handling charges, sharply increasing total logistics cost despite no change in service requirement from the customer.	Ports may offer rebates on HMC charges for coastal steel cargo when HMCs are deployed due to port-side constraints (e.g., TRF under maintenance). Standardise handling charges for coastal steel cargo across ports, distinguishing clearly between customer-driven and port-driven equipment deployment.

Source: Analysis of primary data by Major Ports and Secondary Research

Port Based Agglomeration Centres in Port of Rotterdam supporting short sea shipping

Port of Rotterdam, Netherlands, has developed large industrial and logistics clusters within and adjacent to the port (refineries, steel, chemicals, energy, agri-bulk, distribution parks). This directly addresses the key issue faced in India for steel and a few other commodities, i.e., fragmented parcel sizes leading to underutilised coastal vessels.



Due to its port-based agglomeration centres (PBACs), Rotterdam has been the top port among all EU ports in the last decade to handle maximum volume of short-sea shipped goods (coastal goods), making it the largest port for this mode in the EU.

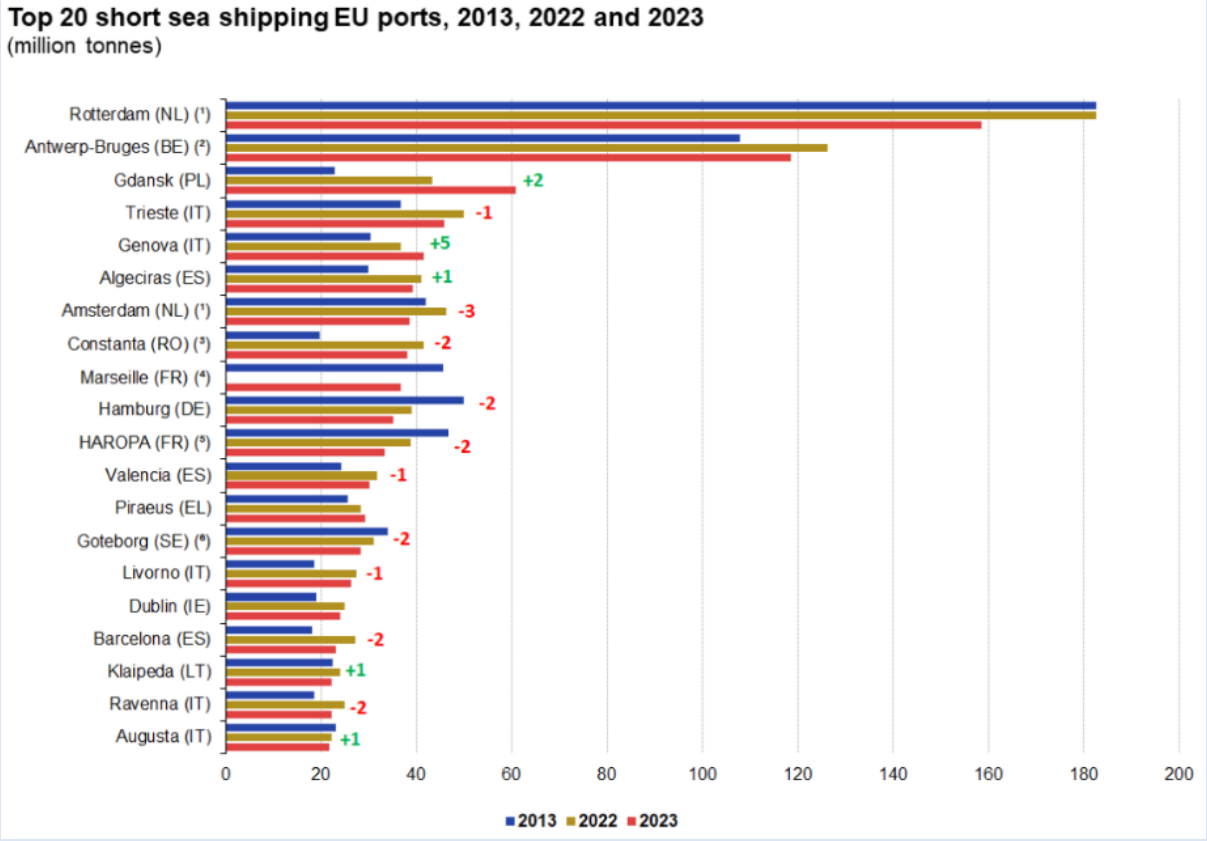


Figure 36: Top 20 short sea shipping EU Ports

Source: EuroStat - Maritime transport statistics - short sea shipping of goods at port level

Key Features

Table 34:Key Features of Port-Based Logistics and Aggregation Infrastructure (Rotterdam Model)

Aspect	Details
Type of Infrastructure	Common user warehouses, container yards, silos, tank farms, distribution centres with direct port interface
Multimodal Connectivity	Integrated road, rail, and inland waterways (Rhine corridor) connectivity within port estate
Cargo Types Aggregated	Containers, dry bulk, liquid bulk, steel, agri-products, consumer goods
Parcel Size Advantage	Enables consolidation of small shipments into full or near full short sea vessel loads

4.5.9. Potential for Coastal Shipping

Further, a blended growth outlook for coastal steel movement has been derived by combining historic growth in domestic steel production and consumption (5–6% CAGR), projected demand growth toward 2030, and the scope for modal shift from rail to coastal shipping driven by congestion on rail corridors and long-haul east–west and east–south steel flows. Given the very low base, future growth in coastal steel volumes is expected to be driven more by structural changes and policy/operational interventions than by underlying steel demand alone.

Under a pessimistic scenario, where rail continues to dominate steel logistics and port/handling inefficiencies persist, coastal steel volumes may grow at only 3–4% CAGR, reaching about 3.0–3.5 MT of port throughput by 2030 (net coastal movement 1.5–1.8 MT). In the realistic scenario, assuming gradual improvements in port handling, limited aggregation at key ports, and selective adoption of coastal routes for long-haul movements, coastal steel could grow at 7–8% CAGR, reaching 4.5–5.0 MT of port throughput by 2030 (net 2.25–2.5 MT). In an optimistic scenario, with targeted interventions such as port-based aggregation centres, standardised handling charges, dedicated coastal services, and assured two-way cargo planning, coastal steel volumes could grow at 10–12% CAGR, reaching 6.0–7.0 MT of port throughput by 2030 (net 3.0–3.35 MT).

Table 35:Scenario-based growth outlook for coastal movement shows potential to more than double volumes by FY 2030 with targeted interventions

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	1.25 – 1.50	2.5 – 3.0	—
Pessimistic (FY 2029–30) *(organic growth only)*	1.50 – 1.75	3.0 – 3.5	3-4%
Realistic (FY 2029–30) *(partial issue resolution)*	2.25 – 2.50	4.5 – 5.0	7-8%
Optimistic (FY 2029–30) *(most interventions implemented)*	3.00 – 3.35	6.0 – 7.0	10-12%

Source: Analysis of primary data by Major Ports

4.6. Cement

4.6.1. Commodity Overview

India is the second largest cement producing country in the world, after China. India is also the second largest consumer of Cement in the world. Thus, majority of the cement produced within India is consumed within India itself, promoting the domestic movement of cargo.

4.6.2. Current Scenario: Domestic Production / Consumption

India produced close to 467 Million Tonnes of cement in FY 2024-25, a jump from 270 million tonnes in year 2015-16[9]. The production of cement has consistently increased for more than two decades.

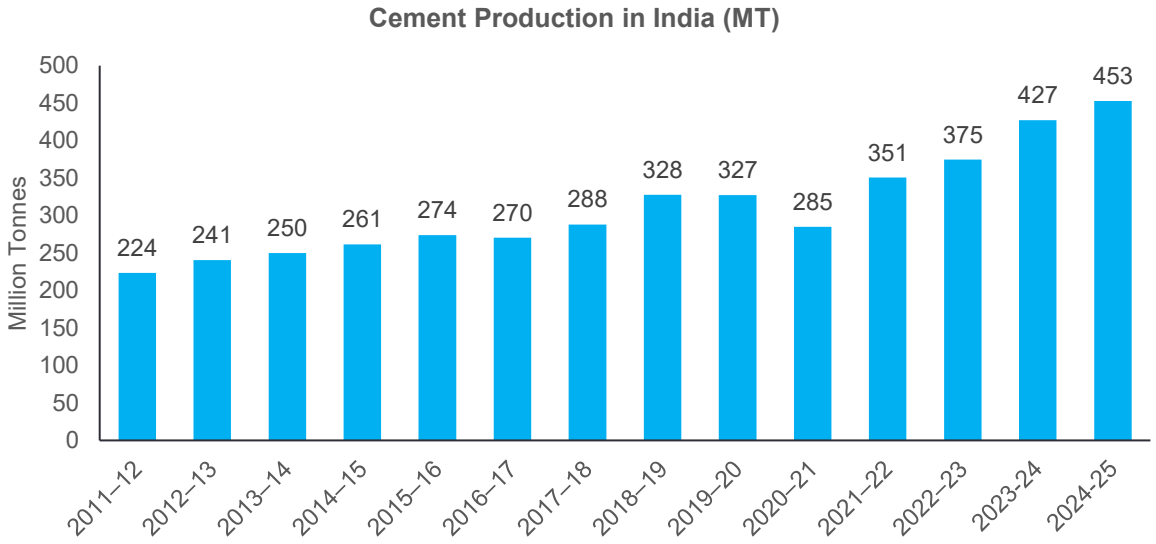


Figure 37: Cement Production in India (MT)

Source: CMIE, Infomerics Economic Research

The Indian cement industry is dominated by a small number of companies, with the top 20 cement companies accounting for almost 70% of the total cement production of the country. The top 10 include: Shree Cement, Dalmia Bharat, Nuvoco Vistas, The Ramco Cement, JK Cement (India – grey & white), JSW Cement, JSW Cement (excluding FZC), Birla Corporation and JK Lakshmi Cement.

Table 36:Player-wise Sales Volume – Top Cement Players (Million Tonnes)

Player	FY19	FY20	FY21	FY22	FY23	FY24	Share
Shree Cement	16.2	24.9	27.7	31.8	35.5	35.9	8%
Dalmia Bharat	10.8	19.3	22.2	25.7	28.8	29.4	6%
Nuvoco Vistas	9.4	10.7	17.7	18.8	18.8	19.4	4%
The Ramco Cement	7.7	11.2	11	14.9	18.4	18.4	4%
JK Cement (India – grey & white)	6.8	9.6	14	16.2	19.1	20.2	4%
JSW Cement	2.7	7.4	9.7	10.5	12.5	12.6	3%
JSW Cement (excluding FZC)	2.7	7.4	8.7	9.6	12.5	12.6	3%
Birla Corporation	7.6	13.8	14.2	15.8	17.8	18.1	4%
JK Lakshmi Cement	5.9	10	11	11.4	12	12.2	3%
Industry Total	**257.1**	**326.5**	**355.8**	**399.4**	**445**	**466.9**	**100%**

Source: Crisil, Market review of Indian cement sector, 2025

Cement manufacturing in India is spatially concentrated around limestone-rich regions, with production capacity clustered primarily in the southern–western belt, central India, and northern India. Southern and western states dominate capacity due to rich mineral availability, strong infrastructure, and

[9] *CMIE, Infomerics Economic Research*

proximity to ports, while central India serves as a bulk production hub supplying multiple regions. Northern India hosts moderate, region-focused capacity constrained by geology and environmental factors. This uneven distribution creates a production–consumption mismatch, making long-distance movement, especially by rail and coastal shipping, critical to the cement supply chain.

Table 37:Cluster of Key states with their Characteristics and Role

Cluster	Key States	Characteristics & Role
Southern–Western Cluster	Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Gujarat	Largest concentration of capacity and plants; driven by abundant limestone, strong industrial demand, and proximity to ports
Central India Cluster	Madhya Pradesh, Rajasthan, Chhattisgarh	Mineral-rich heartland with large integrated plants and lower land costs
Northern India Cluster	Uttar Pradesh, Himachal Pradesh	Moderate, strategically located capacity focused on regional demand

Source: Increasing rail share in freight transport in India, TERI

4.6.3. Future Outlook

Looking ahead, cement demand is projected to reach around 495–500 MT by FY26, translating into a near-term growth rate of ~5–7.5% per annum. Over the medium term, demand is expected to rise further to about 670–680 MT by FY30, implying a robust CAGR of around 7.5–8.5% during FY25–FY30[10].

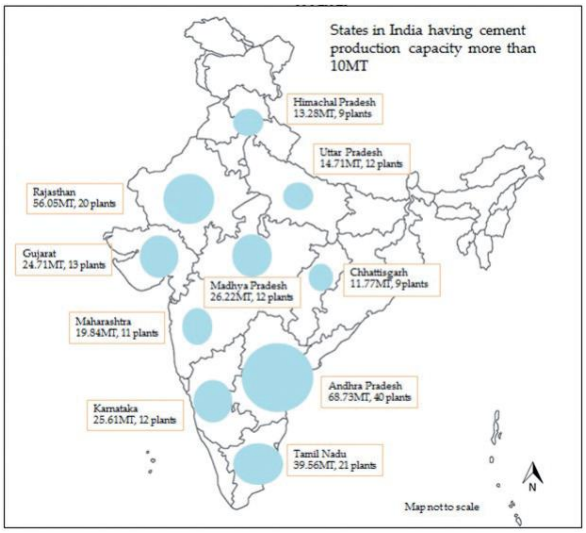
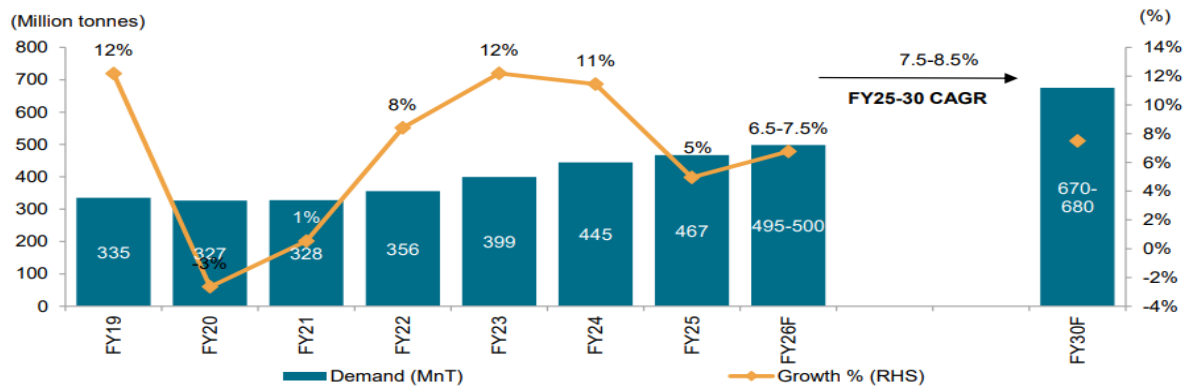


Figure 38: States in India having cement production capacity more than 10 MT

This sustained growth outlook is underpinned by continued public infrastructure investment (roads, railways, ports, urban infrastructure), steady housing demand under government schemes and private real estate, and industrial expansion aligned with India's broader economic growth. The sharp increase in demand relative to existing production clusters is expected to intensify long-haul cement movement, reinforcing the importance of efficient rail and coastal logistics in meeting future demand in a cost-effective manner.

[10] *Source: Crisil, Market review of Indian cement sector, 2025*



Source: Crisil, Market review of Indian cement sector, 2025

4.6.4. Coastal Shipping

In FY 2024–25, cement cargo throughput at Major Ports is estimated at about 3.0–3.5 million tonnes (MT), underscoring cement's niche but strategically important role within India's coastal shipping ecosystem.

Cement's coastal share remains modest, yet it is among the few manufactured commodities to consistently leverage coastal shipping. This reflects a clear threshold effect: coastal mode becomes economically compelling for long-haul inter-regional movements (often >1,200–1,500 km) where it undercuts rail-road combinations.

4.6.5. Major OD pairs

The movements are dominated by Ambuja Cement and UltraTech Cement, which have been early adopters of coastal logistics due to their scale, integrated port access, and bulk cement handling capabilities.

The data indicates that Pipavav (including Victor Port) and Porbandar in Gujarat, along with Krishnapatnam and Visakhapatnam on the east coast, function as the principal loading ports. These ports are located close to large integrated plants or clinker/grinding facilities in Gujarat, Andhra Pradesh, and the eastern hinterland, enabling efficient aggregation of bulk cement for coastal movement.

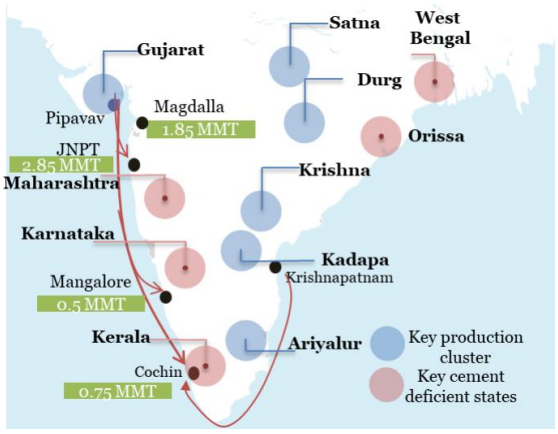


Figure 39: Major OD Pairs

On the demand side, JNPA, Mumbai Port (MbPA), Cochin Port (CoPA), and New Mangalore Port (NMPA) emerge as key discharge ports. These ports serve dense urban and infrastructure-driven markets such as Mumbai Metropolitan Region, Kerala, coastal Karnataka, and nearby hinterlands, where local cement production is relatively limited and logistics costs via road or rail are high.

Table 38:Volume (in MT) of Major OD Pairs

Loading Port	Unloading Port	Volume (FY 2024-25) (in million tonnes)
Pipavav	JNPA	1.80
Pipavav	CoPA	0.67
Pipavav	NMPA	0.16
Krishnapatnam	CoPA	0.15
Krishnapatnam	NMPA	0.08

Porbandar	MbPA	0.07
Visakhapatnam	Port Blair	0.06

Source: Primary Data from Major Ports

4.6.6.Long haul Rail movement of Cement

While road sector dominates the transportation of cement in the country, average lead distance for cement movements in India is around 600 km, prompting rail movements. Rail based movements dominate for the long lead transportation of cement. The following infographic shows major originating and destining zones of Indian Railways despatching and receiving cement.

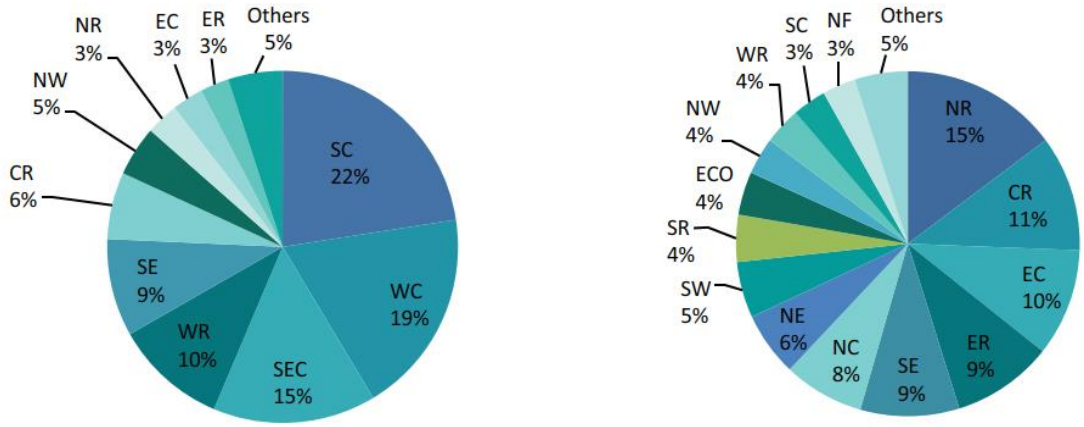


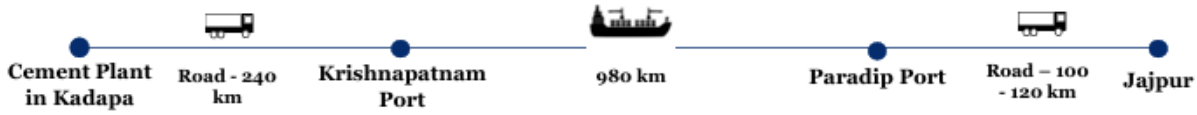
Figure 40: Regional cement proportions dispatched (left) and received (right) by rail
Source: Increasing rail share in freight transport in India, TERI

South Central, West Central, and Southeast Central zones dispatch more than 50% of the total cement moved by rail. These zones broadly cover the states of Andhra Pradesh, Telangana, Chhattisgarh, Madhya Pradesh and parts of Rajasthan.

However, the rail share of cement movement has fallen drastically from 85% in 1950s to less than 30% in 2020s. This fall is due to upgradation in the truck technology for handling cement, development of road infrastructure and distribution of cement plants across the country.

4.6.7. Cost Comparison and Potential OD pairs

While on the west coast coastal shipping cost is competitive with rail costs, on the east coast, coastal shipping in container form costs 15% higher than the railways cost, and even more in bulk form. This is predominantly due to high first and last mile cost, which accounts for 60% of the total logistics cost by coastal shipping.

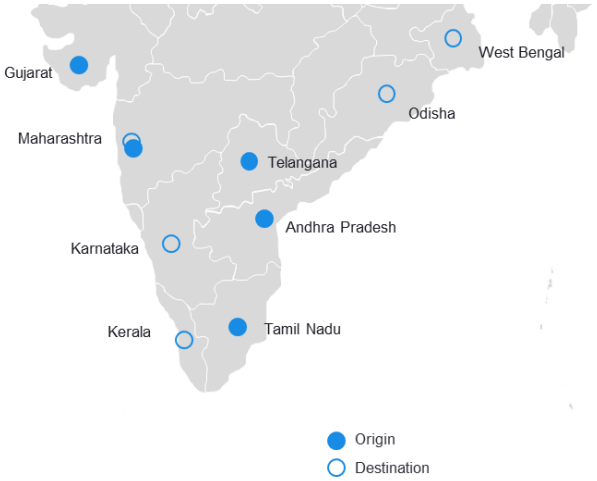


As per the ADB report, subject to implementation of interventions, there's a potential of **modal shift of 11-12 MTPA** to coastal shipping on the following OD pairs for cement cargo.

Table 39: Potential OD pairs for coastal movements of Cement

S. No.	Potential OD Pairs	Volumes (in MnT)

1	Andhra Pradesh- Odisha	2.2
2	Tamil Nadu- Odisha	1.5
3	Andhra Pradesh - West Bengal	1.3
4	Gujarat- Maharashtra	1.0
5	Andhra Pradesh- Kerala	0.5
6	Maharashtra- Karnataka	0.5
7	Maharashtra- Kerala	0.5
8	Telangana- Odisha	0.3
9	Tamil Nadu- Kerala	0.3
10	Telangana- West Bengal	0.2
	Total	8.3



4.6.8. Key Issues and Interventions

Table 40:Key issues and Interventions

Issue / Constraint	Description of the Issue	Suggested Intervention
Cement companies are shifting Grinding Units closer to Demand Centres	Cement manufacturing has increasingly moved towards a "split-location model"	Port-based clinker hubs may be developed at Pipavav and Krishnapatnam as primary aggregation nodes near clinker belts, and at Cochin and New Mangalore as consumption-side hubs, enabling a hub-and-spoke coastal logistics model aligned with the cement industry's shift toward demand-proximate grinding units.

Source: Analysis of primary data by Major Ports and Secondary Research

Key Issue: In the recent years, Cement manufacturing has increasingly moved towards a "split-location model":

- Clinker production near limestone mines (resource-centric)
- Grinding and blending units near consumption centres (market-centric)

This strategy addresses the high logistics cost intensity of cement, where freight can account for 20–30% of total delivered cost.

Cement companies are shifting Grinding Units closer to Demand Centres

Published industry assessments by CRISIL, ICRA and CARE Ratings indicate a structural shift in India's cement industry, with incremental capacity addition increasingly focused on grinding units located closer to urban consumption centres. This strategy aims to reduce freight costs, optimise logistics, and enhance regional competitiveness, while clinker production remains concentrated near limestone-bearing regions.

Railways initiative to re-capture cement cargo

In parallel, the cement industry's strategic shift towards locating grinding units closer to urban and high-consumption centres has also altered traditional cement logistics patterns, leading to a gradual loss of rail share in short- and medium-haul movements. To address this challenge and re-capture rail's share

in cement logistics, Container Corporation of India Ltd. (CONCOR) has launched specialised bulk cement tanker wagons designed for efficient, loss-minimised movement of cement.

However, as cement manufacturers increasingly adopt a split-location model, coastal transportation of clinker from mine-based plants to port-adjacent grinding units presents a strong business case, driven by lower logistics costs, operational efficiency, and environmental benefits, particularly for long-haul inter-regional movements.

Intervention: Port-based clinker hubs may be developed at Pipavav and Krishnapatnam as primary aggregation nodes near clinker belts, and at Cochin and New Mangalore as consumption-side hubs, enabling a hub-and-spoke coastal logistics model aligned with the cement industry's shift toward demand-proximate grinding units.

As grinding units move closer to urban markets, clinker needs to be transported long distances from limestone belts. Clinker is dense, bulk-friendly, and stable, making it ideal for coastal shipping. Port-based hubs work best where three conditions align:

- Proximity to clinker-producing regions
- Strong coastal connectivity to demand-side grinding units
- Ability to handle bulk cargo efficiently (silos, conveyors, storage land)

The table provides potential locations for development of clinker hubs at ports.

Table 41:potential locations for development of clinker hubs at ports.

S. No.	Port	Coast	Hub Type	Key Advantage
1	Pipavav	West	Production-side	Largest clinker surplus + proven OD
2	Krishnapatnam	East	Production-side	Andhra clinker belt + long-haul viability
3	Visakhapatnam	East	Hybrid	Rail–sea integration + strategic redundancy
4	Cochin	West	Consumption-side	Cement-deficit state, strong coastal demand
5	New Mangalore	West	Consumption-side	Regional distribution for SW India

4.6.9. Potential for Coastal Shipping

Looking ahead, most industry assessments project cement demand to reach 670–680 MT by FY30, implying a future demand growth of ~7.5–8.5% CAGR from current levels. Blending the historic growth trend with the higher forward-looking demand outlook yields a blended growth rate of ~7% per annum for the cement market as a whole.

Based on this, three scenarios for coastal shipping of cement can be envisaged. In a pessimistic scenario, where coastal adoption remains limited to existing OD corridors and infrastructure expansion is slow, coastal cement throughput may grow at ~6% CAGR, reaching only 3.8–4.0 MTPA of port throughput by FY30.

Under a realistic scenario, assuming gradual expansion of port-based bulk handling, increased use of coastal mode by large players, and incremental growth in clinker-to-grinding-unit movements, coastal cement throughput could grow at ~9–10% CAGR, reaching 5.0–5.5 MTPA by FY30. In an optimistic scenario, supported by port-based clinker hubs, standardised tariffs, rail–sea integration, and stronger policy facilitation, coastal cement shipping could grow at ~12–14% CAGR, reaching 6.5–7.0 MTPA of port throughput by FY30.

Table 42:Potential for Coastal Shipping

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	1.5 – 1.75	3.0 – 3.5	—
Pessimistic (FY 2029–30) *(organic growth only)*	1.9 – 2.0	3.8 – 4.0	6%
Realistic (FY 2029–30) *(partial issue resolution)*	2.5 – 2.75	5.0 – 5.5	9 – 10%
Optimistic (FY 2029–30) *(most interventions implemented)*	3.25 – 3.50	6.5 – 7.0	12 – 14%

Source: Analysis of primary data by Major Ports

4.7. Fertilizer

4.7.1.Commodity Overview

Fertilizer cargo, comprising finished fertilizers, raw materials, and intermediates such as rock phosphate, muriate of potash, urea, DAP, and Sulphur, represents a critical import-driven commodity group handled at Indian ports. The segment plays a vital role in ensuring agricultural input security and supporting the government's fertilizer distribution and subsidy programs.

4.7.2.Current Scenario: Domestic Production / Consumption

India is the 3rd largest fertilizer producer globally, with ~90% production constituting urea or complex fertilizers. Around 65% of production comes from coastal plants while the rest is produced in the hinterlands of Madhya Pradesh, Rajasthan, Punjab, etc. Rail has been the primary mode of transport for long-distance movement of fertilizer, even for movement between coastal plants and coastal consumption centres. The ports largely handle imported fertilizers.

Indian manufacturers produced close to 51.8 million tonnes of fertilizers in year 2024-25. Out of this the contribution of public sector fertilizer production stood at 17.43%, cooperative sector at 24.81%, and private sector at 57.77%[11]. The total import was close to 17.7 million tonnes, totalling the fertilizer in India to 69.5 million tonnes[12].

[11] *Annual Report, Department of Fertilizers, Ministry of Chemicals and Fertilizers*
[12] *Department of Fertilizer, Pres release:* https://www.pib.gov.in/PressReleasePage.aspx?PRID=2042538&utm_source=chatgpt.com&reg=3&lang=2

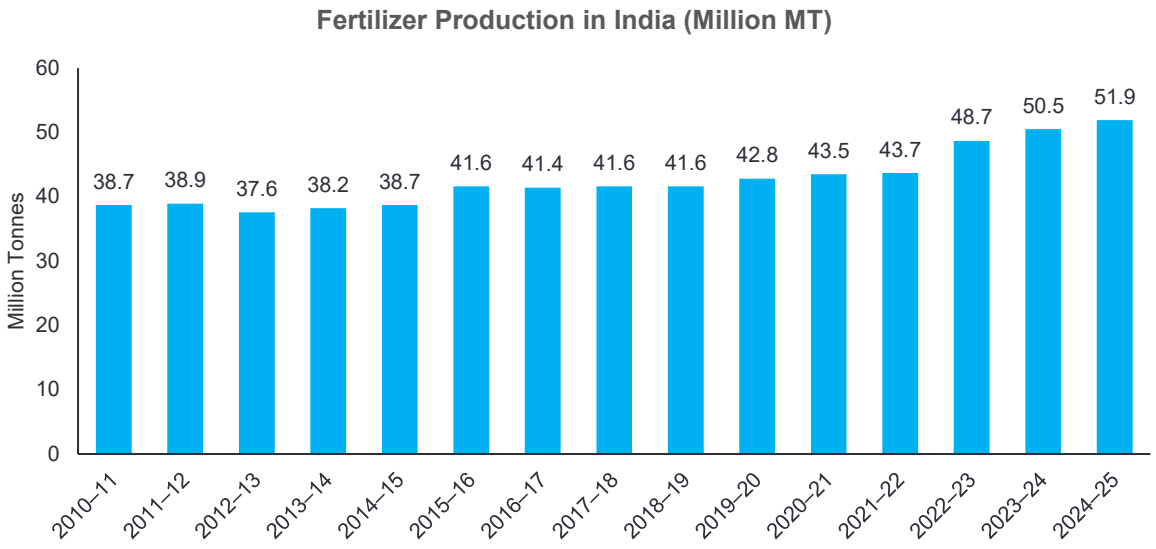


Figure 41: Fertilizer production in India (MT)

Source: Annual Statement of Nitrogenous and Complex Fertilisers, FAI

The production capability of fertilizer is distributed across the country with no specific clusters. Thus, the rail movement of fertilizer dominates over corresponding road and costal movements. The table below shows major fertilizer plants across the country.

Table 43:Major Fertilizer plants across the country

Sr. No.	Plant name	State	Production (Million Tonnes per annum)
1	Chambal Fertilisers, Kota	Rajasthan	3.28
2	Paradip Phosphates Ltd	Odisha	3.00
3	IFFCO, Kandla	Gujarat	2.42
4	KRIBHCO, Hazira	Gujarat	2.19
5	NFL, Vijaipur	Madhya Pradesh	2.07
6	RCF, Thal	Maharashtra	2.00
7	Coromandel International, Kakinada	Andhra Pradesh	1.55
8	HURL, Gorakhpur	Uttar Pradesh	1.27
9	HURL, Barauni	Bihar	1.27
10	HURL, Sindri	Jharkhand	1.27
11	RFCL, Ramagundam	Telangana	1.27
12	GSFC, Vadodara	Gujarat	1.20
13	Matix Fertilisers	West Bengal	1.27
14	Talcher Fertilizers Ltd	Odisha	1.27
15	FACT, Cochin	Kerala	0.94
16	Greenstar Fertilisers, Tuticorin	Tamil Nadu	0.90
17	Madras Fertilizers Ltd, Manali	Tamil Nadu	0.77
18	SPIC, Tuticorin	Tamil Nadu	0.76
19	MCFL, Mangalore	Karnataka	0.69
20	BVFCL, Namrup	Assam	0.58

Source: Annual Statement of Nitrogenous and Complex Fertilisers, FAI

4.7.3.Future Outlook

While the Government of India regularly publishes annual data on fertiliser production, consumption and imports, and has announced specific capacity additions and policy measures, particularly aimed at improving self-sufficiency in urea, no official document sets out a quantified long-term production or import target up to 2030.

Based on recent consumption trends and credible projections published by industry and policy research institutions using Government data as the baseline, India's total fertiliser demand is estimated to rise to about 70–80 million tonnes by 2030, reflecting a compound annual growth rate of around 2–3 per cent driven by higher cropping intensity, improved nutrient application, and sustained agricultural output growth[13].

While domestic fertiliser production capacity is expected to increase through ongoing and planned capacity additions, particularly in urea, imports, especially of phosphatic and potassic fertilisers, are likely to remain structurally significant, potentially in the range of 15–25 million tonnes by 2030[14].

4.7.4. Coastal Shipping

In FY 2024–25, fertilizers accounted for ~1% (1.9 Million Tonnes) of the total coastal cargo handled at Indian Ports. Movement is largely EXIM-oriented, with imports constituting over 85–90% of total fertilizer throughput, while coastal movements are limited and largely consist of repositioning from import gateways to domestic fertilizer consumption centres.

4.7.5. Major OD Pairs

Fertilizer movements are dominated by railways. More than 80% of the fertilizer produced as well as imported is moved by rail. Out of the total ~69 MT, Railways carried total of 58.92 million tonnes[15] of fertilizers from domestic plants as well as ports. The major OD pairs of railway carrying fertilizers are:

1. Gujarat and Southern Rajasthan (Fertilizer plants) à Haryana, Delhi, Punjab, Uttar Pradesh
2. Gujarat and Western Maharashtra (Fertilizer plants) à Madhya Pradesh and Chhattisgarh
3. Odisha (Ports) à Jharkhand, Odisha, Bihar, and West Bengal (Fertilizer Plants)
4. Coastal Tamil Nadu and Karnataka (Ports and Plants) à Tamil Nadu, Kerala, Karnataka, Andhra Pradesh and Telangana

Further, only a few routes / OD pairs are operational for coastal shipping of fertilizers. These are presented in table below.

Table 44:Volume of Coastal Shipping at major OD Pairs

Loading Port	Unloading Port	Volume (FY 2024-25) (in million tonnes)
Dahej	CoPA	0.088
CoPA	PPA	0.074
PPA	CoPA	0.044

Source: Primary Data from Major Ports

4.7.6. Cost Comparison and Potential OD pairs

Analysis of total logistics costs across key O–D pairs shows that containerised fertiliser movement by coastal shipping is competitive with rail, and in some cases offers a distinctly lower cost. The detailed cost assessment for example movement of fertilizers (containerized for coastal shipping) from Kakinada to Hoogly has been provided in the table below:

[13] *Study team estimates*
[14] *Study team estimates*
[15] *Annual Report and Accounts, Indian Railways*

Table 45:Cost comparison (Rail v/s coastal) for Fertilizer movements

Coastal Shipping Costs			Rail Freight Costs	
Leg	**Charges**	**Rate (INR/T)**	**Charges**	**Rate (INR/T)**
First Mile	Plant to Port	150	N.A.	
Main Haul	Port Handling (loading)	250	Basic Freight	1,671.30
	Voyage Cost	500	Surcharge	250.70
	Empty containers reposition and other costs	300	Other Charges	96.10
Last Mile	Port to Destination (Road)	750	N.A.	
Total		1,950		2,018.10

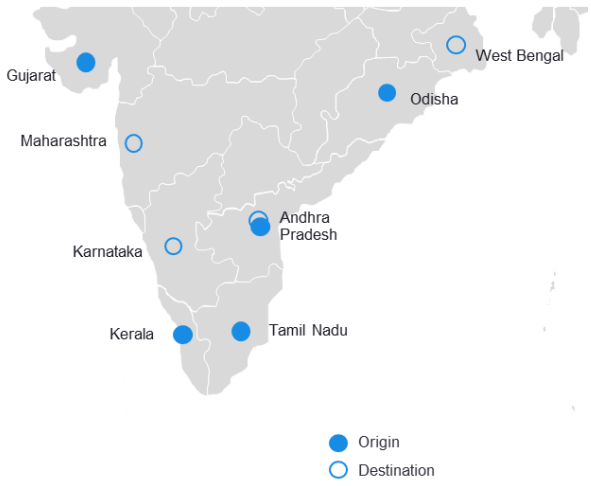
This is also driven by the **extension of freight subsidy under the Nutrient Based Subsidy (NBS) policy for phosphatic and potassic (P&K) fertilisers and the Urea Freight Subsidy (UFS) policy for urea to coastal shipping and inland waterways**. Under this provision, the Government provides freight subsidy for coastal and inland waterway movement equivalent to the notional railway freight from the production plant or import port up to the nearest railhead of the delivery point, while the cost of coastal or inland waterway transport includes the associated first- and last-mile movement by rail or road. This policy support significantly enhances the cost competitiveness of coastal and inland waterway transport vis-à-vis rail for fertiliser movement.

These subsidies have been availed in the past by fertilizer companies like IFFCO, KRIBHCO, SPIC, FACT, IPL and Sliver Line moving fertilizers from other Indian Ports to VOCPA.

Subject to implementation of infrastructural upgrades and interventions, there's a potential of **modal shift of up to 3 MTPA** to coastal shipping on the following OD pairs for fertilizer cargo.

Table 46: Table 38: Potential OD pairs for coastal movements of Fertilizer

S. No.	Potential OD Pairs	Volumes (in MnT)
1	Tamil Nadu- Andhra Pradesh	0.2
2	Andhra Pradesh- West Bengal	0.2
3	Gujarat- Andhra Pradesh	0.2
4	Odisha- West Bengal	0.2
5	Odisha- Bihar	0.2
6	Tamil Nadu- Karnataka	0.2
7	Goa- Maharashtra	0.2
8	Andhra Pradesh- Odisha	0.1
9	Kerala- Tamil Nadu	0.1
10	Kerala- Andhra Pradesh	0.1
	Total	1.7



Further, ports can tap into the fertilizer OD pairs for coastal movements, where rail network is congested, limiting the movement of fertilizers by rail.

4.7.7. Key Issues and Interventions

Based on detailed studies and inputs received during stakeholder consultations, certain issues were identified that constrain the growth of coastal shipping of fertilizer cargo in India. These are discussed in detail below.

Table 47: Key issues and interventions for coastal shipping of fertilizer cargo

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	Continued preference for rail transport despite availability of freight subsidy for coastal shipping of domestically produced fertiliser	Fertiliser, being a subsidised commodity, is eligible for freight subsidy when moved through coastal shipping; however, fertiliser marketing entities (FMEs) continue to rely predominantly on rail, even where coastal shipping is a viable option.	Ministry of Chemicals and Fertilizers, in coordination with concerned agencies, may examine introduction of a **modal preference framework** wherein rail transport is adopted only in cases where coastal shipping is not feasible. Major Ports and terminal operators (CoPA, VoCPA, ChPA) may consider extending concessions in container handling charges for fertiliser cargo to further enhance the cost competitiveness of coastal shipping.
2	Freight subsidy under NBS (P&K) and UFS (urea) policies limited to domestically produced fertiliser	Currently, subsidy benefits for coastal and inland waterway movement are available only for domestically produced fertiliser, whereas a larger demand for coastal movement exists for imported fertiliser handled at ports.	Ministry of Chemicals and Fertilizers may examine extension of freight subsidy eligibility to imported fertiliser moved through coastal shipping and inland waterways, in line with the existing framework for domestic fertiliser, to encourage higher coastal volumes.
3	Inadequate parcel size for containerised fertiliser cargo to support dedicated coastal vessel deployment	Fertiliser cargo volumes in isolation are often insufficient to achieve optimal parcel sizes, affecting service viability and frequency.	Major Ports (CoPA, VoCPA, ChPA) may facilitate cargo aggregation by enabling combined movement of fertiliser containers with other compatible containerised commodities such as foodgrains, cotton, salt, sugar, etc. Major Ports may explore tie-ups with cargo aggregators and logistics service providers to consolidate volumes and support regular coastal sailings.
4	Delays and procedural complexity in freight subsidy reimbursement for coastal shipping	Stakeholders highlighted delays in reimbursement, non-standardised procedures across modes, and cumbersome online submission processes, which act as a deterrent to adoption of coastal and multimodal transport.	Ministry of Chemicals and Fertilizers, in coordination with implementing agencies, may standardise reimbursement procedures across transport modes and fast-track online reimbursement mechanisms for coastal and multimodal movements.

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
			In the longer term, the Government may examine adoption of a standardised, mode-neutral freight subsidy framework, independent of the mode of transportation, to improve predictability and ease of doing business.

Source: Analysis of primary data by Major Ports and Secondary Research

4.7.8. Potential for Coastal Shipping

In FY 2024–25, Indian ports handled about 1.9 MTPA of fertiliser cargo under coastal shipping, which corresponds to an estimated net coastal fertiliser movement of about 0.95 MT after adjusting for double counting at loading and discharge ports. Historically, India's total fertiliser production and consumption have grown at a modest but steady pace of around 2–3% per annum, driven by agricultural demand, cropping intensity, and food security considerations. Looking ahead, sectoral assessments indicate that total fertiliser demand may rise to about 70–80 MT by 2030, implying a continuation of moderate growth in overall volumes, with increasing dependence on efficient domestic distribution from coastal import gateways and production centres.

Based on historic consumption trends and future demand outlook, a blended growth rate of around 4–6% per annum has been considered reasonable for coastal movement of fertilisers. Under a pessimistic scenario, assuming limited policy traction and continued preference for rail, coastal fertiliser movement may grow at about 3% CAGR, reaching roughly 1.1–1.2 MT of net coastal movement by 2030 (equivalent to about 2.2–2.4 MTPA port throughput).

In the realistic scenario, assuming incremental policy support, smoother subsidy reimbursement, and improved container aggregation, coastal fertiliser movement may grow at about 5% CAGR, reaching around 1.3–1.4 MT by 2030 (about 2.6–2.8 MTPA port throughput). Under an optimistic scenario, supported by extension of freight subsidy to imported fertilisers, preferential use of coastal routes where feasible, and port-level facilitation, growth could reach 7–8% CAGR, resulting in 1.6–1.7 MT of net coastal movement by 2030 (around 3.2–3.4 MTPA port throughput).

Table 48:Coastal shipping may capture a gradually rising share of long-haul fertiliser movement, particularly for imported fertilisers and containerised distribution.

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	0.9 – 1.0	1.8 – 2.0	—
Pessimistic (FY 2029–30) *(organic growth only)*	1.1 – 1.2	2.2 – 2.4	3%
Realistic (FY 2029–30) *(partial issue resolution)*	1.3 – 1.4	2.6 – 2.8	5%
Optimistic (FY 2029–30) *(most interventions implemented)*	1.6 – 1.7	3.2 – 3.4	7–8%

4.8. Food Grains

4.8.1. Commodity Overview

Food grains is a critical commodity for the domestic movements in India. The food grains production is dominated by the agricultural states with strong irrigation network. The states that dominate the food grain production are Punjab, Haryana, Uttar Pradesh (NCR area), Madhya Pradesh, Chhattisgarh, and Andhra Pradesh. On the other hand, the food grain consumption is largely concentrated in food grain deficit states with higher urban population. The states with food grain consumption are Tamil Nadu, Kerala, Karnataka, Maharashtra, and Gujarat. The geographic separation of food grain production and consumption allows for long lead movements of the commodity.

4.8.2. Current Scenario: Domestic Production / Consumption

India is one of the world's largest producers and consumers of foodgrains, with total foodgrain production reaching about 363 million tonnes in 2024–25, comprising rice, wheat, coarse cereals, and pulses[16].

Over the last five years (2019–20 to 2023–24), foodgrain output has grown at a moderate CAGR of 1.5–2.0%, driven primarily by productivity gains, expansion in minimum support price (MSP) coverage, and improved irrigation and input use.

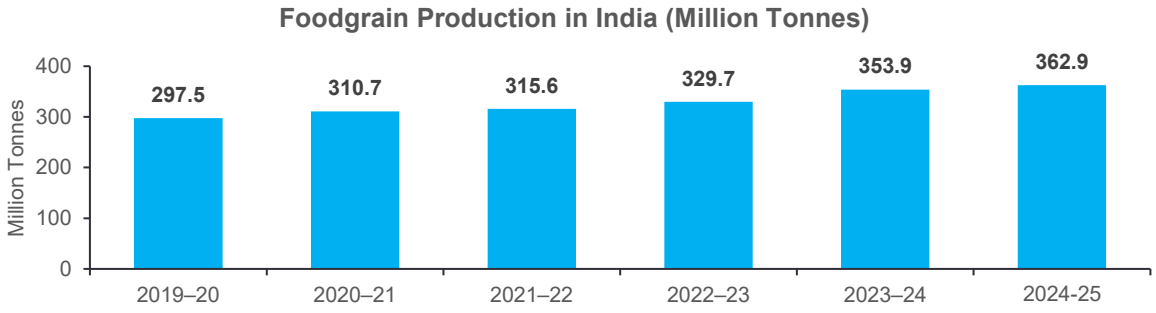


Figure 42: Foodgrain Production in India (MT)

Food Corporation of India (FCI) is the largest aggregator and distributor of food grains in India, primarily using railway (in break bulk form) for transportation of food grains. Road transport is mainly used in intra-state movement and for movement to regions not connected by rail.

Foodgrain production in India is regionally concentrated. The major surplus-producing states include Uttar Pradesh, Madhya Pradesh, Punjab, Haryana, Telangana, West Bengal, and Rajasthan, which together account for a significant share of rice and wheat output.

In contrast, consumption demand is widely dispersed, with large deficit or semi-deficit states in the eastern, northeastern, and southern regions (such as Bihar, Odisha, Assam, Kerala, and Tamil Nadu) depending on inter-state movement of foodgrains through the Public Distribution System (PDS) and open market channels.

4.8.3. Future Outlook

Recent years have already witnessed record foodgrain output, with production reaching around 330–354 million tonnes, indicating that India has entered a phase of stable surplus supported by favourable monsoons, MSP-backed procurement, and incremental productivity gains.

While there's no explicit national production target for foodgrains has been officially notified by the Government of India, however, several research studies and scenario-based assessments suggest that

[16] *India's 2025-26 Record Food grain Target: Opportunities Amid Challenges, 2025, Vigyan Varta*

India's foodgrain production could grow further over the next decade, particularly under a high-yield growth scenario. Under these assumptions, total foodgrain production in India is projected to potentially cross the threshold of 400 million tonnes by 2030–31, compared to a more moderate trajectory under business-as-usual conditions.

4.8.4. Major OD Pairs

The rail mode dominates the movements of food grains. The major long distance routes for rail movements are by domestic containers moved by rail. These movements are dominated by Basmati rice (Punjab and Delhi to Southern states) and Pulses (Chennai to Delhi NCR).

The medium to short lead movements are catered to by the bulk and bagged food grains. These food grains are used for public distribution (PDS). Apart from the rail and road based movements, limited volumes of food grains are also transported through the coastal movements.

4.8.5. Cost comparison

As per ADB Report, the total logistics cost analysis shows that multimodal coastal shipping is **about 46% costlier** than rail transport for key Punjab/Haryana–South India corridors under the existing FCI depot and handling setup.

Although the sea leg itself contributes only a minor share of total cost, high first-mile and last-mile expenses and empty container repositioning costs significantly inflate overall logistics costs, making coastal shipping less competitive than rail for these routes. The detailed cost assessment for food grain movements (containerized for coastal leg) between Moga (Punjab) and Shivamogga (Karnataka) has been provided in the table below:

Table 49: Cost comparison (Rail v/s coastal) for Food Grain movements

Coastal Shipping Costs			Rail Freight Costs	
Leg	**Charges**	**Rate (INR/T)**	**Charges**	**Rate (INR/T)**
First Mile	Plant to Port	2,000	N.A.	
Main Haul	Port Handling (loading)	250	Basic Freight	2708.90
	Voyage Cost	550	Surcharge	406.34
	Port Handling (unloading) Port to Depot	900	Other Charges	175.76
Logistics	Empty containers repositioning	1,050		
	other costs	300		
Last Mile	Depot to Destination (Road)	500	Depot to Consumer	500
Total		5,550		3,791

4.8.6. Potential for Coastal Shipping

Coastal throughput of food grains in recent years (predominantly through containers has remained a negligible share of total foodgrain production in India (363 MT in FY2024-25), despite persistent inter-regional imbalances between surplus northern/central states and deficit southern and eastern regions. Historically, foodgrain production has grown at 1.5–2.0% per annum, while domestic demand growth has remained modest.

Due to the multiple handling, longer first and last mile movements, high costs of empty container repositioning, and the existing rail based logistics of food grains by major players like FCI and CWC,

the potential of coastal shipping of food grains is very limited. In rare cases, the coastal movement of food grains is undertaken by the private operators that supply food grains as a raw product for industry.

4.9. Automobile

4.9.1. Commodity Overview

Automobile is a special commodity whose production requires high skills and machinery. Hence, Automobile production takes place in a handful of countries around the world. China is the largest producer of motor vehicles, accounting for about one-fourth of the global production, followed by Japan and Germany. India ranks fourth in the world in terms of production of motor vehicles.

4.9.2. Current Scenario: Production / Consumption

India is one of the largest 'small car' market in the world. India leads the world in terms of two-wheeler production as well as small size passenger car production. India produced a total of 31 million units of automobiles in year 2024-25, including two wheelers, three wheelers, passenger cars as well as commercial vehicles.

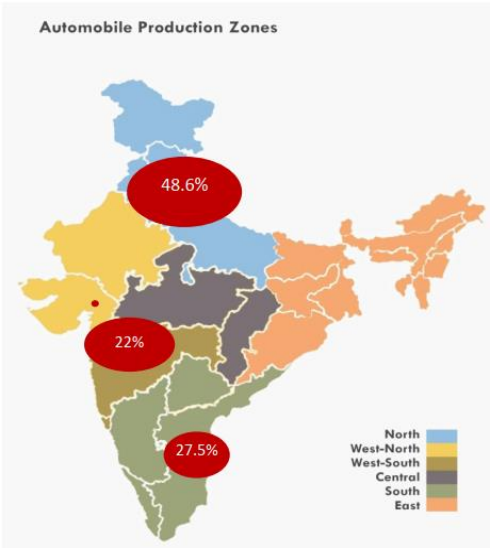


Figure 43: Automobile Production Zones

Table 50:Production of different categories of Automobiles

Category	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Passenger Vehicles	34,24,564	30,62,280	36,50,698	45,87,116	49,01,840	50,61,164
Commercial Vehicles	7,56,725	6,24,939	8,05,527	10,35,626	10.67,504	10,32,645
Three Wheelers	11,32,982	6,14,613	7,58,669	8,55,696	9,96,159	10,50,020
Two Wheelers	2,10,32,927	1,83,49,941	1,78,21,111	1,94,59,009	2,14,68,527	2,38,83,857
Quadricycles	6,095	3,836	4,061	2,897	5,006	6,488
Grand Total	**2,63,53,293**	**2,26,55,609**	**2,30,40,066**	**2,59,40,344**	**2,84,39,036**	**3,10,34,174**

Source: Society of Indian Automobiles Manufacturers (SIAM)

The production of automobile is clustered around North, West and South India. The North Indian cluster includes Delhi NCR region with automobile units located in Haryana and Rajasthan. The west Indian cluster includes Gujarat and Maharashtra with automobile manufacturing factories in Sanand as well as Savli in Gujarat and Pune, Nasik, and Aurangabad in Maharashtra. The southern cluster includes Chennai and Hosur in Tamil Nadu and Bengaluru in Karnataka. The following map shows the production profile of automobile plants in India.

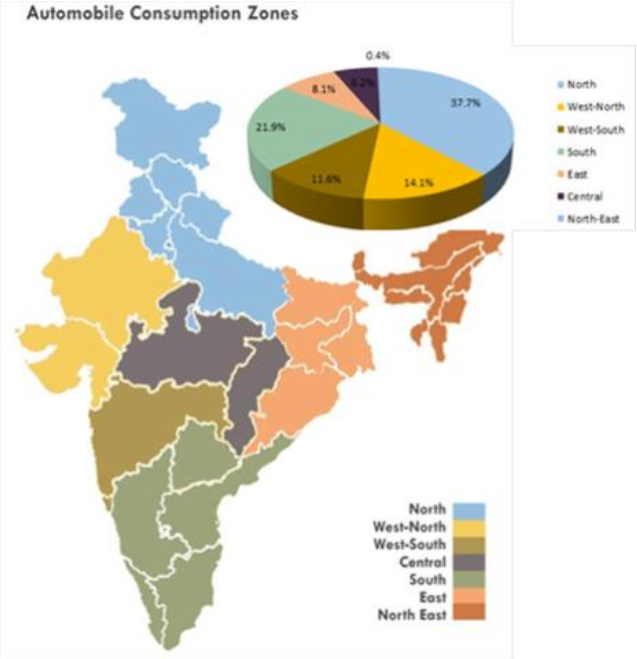


Figure 44: Automobile Consumption Zones

The consumption clusters of automobiles are distributed across the country, with more demand in high population or high urban population areas. The following map shows consumption clusters of passenger vehicles in India. The northern cluster has a share of 37.7% within the total automobile demand in India, followed by the Southern cluster with 21.9% share.

Majority of the automobile are moved by road, owing to the requirement of multiple handling costs by other modes. However, for longer lead distances beyond 1500 km, the rail mode is largely used for domestic automobile movements.

4.9.3. Future Outlook

Based on NITI Aayog's outlook, India's automobile and auto components sector—currently valued at about USD 200–220 billion—is expected to grow to around USD 300–350 billion by 2030. This implies a value growth of approximately 5–8% CAGR, driven by sustained domestic demand, export expansion, and increasing value addition due to electrification and advanced automotive technologies. A new manufacturing plant of VinFast has been recently set up in Thoothukudi in Tamil Nadu. The plant is expected to produce around 50,000 EV passenger cars in initial years, gradually expanding to 1,00,000 passenger cars per annum by 2030. The location of plant in the proximity of VOC Port Tuticorin and the surging demand for EV automobiles provide a great opportunity for high volume movement of EVs from Thoothukudi to western and northern parts of India through coastal shipping.

4.9.4. Major OD pairs

The movement of domestic automobile across the country can be divided into four major corridors:

1. North – South – North: between Delhi NCR and Karnataka / Andhra Pradesh and Tamil Nadu
2. North – West South – North: between Delhi NCR and Mumbai / Pune / Nashik
3. North – West North – North: between Delhi NCR and Gujarat
4. West – South – West: between Gujarat and Tamil Nadu / Karnataka

These long-distance corridors are covered by rail as well as road. However, the corridor between North and South as well as the corridor between West and South hold high potential for modal shift to coastal shipping.

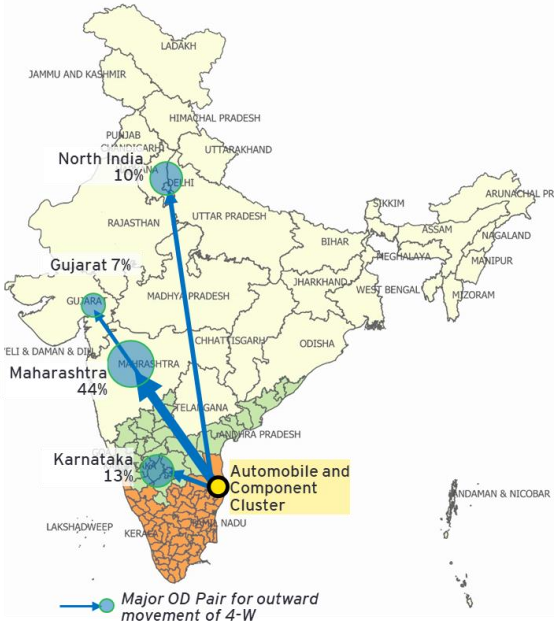
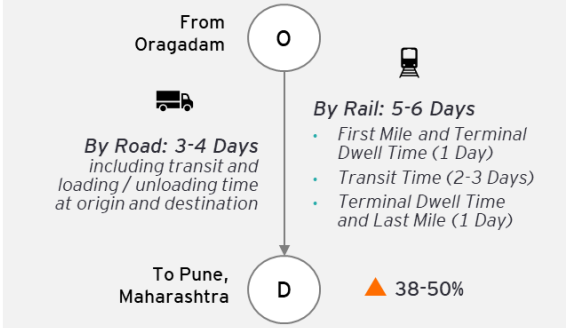
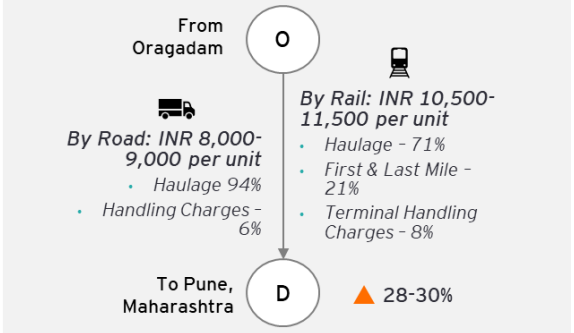
4.9.5. Cost Comparison

Currently, the inter-state movements of automobile are dominated by road and rail modes, with no movement on coastal mode. Sea routes are predominantly utilized for the EXIM movements of automobile cargo in India.

To test viability on the south–west corridor, automobile manufacturers undertook pilot coastal Ro-Ro movements between Kamarajar (Chennai) and Kandla ports. However, these movements were discontinued as the total logistics cost (TLC) of coastal shipping exceeded that of road and rail alternatives.

The automobile movements are dominated by select OD pairs and thus road or rail modes are preferred. The following table shows the cost and time of travel for the movement of automobile from Chennai (Sriperumbudur) to Pune (Chakan) by road and rail modes

Table 51: Cost comparison for automobile movements in hinterland

Major Movements	Time and Cost Comparison
	**Travel Time Comparison:**  **Logistics Cost Comparison (INR per Unit):** 

The coastal shipping movements in future will need to provide competing Total Logistics Cost (TLC) for transportation of automobile as compared to road and rail, in order to make it lucrative for transporters.

4.9.6. Key Issues and Interventions

Based on detailed studies and inputs received during stakeholder consultations, certain issues were identified that constrain the growth of coastal shipping of automobile cargo in India. These are discussed in detail below.

Table 52:certain issues were identified that constrain the growth of coastal shipping of automobile cargo in India

S. No.	Issue / Constraint	Description of the Issue	Suggested Intervention
1	Empty return cost of coastal Ro-Ro vessels impacting cost economics	Empty return cost is one of the largest components of voyage cost, contributing ~37% of total voyage cost. Due to the absence of suitable return cargo from the west coast to the south, automobile shippers moving cars from south to west have to bear the full cost of empty return, making coastal Ro-Ro movement uncompetitive compared to road and rail. Unlike coastal shipping, road and rail operators can divert to alternative routes to secure return cargo, thereby optimising asset utilisation.	Introduce a **policy support mechanism for coastal Ro-Ro vessels** to offset empty return costs (e.g. viability gap support, minimum revenue guarantee, or voyage-based incentive). Facilitate aggregation of potential return cargo through a centralised platform to improve utilisation. Establishment of circuits and OD pairs catering automobile movements in both directions (ChPA / VOCPA – MbPA / Mundra / Kandla)
2	Non-permissibility of mixing coastal and EXIM cargo on foreign Ro-Ro vessels	Existing international Ro-Ro liners already call at multiple Indian ports and often sail with significant unutilised capacity after loading EXIM cars. However, current restrictions do not allow mixing of coastal and EXIM cargo, leading to inefficient capacity utilisation and higher costs for coastal movements.	CBIC and DGS may explore allowing mixing of coastal and EXIM cargo on foreign-flag Ro-Ro vessels calling at multiple Indian ports. Permit discharge of coastal automobiles from KPL to west coast ports (JNPA or ports in Gujarat) during onward EXIM voyages, similar to the exception provided to Mumbai Port recently for a specific case*. Such exemption could be provided by CBIC for all major ports handling coastal Ro-Ro cargo.
3	Limited availability of dedicated Indian coastal Ro-Ro services	The absence of a dedicated Indian coastal Ro-Ro operator limits scale, frequency, and pricing flexibility for automobile movement. While demand exists, the business case for procuring Ro-Ro vessels remains weak due to high capital costs and uncertain cargo commitment.	Bharat Container Shipping Liner, the proposed JV between Shipping Corporation of India and Container Corporation of India, may be given a mandate to operate Ro-Ro vessels for coastal automobile cargo, alongside EXIM cargo. Enable blended coastal–EXIM operations to improve revenue certainty.

Source: Analysis of primary data by Major Ports and Secondary Research

***Precedent for allowing coastal movement of Ro-Ro cargo on foreign vessels**

A recent communication issued by the Office of the Principal Commissioner of Customs (General), Mumbai demonstrates regulatory flexibility in enabling coastal movement of cargo on foreign-flag vessels under special circumstances. In its letter dated 10.06.2025 to a Ro-Ro operator, Customs clarified that while coastal carriage on foreign vessels is generally restricted under Sections 406 and 407 of the Merchant Shipping Act, 1958, such operations may be permitted with prior approval of the

Directorate General of Shipping, particularly where Indian-flag tonnage is not available or where it serves trade and logistics efficiency objectives. The communication further confirms that, upon grant of such permission by DG Shipping, Customs would examine and facilitate operational compliance at the port level.

This case provides a practical precedent for enabling coastal Ro-Ro movement of automobiles using foreign vessels calling at Indian ports. Extending a standardised and uniform provision across all Major Ports, instead of port-specific or case-by-case permissions, would help unlock unused Ro-Ro capacity on international liners, reduce empty return costs, and improve the commercial viability of coastal shipping for automobile cargo. Such an approach would be consistent with the objective of promoting coastal shipping while safeguarding cabotage through controlled and regulated exemptions.

4.9.7. Potential for Coastal Shipping

At present, coastal shipping of automobiles in India is limited to a few pilot and trial movements undertaken by automobile manufacturers, primarily on the south–west coast corridor. These movements have not translated into regular or scheduled services, as coastal shipping was found to be significantly costlier than road and rail due to high voyage costs, empty return of Ro-Ro vessels, and longer transit time. Consequently, domestic automobile movement in India continues to be overwhelmingly road- and rail-based, with no sustained coastal Ro-Ro services in operation.

The following table indicates potential OD pairs for coastal movements of automobile cargo in future, considering the existing and upcoming production volumes.

Table 53: Potential OD pairs for coastal movements of Automobile

Corridor	Volume* (per month)	Current Mode	Key OEMs	Coastal Shipping Opportunity
Chennai – West India	8,000 to 10,000	Road	Hyundai, Renault Nissan, Ford	High potential due to proximity of ports at both ends
Maharashtra – South/East India	2,000 to 3,000	Road	Volks Wagon, Mahindra and Mahindra, Jaguar Land Rover	High potential due to existing movements to Mumbai port for EXIM
Gujarat – South/ East India	6,000 to 8,000	Rail, Road	Maruti Suzuki	High potential due to proximity of ports at both ends
Thoothukudi – West India	3,000 to 4,000	N.A.	VinFast	Caters to upcoming EV market. Plant located in the proximity of the port.

** Tentative volumes as indicated by the stakeholders*

Based on stakeholder inputs, there is clear latent potential for coastal shipping of automobiles on select long-haul corridors. The Chennai–West India corridor, handling about 8,000–10,000 vehicles per month, and the Maharashtra–South/East India corridor, with 2,000–3,000 vehicles per month, currently rely entirely on road and rail despite proximity of major OEM plants to ports.

Stakeholders indicated that adequate volumes exist for coastal movement; however, higher costs and lack of suitable service models, rather than demand constraints, have prevented adoption of coastal shipping for automobile logistics. Moreover, ports like PPA have a dedicated RORO jetty for the coastal movements of passenger vehicles, trailers, and machinery in the quest of reviving the coastal movements, utilizing the available infrastructure.

4.10. Salt

Based on inputs reported by Deendayal Port Authority (Kandla Port), there is a potential for movement of salt in bulk through coastal shipping, linking western India with select ports on the east coast and within Gujarat. Kandla, being one of India's major salt-handling ports with proximity to large salt-producing clusters in Gujarat, has identified multiple Origin–Destination (OD) pairs where coastal shipping can be leveraged to serve industrial and consumption centres. The total identified coastal movement potential across these routes is around 1.29 million tonnes (MT), distributed as follows:

S. No.	Origin Port	Destination Port	Coastal Volume (MT)
1	Kandla	Chennai	0.13
2	Kandla	Cochin	0.13
3	Kandla	Okha	0.67
4	Kandla	Gopalpur	0.09
5	Kandla	Kakinada	0.11
6	Kandla	Tuticorin	0.16

Source: Primary data from Major Ports

4.11. Total Addressable Demand for Coastal Shipping (2030)

Based on the detailed commodity-wise assessment covering coal, iron ore, POL (crude and products), steel, cement, fertilizers, foodgrains and automobiles, the total addressable demand for coastal shipping in India is expected to increase steadily over the medium term. In FY 2024–25, net coastal cargo movement is estimated at about 170 MT, corresponding to a port-level coastal throughput of around 339 MT, accounting for double counting at load and discharge ports.

Under a ***pessimistic scenario***, which assumes largely organic growth with limited resolution of existing operational, infrastructural and policy constraints, net coastal volumes are projected to increase to about ***240–250 MT by FY 2029–30***, reflecting a CAGR of around 7.5–8.0%.

In a ***realistic scenario***, which assumes partial resolution of key bottlenecks and targeted modal shift in identified commodities, net coastal volumes are projected to rise further to about ***250–270 MT by FY 2029–30***, implying a CAGR of around 8.0–9.5% over the period.

Under an optimistic scenario, assuming effective implementation of most recommended interventions, net coastal volumes could reach ***270–290 MT by FY 2029–30***, corresponding to a CAGR of around 9.5–11.0%. This scenario reflects the upper bound of feasible growth based on current commodity structures and market response.

Overall, the realistic scenario represents a balanced and credible pathway for the sector, combining organic growth with targeted policy and operational improvements.

Table 54:Total Addressable Demand for Coastal Shipping by FY 2030

Scenario	Net Coastal Volume (MT)	Coastal Throughput at Ports (MT)	Implied CAGR (FY 2024–25 to FY 2029–30)
Baseline (FY 2024–25)	170	339	—
Pessimistic (FY 2029–30) *(organic growth only)*	240 – 250	480 – 500	7.5 – 8.0%
Realistic (FY 2029–30) *(partial issue resolution)*	250 – 270	500 – 540	8.0 – 9.5%
Optimistic (FY 2029–30) *(most interventions implemented)*	270 – 290	540 – 580	9.5 – 11.0%

05

Systemic Reforms to Unlock Coastal Shipping Potential

5. Systemic Reforms to Unlock Coastal Shipping Potential

Following the commodity-wise assessment of coastal shipping potential, it is evident that while demand drivers and logistics characteristics vary across commodities, a set of common sector-level issues influence the viability, competitiveness, and scalability of coastal shipping across most cargo segments. These issues are largely structural and systemic in nature, cutting across commodities and geographies, and relate to policy and regulatory provisions, operational practices, infrastructure availability, and institutional coordination.

This section therefore examines the **key sector-wide issues affecting coastal shipping**, drawing on stakeholder consultations, empirical analysis, and international best practices, with a view to identifying targeted interventions that can benefit multiple commodities simultaneously and enable sustained growth of coastal shipping in India.

5.1. Dedicated coastal cargo berths and mechanisation

5.1.1. Current Situation

The development of dedicated coastal berths at Major Ports has been a significant institutional and operational step towards promoting coastal shipping in India. These berths were envisaged to provide assured access, priority berthing, and operational segregation for coastal vessels, thereby reducing turnaround time and improving the reliability of coastal services.

As of FY 2024–25, Major Ports together handled about 196 MT of coastal cargo, supported by 19 designated coastal berths across ports. However, while berth designation has progressed across most ports, the level of mechanisation at these berths varies widely and, in several cases, remains misaligned with the dominant coastal cargo handled at the port. Notably, Deendayal Port Authority (DPA), Kamarajar Port Limited (KPL) and Mormugao Port Authority (MgPA) manage substantial coastal traffic through multipurpose or general cargo berths. This approach, while offering flexibility results in operational inefficiencies for coastal vessels.

Table 55: Port-wise Coastal Cargo Handling Profile (FY 2024–25): Volumes, Berth Availability, and Commodity Mix

S. No.	Port	Cargo Volume (MT) 2024-25	Dedicated Coastal Berths	Mech. level at Coastal berths	Major Commodities handled at port
1	PPA	63.7	5	Mech.	Th. Coal, Iron ore, IO Pellets, POL
2	MbPA	22.3	3	Non-Mech.	POL, Iron Ore and Cement & clinkers, Others
3	KPL	19.7	2	Mech.	Thermal coal, POL, Containers, others
4	VPA	19.3	1	Non-mech.	Iron ore & Pellets, POL, Thermal Coal, Containers, others
5	DPA	15.8	NIL	NA	Crude, POL, Salt, Containers, others
6	CoPA	12.5	1	Mech.	POL, Steel, cement, containers, Others
7	VOCPA	12.0	1	Non-Mech	Th. Coal, POL, salt and containers
8	NMPA	8.7	2	Non-Mech.	Iron ore, Crude & POL, containers, others
9	ChPA	6.2	1	Non-Mech.	POL, Containers, iron & steel products
10	JNPA	6.0	1	Non-Mech.	POL, Cement, break-bulk, Containers, others
11	SMPA	5.1	3	1 Mech. (SMPA-H)	SMPA-K: Gen. cargo, iron and steel, agro products, containers, Others SMPA-H: POL, Coal, Chem & Petrochem. Containers, Others

S. No.	Port	Cargo Volume (MT) 2024-25	Dedicated Coastal Berths	Mech. level at Coastal berths	Major Commodities handled at port
12	MgPA	4.4	NIL	NA	Iron ore, POL, Bauxite, coking coal, iron & steel, others
	Total	195.7	21		

Ports such as Paradip Port Authority (PPA) demonstrate the intended outcome of this intervention. PPA handled 63.7 MT of coastal cargo in FY 2024–25 through fully mechanised coastal berths, primarily handling thermal coal, iron ore, pellets and POL. The availability of mechanised handling systems has enabled high throughput, faster vessel turnaround and lower unit handling costs for bulk coastal cargo. While the absence of exclusive coastal berths at DPA, KPL and MgPA leads to berth allocation uncertainty, high turnaround times and reduced reliability of coastal services, this remains a structural gap in the coastal infrastructure ecosystem.

In contrast, several other Major Ports handle sizeable coastal volumes through non-mechanised or partially mechanised coastal berths, or through general-purpose berths without exclusive coastal designation. For example:

- MbPA and VPA handle over 20 MT and 19 MT of coastal cargo respectively, largely through non-mechanised coastal berths handling mixed cargo streams.
- Ports such as DPA and MgPA handle substantial coastal cargo without dedicated coastal berths, relying on multipurpose or general cargo berths to maintain flexibility.
- Ports including VoCPA, NMPA, ChPA and JNPA have designated coastal berths, but these are mostly non-mechanised despite handling bulk or semi-bulk coastal cargo such as coal, cement, iron and steel products.

Overall, while berth availability per se is not the primary constraint, insufficient cargo-specific mechanisation at coastal berths continues to limit productivity, increase vessel stay, and dilute the cost competitiveness of coastal shipping at several Major Ports.

5.1.2. Industry Representation

During stakeholder consultations, coastal vessel operators, cargo owners and terminal users highlighted that the absence of appropriate mechanised handling systems at coastal berths at DPA and MgPA often negates the benefits of dedicated coastal infrastructure.

Key issues raised include:

- Higher vessel turnaround time at non-mechanised coastal berths, particularly for bulk and break-bulk cargo.
- Increased handling costs due to reliance on mobile equipment or manual operations, making coastal shipping less competitive vis-à-vis rail or road for short and medium hauls.
- Operational uncertainty, as coastal vessels are often shifted between berths or handled alongside EXIM cargo, especially at ports without mechanised coastal facilities.
- Mismatch between berth infrastructure and cargo profile, where ports handling predominantly bulk coastal cargo lack conveyors or rapid loading/unloading systems, while container-oriented equipment remains limited for coastal services.

Industry stakeholders emphasised that, for coastal shipping to scale meaningfully beyond current volumes, berth designation must be complemented by mechanisation tailored to the dominant coastal cargo streams at each port.

5.1.3. Plan for Capacity Enhancement and Mechanization for Dedicated Coastal Berths

Based on inputs received from Major Ports, capacity development and mechanization for coastal shipping is being pursued through a mix of PPP-led upgrades, selective creation of dedicated coastal berths, and increased use of mechanised multipurpose berths rather than large-scale greenfield coastal infrastructure.

The plan (please refer table below) reflects a pragmatic, demand-linked strategy, prioritising mechanisation and better utilisation of existing berths over widespread development of new dedicated coastal infrastructure, while addressing specific gaps such as Ro-Ro and container-friendly facilities on a case-by-case basis.

Table 56: Plan for Capacity Enhancement and Mechanization for Dedicated Coastal Berths

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
1	Chennai Port Authority (ChPA)	1	Non-mechanised	Coastal berths planned to be awarded on PPP in FY2025-26 Satellite port at Pondicherry for coastal containers	PPP award proposed in FY 2025-26; mechanisation envisaged post-PPP Pondicherry MoU expired on 26.02.2024; extension sought till 26.02.2026, pending response
2	Cochin Port Authority (CoPA)	1	Mechanised	Existing dedicated coastal berth; coastal priority at cement berths & container terminal	Dedicated berth already mechanised No additional coastal berths planned due to surplus capacity (47% utilisation)
3	Kamarajar Port Limited (KPL)	2	Mechanised	Mechanised coal berths	Coal Berth-1 & 2 mechanised and operational Coal Berth-3 & 4 constructed; mechanisation in progress by TNPGCL
4	Jawaharlal Nehru Port Authority (JNPA)	1	Semi-mechanised	PPP-based upgrade of coastal berth; liquid berths LB-3 & LB-4	Coastal berth upgrade by NSDTPL under construction; COD May 2026 LB-3 & LB-4 (4.5 MTPA) awarded to JSW Infra; operations expected Feb 2026 (not exclusive coastal)

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
5	Paradip Port Authority (PPA)	5	Mechanised	All coastal berths mechanised	Dedicated coastal capacity (~71.2 MTPA) adequate till 2030 No new mechanisation or coastal berth planned
6	V.O. Chidambaranar Port Authority (VOCPA)	1	Non-mechanised	Mechanisation of NCB-III; Ro-Ro facility planned	NCB-III mechanisation (6.96 MTPA) under construction; target Q1 2027 Ro-Ro facility (0.6 MMT) at planning stage
7	Visakhapatnam Port Authority (VPA)	1	Non-mechanised	Coastal cargo handled at existing and other suitable berths	No dedicated coastal mechanisation project proposed at present
8	Deendayal Port Authority (DPA)	NIL	NA	Conversion of Bandar Area jetties; CJ-17 berth; Ro-Ro Pax facilities	Bandar Area jetty conversion proposed; DPR/planning stage CJ-17 multipurpose berth proposed; approval awaited Ro-Ro Pax at Muldwarka held up due to non-issuance of non-conditional NOC by M/s Ambuja Cement Ltd.; project duration 8 months (onshore) + 9 months (offshore) Ro-Ro Pax at Pipavav held up due to non-issuance of NOC by M/s Swan Defence & Heavy Industries Ltd.; project duration 18 months from award
9	Mumbai Port Authority (MbPA)	3	Non-mechanised	Semi-mechanisation of Indira Dock berths	O&M tender floated; operator to deploy handling equipment post award

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
10	Mormugao Port Authority (MgPA)	NIL	NA	Dedicated coastal berth at Vasco Bay; Berth-9 redevelopment	Vasco Bay coastal berth (2 MTPA, ₹203 Cr) under EIA; completion target 2030-31 Berth-9 (4.71 MTPA) proposed under Sagarmala; target 2028-29
11	Syama Prasad Mookerjee Port Authority (SMPA)	3	1 mechanised (at HDC)	At KDS, out of 32 berths at KPD and NSD, 23 berths are either mechanized or will be mechanized by 2030. Hence coastal cargo will be handled in Mechanized/ semi-mechanized as well as a few non-mechanized berths of KDS, as per requirement. At HDC there is a dedicated berth for Coastal Thermal Coal export which is already mechanized. Other than the dedicated berth there are various multipurpose berths where coastal cargo is being handled	Phased mechanisation / semi-mechanisation of multiple berths planned up to 2030. Berth wise plan details given in the following table.

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
12	New Mangalore Port Authority (NMPA)	2	Non-Mechanised	Study to be undertaken to evaluate mechanization of the costal berths including other general cargo berths Mechanization of Berth No. 14 for handling containers and other cargo on DBFOT basis (Phase-2) Construction of Berth No. 17 (new berth) Deepening and reconstruction of Berth No. 9 to handle deep-draft oil tankers 5000-ton capacity enhancement of M/s UltraTech Cements by addition of 1 silo and increasing ship unloading capacity Strengthening of Berth No. 8 for handling coastal iron ore imports Construction of 2 covered storage sheds (area 3500 sqm each) with holding capacity of 8750 tons inside customs bonded area	No plan for additional dedicated coastal berths. Mechanization of Berth No. 14 - Phase-2 activities have commenced as of 26.08.2025 and on-ground construction activities work have commenced from December 2025. Scheduled date of completion - 25.08.2026. Berth No. 17 - Proposal estimate under preparation – Target completion Dec 2028 Berth No. 9 - Proposal forwarded to Ministry for obtaining grants under Sagarmala Scheme – Target completion – FY 2028-29 Cement silo - Work is in progress – Target Completion - 20.02.2026 Berth No. 8 - Work terminated on 02.12.2025 and balance work invited through risk & cost. Target completion – Dec 2026 2 covered storage sheds completed.

Source: Primary data from Major Ports

SMPA is planning to Mechanize/Semi-Mechanize maximum of its Multipurpose berth by the end of 2030, for which Berth Mechanization plan is provided below:

Table 57: Berth Mechanization plan of SMPA

#	List of Projects	KDS/HDC	Project Cost in INR Cr	COD Year
1	Reconstruction of Berth No. 8 and Mechanization of berth no. 7 & 8	KDS	698.84	2028
2	Integrated Mechanization of 1-5 NSD and construction of Outer Terminal at NSD, KDS	KDS	832.25	2029
3	Development of Cement storage bulk Terminal at KPD-II (West)	KDS	487.36	2030
4	Extended Port at Balagarh	KDS	538.2	2030
5	Multimodal terminal at KPD II (East)	KDS	215	2030
6	Rejuvenation of KPD Phase 2 (Berth 8,10,12)	KDS	86.15	2032
7	Mechanization of Berth No. 2 at HDC	HDC	298.26	2026
8	Mechanization of Berth No. 5 at HDC	HDC	343.58	2028
9	Mechanization of Berth No. 9 & 10 at HDC	HDC	679.58	2030
10	Integrated of Berth No. 11 & 12 and development of Outer Terminal at HDC	HDC	697	2030

Source: Primary data from Major Ports

5.2. Connectivity Infrastructure at Major Ports

Promotion of coastal shipping is intrinsically linked to the availability of efficient port connectivity infrastructure. While coastal berths and terminals enable maritime operations, seamless evacuation of cargo from ports through road and rail networks is essential to make coastal shipping commercially viable and attractive for cargo owners. Robust hinterland connectivity reduces last-mile bottlenecks, lowers overall logistics costs, and ensures faster and more reliable movement of coastal cargo to and from production and consumption centres.

Recognising this critical linkage, Major Ports have been actively undertaking a range of road and rail connectivity projects aimed at strengthening cargo evacuation capacity and improving multimodal integration. These connectivity interventions are expected to play a key role in supporting the growth of coastal shipping by enhancing operational efficiency at ports and facilitating a modal shift from road-based transport to coastal routes.

A comprehensive port-wise list of road and rail connectivity projects (ongoing / in pipeline) reported by the Major Ports, along with their current status and their implementation status, is presented in the tables below.

5.2.1. Road Connectivity Infrastructure Projects

#	Port	Project	Status	Target Completion Timeline
1	ChPA	Double Decked Elevated Corridor from Chennai Port –Maduravoyal	Works ongoing - Physical Progress (as on December 2025) • Overall physical progress remains below 15% across all packages. • Package–I shows the highest progress at 14.15%. • Package–IV has the lowest progress at 5.37%, indicating delay.	Feb 2027

#	Port	Project	Status	Target Completion Timeline
			• Progress across Packages II and III is almost similar (around 13–14%)	
2	CoPA	Expanding existing 2 lane NH 966B to four (4) lane connecting Willingdon Island to Kundanoor Jn. (8 KMs) - to be implemented by NHAI.	Alignment finalization is under progress.	Land acquisition will be the next subsequent step.
3	DPA	Construction of ROB in lieu of Existing LC 1A at Km 363.625 on NH-8A, KFTZ to Kandla Road in the State of Gujarat	Work awarded to NH division on deposit basis. Work Order was issued by NHD- Gandhidham to Contractor on 24/03/2025 with dated of start of work from 01/04/2025, but after lapse of 09 months no progress at site only partial site cleaning work is done. The various correspondence and DO letters and meetings were held and requested to submit the corrected MoU. The same is still awaited.	project Duration is 24 months from the date of award of work
4	DPA	widening & improvement of existing 2/4 lanes KK ROAD into 6 lane road. (NH-141 to NH-8A (Chainage at 354KM))	Work in progress	29.03.2026
5	DPA	Construction of 6-lane link road connecting to KK-Road to NH-8A (NH-141 to NH-8A (Chainage at 349.5 KM))	Expedite with NHAI	NIL
6	KPL	Development of Concrete Road leading from NCTPS Main Road to KPL coal stock yard and (ii) Reconstruction of Two no's bridge at km 3/519 and km 4/124 in the existing road (km 0/000 to km 4/390).	Work in progress	Jan 2027
7	KPL	Construction of the North Gate Complex, including the complex building, connecting concrete roads and other associated facilities.	The project is in the pipeline, and approval for the estimates is yet to be obtained	May 2027
8	NMPA	NH-75 Bengaluru - Hassan -Mangaluru through Shiradi Ghats (140 KM)	Ongoing	Mar 2026
9	NMPA	2 to 4 Laning of NH-169 from Mangalore to Moodabidri to Karkala (40 kms)	Ongoing	Mar 2027
10	NMPA	Construction of 4 lane flyover bridge from KIOCL to Baikampady along NH 66 (3.5 Kms)	DPR and bid documents has been submitted for approval of Competent Authority by NHAI	Dec 2028

#	Port	Project	Status	Target Completion Timeline
11	PPA	8 laning of Chandikhole-Paradip section of NH-53 (76 Kms)	Under Implementation	Oct 2026
12	SMPA	Revamping/Upgradation of 06 (six) roads	Under implementation stage	Mar 2026
13	SMPA	Thorough upgradation and resurfacing of Taratala Road (old & new) from Diamond Harbour Road crossing to Ramnagar crossing	Under implementation stage	Oct 2026
14	SMPA	Renovation of Bascule Bridge at Kolkata Dock System	Under implementation stage	May 2027
15	SMPA	Development of Road connecting Shalimar Road from Foreshore road towards godown with M-55 grade Concrete Paver Block topping, development of Drain, road berm and other allied works	Under implementation stage	Nov 2026
16	VoCPA	Nagapattinam - Kanniyakumari via Tuticorin (ECR) road connectivity (348 km)	Under Process	
17	VPA	Construction of flyover/underpass at Visakhapatnam Airport junction to ensure flow of container trailers to-from MMLP set up at NH-16	Work in progress	31.05.2026
18	VPA	Flyover from seahorse junction area to dock area	Approval stage	24 months from the date of commencement
19	VPA	4 to 6 laning of road connecting VPT convent junction to Sheelanagar	Work in progress	31.05.2026

Source: Primary Data from Major Ports

5.2.2. Rail Connectivity Infrastructure Projects

#	Port	Project	Status	Target Completion Timeline
1	CoPA	Electrification of Rail link from Willingdon Island to Ernakulam Junction (5 kms)	The project is stalled due to objection from Navy regarding overhead lines interfering with Naval Aircraft.	NA
2	DPA	Construction of Road Over Bridge (ROB) at LC-235	Work in progress	25.12.2026

#	Port	Project	Status	Target Completion Timeline
3	DPA	Provision of Long-Haul loop line in Gandhidham Yard	LoA has been issued to W/R on deposit basis on 06.01.2025. Thereafter, W/R submitted a tentative higher revised cost vide letter dated 21.04.2025. Accordingly, DPA, vide letter dated 05.06.2025, requested W/R to submit the final revised Detailed Estimate along with DPR for the subject project at the earliest, with proper justification, so that after finalization the same may be placed before the Board of DPA for approval. Till date, reply from W/R is still awaited.	
4	DPA	Doubling & electrification of existing Tuna-GIMB line to cater railway traffic of newly developed facilities at Tuna-Tekra for Container Terminal and Multipurpose Cargo berth up to the Take-off point	DPR is submitted to western railway for approval on 29.07.2025. Compliance report along with updated DPR, ES P & L section submitted to railway authority after the observations raised by Western railway	Project Duration is 18 months from the date of award of work
5	DPA	Electrification of railway network inside and outside of Cargo Jetty	The work for electrification of railway network inside and outside of Cargo Jetty is near completion.	
6	KPL	Development of Common user railway siding for (i) General Cargo, (ii) End loading Motor Vehicle (MV) and Non-Hazardous Liquid and (iii) Road 2 Electrification.	Southern Railway has accorded in-principle approval for the Feasibility Study Report on 14.01.2026. Preparation of the Detailed Project Report is in progress.	Sep-27
7	PPA	3rd & 4th line between Jarapada - Budhapank with flyover at Talcher (47 Kms)	Under Implementation	Mar'2027
8	PPA	3rd and 4th line from Budhapank- Salegaon via Rajatgarh (86 Kms)	Under Implementation	Dec'2026
9	PPA	Bhadrak - Vizanagagram 3rd Line (385 kms) – 'Project replaced with Bhadrak-Nergundi 3rd line'	Under Implementation	Sept'2030
10	PPA	Flyover between Siju-Paradip (6.2 Kms)	Under Implementation	Jul'2028

#	Port	Project	Status	Target Completion Timeline
11	PPA	Doubling of Haridaspur-Paradip Rail line (82 Kms) – 'Project Added'	Under Development	-
12	VoCPA	Doubling of Madurai-Maniyachi-Tuticorin rail line (158.81 kms)		
13	VoCPA	Rail line between Madurai-V. O . Chidambaranar via Aruppukkottai (143.50 kms)		
14	VoCPA	Electrification and doubling from Milavittan railway station to Marshalling yard and Milavittan station to Tuticorin station (17.60 km)		

Source: Primary Data from Major Ports

5.3. Cargo Aggregation: Strategy and Institutional Strengthening

5.3.1. Current Situation

Coastal cargo is predominantly domestic, fragmented, and demand-driven by regional production–consumption patterns. As a result, average parcel sizes for coastal cargo are significantly smaller than EXIM consignments, even though the frequency of vessel calls is often comparable, particularly on established coastal corridors.

For example, Coal is the largest commodity by volume in India's coastal shipping mix and is generally considered the most amenable to coastal movement due to its bulk nature, steady demand, and presence of large anchor shippers. However, port-level data from Deendayal Port Authority (DPA) and Syama Prasad Mukherjee Port Authority (SMPA) indicates that even coastal coal movements suffer from sub-optimal vessel utilisation.

Table 58:Coastal coal movements operate at smaller parcel sizes, reflecting aggregation constraint

Port	Avg. Vessel Size (DWT)	Avg. Parcel Size (MT)	Usable Capacity (~80% DWT)	Utilisation
DPA	34,323	20,935	27,500	~76%
SMPA	67,686	24,508	54,000	~45%

Source: Primary Data from Major Ports

Further,

- Coastal vessels typically operate with lower average load factors compared to EXIM vessels.
- Cargo is often originated by multiple small and medium shippers, unlike EXIM cargo which is consolidated at source by large exporters or importers.
- While port throughput figures appear reasonable, net coastal cargo per voyage remains low, leading to under-utilisation of vessel capacity and higher unit logistics cost.

Coastal Shipping Act 2025

Under the new Act, it has been proposed to establish a National Coastal and Inland Shipping Strategic Plan every two years, led by a multi stakeholder committee comprising the DG Shipping, IWAI, Major

Port Authorities, State Maritime Boards, shipowners, seafarer representatives, and maritime experts. This Plan will assess route conditions, forecast traffic, identify operational improvements, and propose new coastal inland waterway integrations to strengthen domestic maritime connectivity.

National Coastal and Inland Shipping Strategic Plan and National Data Base of Coastal Shipping

National Coastal and Inland Shipping Strategic Plan (NCISSP)

The proposed National Coastal and Inland Shipping Strategic Plan under the Coastal Shipping Act 2025 aims to provide a long-term, integrated roadmap for the development of coastal shipping and its seamless integration with inland waterways, rail, and road networks. The plan is envisaged to identify priority coastal and riverine corridors, commodity-wise opportunities, vessel requirements, port and terminal infrastructure gaps, and policy interventions required to enhance modal share, reduce logistics costs, and promote environmentally sustainable transport.

Committee for Coastal and Inland Shipping Strategy

To operationalise the Strategic Plan, the Act proposes the constitution of a dedicated National Coastal and Inland Shipping Committee. The composition will include:
•Director-General of Shipping – Chairperson
•Chairman, IWAI
•Representatives from each Major Port Authority
•Representative from National Security Council Secretariat
•One representative from each State Maritime Board / port administering authority
•Two representatives of ship owners- Member
•Two representatives of seafarers- Member
•Additional experts from coastal trade, marine trade, or maritime sectors may be included as required

National Database of Coastal Shipping

The Act also proposes the creation of a National Database of Coastal Shipping as a centralised digital repository. This database would capture vessel-wise, route-wise, and commodity-wise data on coastal and inland cargo movement, port calls, capacities, and operational performance.

5.3.2. Industry Representation

During stakeholder consultations, vessel operators, logistics service providers, and cargo owners consistently highlighted that under utilisation of coastal vessels is a demand side structural issue. Domestic cargo volumes are dispersed across multiple shippers and destinations; individual shippers rarely generate cargo volumes sufficient to fully load a coastal vessel. Coastal operators are compelled to sail **vessels at 50–60% utilisation**, which directly impacts voyage economics and discourages service expansion.

Stakeholders emphasised that without **systematic cargo aggregation and port-based storage support**, coastal shipping cannot achieve the scale efficiencies required to meaningfully compete with rail or road, despite its inherent cost and environmental advantages.

5.3.3. Potential Interventions

In this context, the **creation of a separate, standalone agency or organisation dedicated exclusively to coastal shipping was deliberated**. However, coastal shipping is not an activity that operates in isolation; it is implemented almost entirely within port ecosystems, involving berthing, cargo storage, handling, scheduling, tariff application, and coordination with rail, road, and inland waterways.

A new agency would inevitably overlap with existing institutional roles, lack direct operational control over port infrastructure, and risk fragmenting decision making across multiple bodies.

The core challenge facing coastal shipping today is not the absence of policy or institutions, but the need for effective, on-ground facilitation and coordination at ports, where cargo aggregation actually takes place. Against this backdrop, a more pragmatic and implementable approach would be to establish a **Coastal Cargo Promotion Centre (CCPC) under the Indian Ports Association (IPA)** to function as a marketing and facilitation entity. IPA already serves as the coordinating platform for Major Ports and is institutionally positioned to anchor a neutral facilitation function without duplicating structures.

Coastal Cargo Promotional Centre (CCPC)

The National Coastal and Inland Committee proposed under the Coastal Shipping Act would serve as a central planning and regulatory authority, responsible for guiding the strategic development of India's coastal trade ecosystem. To support its mandate, a dedicated Marketing Unit (**Coastal Cargo Promotion Centre (CCPC) under the Indian Ports Association)** would be essential at the national level to promote coastal shipping across major ports and act as a unified cargo aggregator. This unit would facilitate on-ground cargo movement, coordinate with port authorities and industry players, and ensure seamless communication among all stakeholders.

Additionally, it would play a critical role in identifying operational bottlenecks, conducting research on infrastructural and logistical gaps, and recommending evidence based policy interventions to the Ministry. By combining regulatory oversight with a strong market facing function, the Committee and its Marketing Unit would help unlock the full potential of coastal shipping as a sustainable and efficient mode of domestic transport.

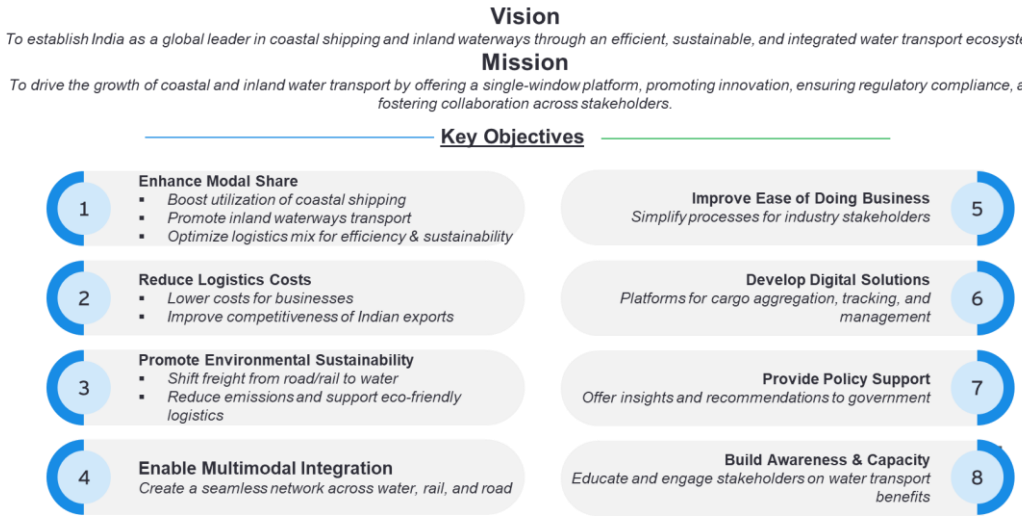


Figure 45: Coastal Cargo Promotional Centre (CCPC)

Functional Structure of CCPC – Core Operating Verticals

The proposed CCPC functional structure is a market-oriented operating model that integrates cargo aggregation, service design, shipping and port coordination, digital enablement, and policy support to deliver end-to-end, scalable coastal logistics solutions across India's major ports. ***Total Indicative Manpower (Phase-1): 35 Professionals***

Table 59: Functional Structure of CCPC – Core Operating Verticals

Division / Vertical	Key Sub-Units	Core Responsibilities	Indicative Roles	Manpower (Nos.)
A. Cargo Aggregation & Market Development	Commodity Desks (Bulk, Container, Ro-Ro/Project) Key Account Management MSME Outreach	Aggregate fragmented coastal cargo Build long-term cargo commitments Customer acquisition & retention	Head – Market Development (1) Commodity Managers (3) Key Account Managers (3) MSME Outreach Executive (1)	8
B. Service Design & Bundled Solutions	Coastal Service Design Cell Multimodal Integration (Road/Rail/IWT) Pricing & Commercial Structuring	Design end-to-end coastal logistics products Bundle port, shipping & inland transport services Prepare service pricing & tariffs	Head – Service Design (1) Logistics Solution Specialists (3) Commercial/Pricing Analyst (1)	5
C. Shipping & Operator Coordination	Coastal Shipping Line Interface Vessel / Slot Aggregation Cell Ro-Ro & Specialised Vessel Desk	Coordinate with coastal operators Aggregate slots / charter vessels Ensure sailing frequency & reliability	Head – Shipping Coordination (1) Shipping Operations Managers (3) Ro-Ro / Special Cargo Specialist (1)	5
D. Port & Terminal Coordination	Major Port Interface (cluster-wise) Terminal & ICD Coordination Berth & Window Planning Support	Align port readiness & priority handling Coordinate with terminals & ICDs Resolve port-side operational issues	Head – Port Coordination (1) Port Interface Officers (3) Terminal Coordination Executive (1)	5
E. Digital Platform & Analytics	CCPC Cargo Platform Demand Forecasting & Route Analytics Performance MIS	Operate digital booking & aggregation platform Route & demand analytics Monitor service performance	Head – Digital & Analytics (1) Data / Business Analysts (2) IT / Platform Support (1)	4

Division / Vertical	Key Sub-Units	Core Responsibilities	Indicative Roles	Manpower (Nos.)
F. Policy, Incentives & Stakeholder Coordination	Incentive / VGF Coordination Inter-Ministerial Liaison Industry & Association Engagement	Coordinate incentives & schemes Flag regulatory bottlenecks Stakeholder consultations	Head – Policy & Stakeholder Affairs (1) Policy / Incentive Analysts (2)	3
G. Finance, Legal & Risk	Commercial Finance & Billing Contracts & Legal Risk & Credit Assessment	Financial control & billing Draft & manage contracts / SLAs Counter-party risk management	Head – Finance & Legal (1) Finance Executive (1) Legal / Contract Officer (1)	3
H. Administration & Capacity Building	HR & Administration Training & Knowledge Dissemination	HR, admin & procurement Capacity building for ports & operators	Admin & HR Manager (1) Training / Knowledge Executive (1)	2

Implementation Plan:

Phase I: Establishment & Foundation (2025-26)

- Set up organizational structure and onboard key personnel
- Forge partnerships with stakeholders
- Supply Chain & Logistics Mapping
- Conduct baseline studies and identify priority areas
- Create detailed action plans for each functional domain

Phase II: Expansion & Growth (2026-28)

- Scale operations across all coastal states and inland waterways
- Launch pilot projects on cargo aggregation & multimodal integration
- Develop segment-specific services (e.g., bulk, container, perishable)
- Roll out capacity-building initiatives
- Begin structured policy advocacy based on Phase I learnings

Phase III Consolidation & Sustainability (2028-30)

- Evaluate outcomes and refine strategies
- Build sustainable revenue models for operations
- Position CCPC as a national center of excellence
- Draft roadmap for future growth and scale

5.4. Cabotage relaxations to enhance vessel availability for coastal containers

5.4.1. Current Situation

The primary legislation governing cabotage in India is the **Merchant Shipping Act, 1958**. The specific provisions are found in **Part XIV** (Control of Indian Ships and Ships Engaged in Coasting Trade).

- **Section 406**: Governs the licensing of Indian ships and ships chartered by Indian citizens/companies. It requires these vessels to obtain a license from the Director General of Shipping (DGS) to operate.
- **Section 407 (1)**: This is the core "Cabotage" clause. It mandates: "No ship other than an Indian ship or a ship chartered by a citizen of India [or an Indian company] shall engage in the coasting trade of India except under a licence granted by the Director-General."
- **Section 407 (3)**: Grants the Central Government the power to override these restrictions: "The Central Government may, by general or special order, direct that the provisions of sub-section (1) shall not apply in respect of any part of the coasting trade of India..."

Since 2015, the government has used Section 407(3) to issue several landmark General Orders (GOs) to boost coastal shipping and reduce the reliance on foreign transshipment hubs like Colombo or Singapore.

- **Specialized Vessels (2015):** Relaxed for 5 years for specialized vessels including Ro-Ro (Roll-on/Roll-off), Ro-Pax, Hybrid Ro-Ro, Pure Car Carriers, LNG vessels, and Over-Dimensional Cargo (ODC) carriers.
- **General Order No. 1 of 2018 (21st May 2018) for EXIM and Empty Containers:** "The provisions of sub-section (1) of Section 407 shall not apply to foreign flag ships engaged, in full or in part, for transportation of EXIM laden containers for transshipment and empty containers on any route between different ports/places in India."
- **General Order No. 2 of 2018 (22nd May 2018) for Agricultural and Allied Commodities:** Exempted foreign ships carrying Agriculture, Horticulture, Fisheries, and Animal Husbandry commodities to expand the market ecosystem for farmers and lower the cost of transporting perishables.
- **General Order No. 3 of 2018 (22nd June 2018 followed by a notification on 15th October 2018) for Fertilizers:** Relaxed for the movement of Fertilizers (specified under ITC HS Code 31) subject to a condition that Fertilizers must contribute at least 50% of the total cargo on board.

Recently, in 2025, **Coastal Shipping Act, 2025** was enacted, which aims to separate coastal shipping regulations from the Merchant Shipping Act, 1958. It reaffirms cabotage but gives the DGS wide discretionary powers to grant exceptions based on national interest or capacity shortages.

5.4.2. Industry Representation

Industry stakeholders proposed that the existing cabotage relaxations be extended to cover all types of containerized cargo and essential dry bulk cargo (coal & iron ore) moving coastally within India. This would enhance vessel availability and promote modal shift to coastal shipping.

Rationale for Extension: The recommendation to relax cabotage for domestic containers and essential dry bulk cargo (coal and iron ore) is driven by several critical operational factors:

- Vessel Availability and Service Frequency: Stakeholders have consistently reported a lack of timely Indian-flagged vessel availability. Limited domestic service options often result in transport delays, forcing cargo back onto road and rail networks.

- Operational Cost Efficiency: The operating cost of Indian vessels is estimated to be 35–40% higher than foreign-flagged counterparts. Extending relaxations could reduce logistics costs by 40–45% on the sea leg of the journey, making coastal shipping more competitive. Allowing foreign vessels for dry bulk like coal and iron ore can reduce sea leg costs.
- Efficiency of Hub-and-Feeder Models: Allowing foreign vessels to carry any domestic containerized commodity would enable a more efficient "hub-and-feeder" system. Large ports can serve as hubs for all types of cargo, with smaller ports acting as feeders, thereby reducing overall Terminal Handling Charges (THC).

Observed Impact of Previous Relaxations (2019–2025): Data trends post-2018 provide a strong justification for further liberalization. Major Ports have reported significant growth in coastal trade (for commodities exempted from cabotage regulation as per 2018 orders - *EXIM laden containers for transshipment, agricultural and allied commodities and fertilizer cargo*) since the initial relaxations were implemented.

- Average number of foreign-flagged vessels participating in coastal cargo movement of exempted commodities per year increased from 74 in 2014-2018 period to 298 in 2019-2025 period.
- Average coastal cargo volume carried by foreign-flagged vessels of exempted commodities per year increased from 0.7 MT in 2014-2018 period to 4.7 in 2019-2025 period, demonstrating that increased vessel supply directly correlates with higher coastal throughput.

Table 60:Growth Trend in Coastal Movement of Cabotage-Exempted Commodities: Cargo Volumes and Vessel Calls

Year	Cargo Volume of exempted commodities (Million Tonnes)			No. of vessels carrying exempted commodities (No.)		
	Foreign Flagged Vessels	Indian Flagged Vessels	Total Volume	Foreign Flagged Vessels	Indian Flagged Vessels	Total Vessels
2014-15	0.4	3.5	4.0	46	372	418
2015-16	0.3	5.7	6.1	39	497	536
2016-17	0.8	6.5	7.2	92	588	680
2017-18	1.1	8.2	9.4	118	536	654
Annual Average	**0.7**	**6.0**	**6.7**	**74**	**498**	**572**
2018-19	3.1	10.9	14.0	209	700	909
2019-20	6.7	11.6	18.3	420	747	1167
2020-21	6.7	13.9	20.6	391	775	1166
2021-22	3.6	15.4	19.0	168	840	1008
2022-23	3.6	15.1	18.7	182	853	1035
2023-24	3.1	14.4	17.5	232	929	1161
2024-25	6.2	14.6	20.8	481	826	1307
Annual Average	**4.7**	**13.7**	**18.4**	**298**	**810**	**1108**

Source: Primary Data from major Ports

5.4.3. Representation by Directorate General of Shipping

Deliberations on this subject with Directorate General of Shipping yielded a contrast view. The Directorate General of Shipping (DGS) has proposed the withdrawal of General Orders (GO) 1, 2 and 3 of 2018 after a detailed review found that these measures neither achieved their intended objectives nor supported the long-term health of India's shipping sector. Introduced in mid-2018 to relax cabotage by allowing foreign-flagged vessels to carry certain categories of domestic cargo without licence or Right of First Refusal for Indian ships, the orders were expected to reduce transshipment dependence, lower freight costs, and improve coastal movement of select commodities. However, subsequent experience and stakeholder consultations culminating in 2024–25 indicated that these outcomes were not realised, prompting DGS to recommend an expeditious withdrawal with effect from 31 December 2025.

In terms of outcomes, the orders failed on all core objectives. Transshipment of Indian EXIM containers through foreign hubs such as Colombo has increased rather than declined, freight costs for exporters and importers have not reduced due to additional surcharges imposed by foreign lines, and the movement of agricultural commodities along the coast remains negligible. Fertiliser movement continues to be efficiently handled by Indian-flagged vessels, indicating that foreign participation was neither necessary nor value-adding. Thus, the liberalisation did not meaningfully enhance efficiency or competitiveness in coastal shipping.

The policy has also led to losses in GST revenue, higher foreign exchange outflows, and increased market power of foreign container lines, leaving Indian trade exposed to pricing volatility. Allowing foreign vessels to carry coastal empties and feeder cargo has further weakened Indian operators by eroding their return-cargo base.

Reversing these orders is therefore viewed as essential to restoring a level playing field, strengthening domestic tonnage, and aligning policy with the Maritime Amrit Kaal Vision 2047, including enabling Shipping Corporation of India's planned acquisition of new container vessels.

5.4.4. Potential Intervention

The current divergence between the regulator's position and industry demands indicates the need for a balanced intervention rather than a further expansion of cabotage relaxations. While industry stakeholders seek broader cabotage exemptions to improve vessel availability, reduce costs, and support hub-and-feeder operations, such measures raise concerns about long-term impacts on Indian tonnage, employment, and market stability.

A practical middle path is to further reduce the time required to convert a foreign-flagged vessel for coastal operations.

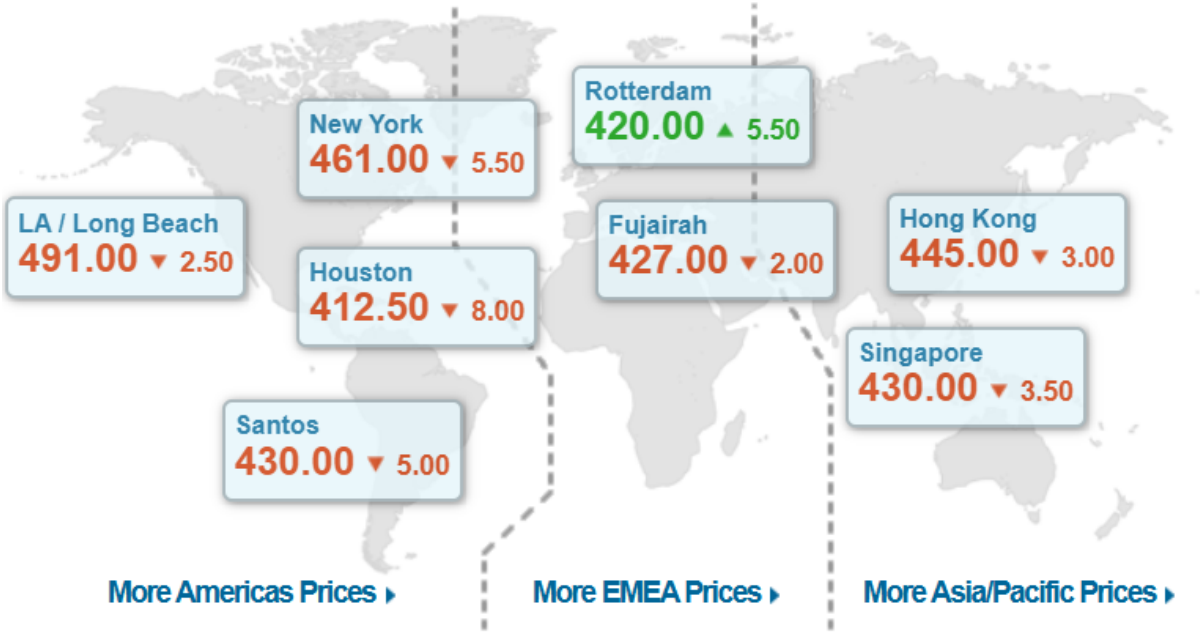
Although the conversion process has already been shortened from about five days to two days, this timeline remains too long for commercial decision-making in container and bulk trades. ***Reducing the conversion time to less than 04 hours through digital approvals and pre-clearance would allow foreign vessels to be deployed quickly for coastal legs whenever Indian vessels are unavailable.***

This approach would address industry concerns on vessel availability, service frequency, and cost efficiency, without permanently opening coastal trades through cabotage exemptions. At the same time, it would retain regulatory oversight and preserve the primacy of Indian-flagged vessels, ensuring that domestic shipping capacity is not structurally displaced. Faster coastal conversion therefore offers a targeted and low-risk solution that delivers operational flexibility while protecting long-term policy objectives.

5.5. Optimizing Bunker Cost

5.5.1. Current Situation

Bunker fuel cost is a material determinant of voyage economics for coastal and short-sea shipping. A comparison of prevailing bunker prices at Mumbai Port with major global bunkering hubs such as Singapore, Fujairah and Rotterdam indicates a significant and persistent price differential on bunkering price in India.



	Price $/mt	Change	High	Low	Spread
Global 20 Ports Average	462.00 ▼	-2.00	462.00	462.00	0.00
Global 4 Ports Average	422.50 ▼	-2.00	422.50	422.50	0.00
Global Average Bunker Price	500.00 ▼	-3.00	500.00	500.00	0.00

Figure 46:Bunkering price at global ports in Jan 2026

Source: World Bunker Price Index by Ship&Bunker

Current Bunker Fuel Prices in Mumbai

HSFO	MGO	VLSFO
545.00 $US/MT	799.00 $US/MT	658.00 $US/MT
0.00 0%	-15.00 -1.84%	+32.00 5.11%

Source: Third Party Data Website (OilMonster)

As can be observed from above data, the **price differential translates into a 50–55% premium on bunker fuel at Mumbai compared to leading international bunkering hubs**. A similar premium is visible for other fuel grades as well.

GST on Bunkering

Further, in India, bunker fuel supplied to coastal vessels attracts 5% GST, following GST rate rationalisation for bunker fuel used in coastal shipping. In contrast, global bunkering hubs such as Singapore, Fujairah and Rotterdam do not levy VAT/GST or excise duties on marine bunker fuels supplied to international shipping, treating bunkers as tax-free international supplies.

Bunker fuel constitutes **30–45% of total operating cost** for coastal vessels, especially for bulk and short-sea services with high fuel intensity. The levy of 5% GST on bunker fuel supplied to coastal vessels in India directly increases voyage cost.

Foreign-flag vessels operating on international routes bunker fuel tax-free at global hubs and may subsequently undertake limited coastal legs after conversion. Indian-flag coastal vessels, however, must bunker domestically and bear GST-inclusive fuel costs.

5.5.2. Industry Representation

During stakeholder consultations with coastal vessel operators, shipowners and charterers, the following issues were consistently highlighted:

- Indian-flag coastal vessels sourcing bunkers at Indian ports incur significantly higher operating costs compared to foreign-flag vessels bunkering at Singapore or Fujairah.
- Stakeholders highlighted that even the 5% GST on bunkering for coastal shipping creates a cost asymmetry, as competing foreign vessels effectively bunker tax-free at global hubs.

Issues in accounting of duty-paid and non-duty-paid bunkers for foreign vessels converting to coastal run:

Foreign-flag vessels converting from EXIM to coastal run face operational and accounting challenges in relation to bunker fuel already on board:

- Difficulty in segregating import (foreign) bunker and coastal bunker
- Ambiguity on customs duty applicability on remaining bunker at the time of conversion
- Port-wise and officer-wise variations in interpretation

5.5.3. Potential Interventions

To address the bunker cost disadvantage and support coastal shipping competitiveness, the following interventions may be considered:

GST rationalisation on bunker fuel for coastal shipping:

Consider zero-rating or full GST exemption on bunker fuel supplied to coastal vessels, similar to international bunkering hubs. Alternatively, introduce a refund-based or deemed-export mechanism to ensure complete tax neutrality without cash-flow impact on operators.

Standardised customs SOP for bunker accounting during EXIM–coastal conversion:

- Issue a uniform national SOP clarifying:
- Treatment of bunkers already on board at the time of conversion
- Methodology for accounting duty-paid vs non-duty-paid bunkers
- Documentation requirements and time limits

This would reduce port-level discretion and procedural uncertainty.

5.6. GST on Multimodal Transport

5.6.1. Current Situation

Under the GST framework, multimodal transportation of goods—including services combining coastal shipping with road and/or rail, was originally taxed at 12% with full Input Tax Credit (ITC). However, subsequent rate rationalisation reduced the GST rate to 5%, while explicitly disallowing ITC.

Relevant official notifications:

- CBIC Notification No. 11/2017–Central Tax (Rate), dated 28.06.2017– Prescribed GST rates for transport of goods, including multimodal transport, initially allowing 12% GST with ITC.
- CBIC Notification No. 20/2019–Central Tax (Rate), dated 30.09.2019 – Introduced a concessional 5% GST rate for certain transport services subject to the condition that ITC shall not be availed.
- CBIC Notification No. 03/2022–Central Tax (Rate), dated 13.07.2022 – Continued the structure of lower GST rate with restricted ITC, reaffirming the policy choice between higher rate with ITC and lower rate without ITC.

As a result, multimodal transport operators, including coastal shipping service providers, now face a situation where:

- Output GST is reduced to 5%, but
- GST paid on key inputs such as port services, terminal handling, stevedoring, pilotage, towage, warehousing, fuel-related services, and inland transport legs cannot be offset.

This has led to an increase in effective logistics cost, despite the nominal reduction in the headline GST rate.

5.6.2. Industry Representation

Industry stakeholders, including coastal vessel operators, multimodal logistics operators (MTOs), and cargo owners, have represented the following concerns:

- The removal of ITC has converted GST paid on input services into a non-creditable cost, which is embedded into freight rates.
- For coastal shipping, where margins are thin and cost competitiveness against rail and road is critical, this embedded tax materially affects viability.

5.6.3. Potential Interventions

Allow ITC for multimodal transport linked to coastal shipping:

Allow ITC at 5% GST, at least for notified coastal and multimodal transport services, which would directly reduce logistics costs, enhance coastal shipping competitiveness, and better align tax policy with the Government's broader modal shift and logistics efficiency objectives, without creating material adverse fiscal or compliance impacts.

In practical terms, stakeholders estimate that restoration of ITC can **reduce effective logistics cost by 6–8% for coastal multimodal movements**, depending on the cargo and route.

5.7. GST Exemption for Agricultural Produce Transportation by Coastal Shipping

5.7.1. Current Situation

Under the GST framework, transportation of agricultural produce by road, rail, inland waterways and coastal vessels is fully exempt from GST. This exemption is intended to keep logistics costs for agricultural commodities low and to avoid tax cascading in essential supply chains.

Relevant official GST provisions:

- CBIC Notification No. 12/2017–Central Tax (Rate), dated 28.06.2017 – Exempts services by way of transportation of agricultural produce by road, rail, inland waterways and coastal shipping from GST.
- CBIC Circular No. 186/18/2022–GST, dated 27.12.2022 – Clarifies the scope of "agricultural produce" for GST exemption purposes and reiterates exemption on transportation services.
- CBIC Circular No. 80/54/2018–GST, dated 31.12.2018 – Clarifies applicability of GST on various port and terminal services.

While transportation itself is exempt, port-related services such as berth hire, wharfage, pilotage and towage, cargo handling, port storage and warehousing, continue to attract 18% GST, even when the cargo handled is agricultural produce.

As a result, coastal movement of agri-cargo through ports faces a partial GST exemption, where the sea leg is exempt, but the port interface remains fully taxable leading to a higher effective logistics cost for coastal shipping of agricultural commodities.

5.7.2. Industry Representation

Stakeholders including agri-commodity traders, FCI-linked logistics operators, port users and coastal vessel operators have highlighted the following issues:

- GST charged on port services becomes a direct cost, as output transportation is exempt and Input Tax Credit cannot be claimed.
- This embedded tax increases per-tonne logistics cost for agri-cargo moved by coastal shipping.
- Road and rail movement of agricultural produce often bypass port interfaces and therefore do not incur comparable taxable services.

This places coastal shipping at a relative disadvantage despite being a more energy-efficient and scalable mode.

5.7.3. Potential Interventions

Extend GST exemption to port-related services for agricultural produce:

It is recommended that GST exemption applicable to transportation of agricultural produce be explicitly extended to port-related services, when such services are rendered exclusively for handling agricultural produce.

5.8. Reverse conversion from coastal (Indian flag / coastal run) to foreign-going trade

5.8.1. Current Situation

Under the prevailing regulatory framework, vessels operating on India's coast frequently require conversion between coastal and foreign-going trade to optimise fleet deployment and voyage economics. While conversion from foreign-going to coastal run is well institutionalised, the reverse conversion (from coastal to foreign-going status) requires completion of outward clearance formalities, including Customs, Immigration and Port Health clearances.

Although there is no explicit legal restriction mandating that such reverse conversion be undertaken only at select ports, in practice it is feasible only at ports notified and equipped to handle international (EXIM) traffic under the Customs Act, 1962. Many coastal ports and terminals—particularly those developed primarily for domestic cargo, do not have permanent deployment of Customs, Immigration and allied border control agencies.

As a result, vessels completing coastal operations at such ports are unable to directly sail on foreign trade and must divert to the nearest EXIM-enabled port to complete reverse conversion formalities. This has emerged as a de facto operational constraint, despite the absence of a formal regulatory prohibition.

5.8.2. Industry Representation

Industry stakeholders highlighted that **many coastal ports in India do not have full Customs, Immigration and other border-control facilities required for converting a vessel from coastal to foreign-going trade**. As a result, vessels are often forced to divert to a limited number of EXIM-enabled ports only to complete conversion formalities, even when no cargo operations are planned there.

Stakeholders also pointed out that this lack of flexibility reduces the attractiveness of coastal legs, especially for foreign-flag vessels that need to quickly return to international routes. The additional cost and uncertainty discourage vessel operators from offering coastal services, affect efficient fleet deployment, and ultimately limit the growth of coastal shipping.

5.8.3. Potential Interventions

a) Notify additional coastal ports for limited foreign-going (EXIM) clearance or provide on-call Customs and Immigration facilities to enable reverse conversion without requiring vessel diversion.

b) Issue a uniform national SOP for reverse conversion, clearly defining documentation, responsibilities of authorities, and timelines to ensure consistency across ports.

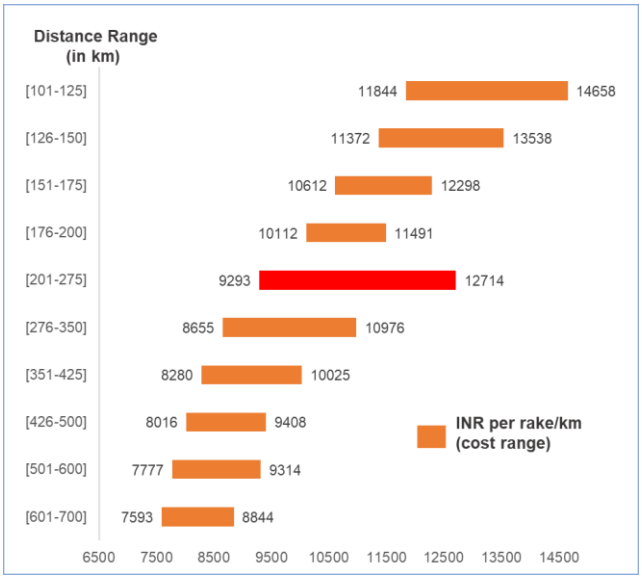
c) Introduce digital and remote clearance mechanisms for Customs and Immigration to allow outward clearance from non-EXIM coastal ports on a risk-based approach.

5.9. Rationalisation of rail freight for short-haul distances for coastal cargo

5.9.1. Current Situation

Rail connectivity is a critical enabler for coastal shipping, as most coastal cargo movements require Rail–Sea–Rail or Rail–Sea–Road interfaces at ports. However, the economics of rail freight for short-haul distances (typically below 250–300 km) remain a structural challenge for coastal cargo. The exhibit here on rail freight cost per rake-km across distance slabs highlights a clear distortion in short-haul pricing.

This indicates that rail freight is most expensive on a per-km basis precisely where coastal cargo needs it the most, i.e., short-distance evacuation from hinterland to ports and from ports to nearby consumption centres.



5.9.2. Industry Representation

Industry stakeholders, including port authorities, coastal vessel operators, bulk cargo shippers, and logistics service providers, have highlighted the following concerns:

- *Rail becomes uncompetitive for short-haul port connectivity:* For distances below 250 km, rail freight costs approach or exceed road transport costs, despite rail being operationally more suitable for bulk coastal cargo.
- *High rail evacuation cost offsets coastal shipping savings:* While the sea leg may be cheaper than long-haul rail or road, high short-haul rail tariffs significantly dilute overall logistics savings, making coastal routes unattractive for shippers.

5.9.3. Potential Interventions

To address this structural issue, targeted rationalisation of rail freight for short-haul movements linked to coastal cargo may be considered.

Introduce a special short-haul rail tariff for coastal cargo:

Create a dedicated coastal cargo rail category with a reduced minimum chargeable distance (e.g., 50–100 km instead of prevailing slabs). Apply flatter tapering for distances up to 300 km when cargo is demonstrably linked to coastal shipping.

Allow zonal railways to notify pilot concessions for identified coastal corridors (e.g., eastern coast coal, west coast steel and cement). Outcomes can be evaluated before national roll-out.

5.10. Telescopic benefit in railway freight rates for RSR movement of bulk commodities

5.10.1. Current Situation

Rail–Sea–Rail (RSR) movement is a key logistics model to promote coastal shipping by combining the cost efficiency of sea transport with rail connectivity at both ends. At present, telescopic freight benefit for RSR movement is explicitly available only for domestic coal movement for Centre / State GENCOs, from east coast ports to south and east coast ports.

However, for other bulk commodities such as, iron Ore, steel, cement, food grains, etc., rail legs in an RSR movement are treated as independent point-to-point rail movements, without telescopic adjustment. As a result, the combined rail freight often erodes the cost advantage of the coastal leg.

5.10.2. Industry Representation

Industry stakeholders highlighted that for non-coal bulk cargo as well, charging full rail freight on both pre-haulage and post-haulage legs significantly increases total logistics cost, often making direct all-rail or road movement more competitive than RSR.

5.10.3. Potential Intervention

Extend telescopic benefit to private GENCOs and other bulk commodities

Railway Board may notify telescopic rail freight benefit for RSR movement of coal for private GENCOs as well and for select bulk commodities such as iron ore, steel, cement and fertilisers.

Eligibility may be linked to minimum parcel size, identified coastal corridors or proof of coastal movement through port documentation. Implement telescopic benefit initially on identified pilot corridors (e.g. east coast bulk corridors or west coast industrial clusters) and evaluate traffic response before wider roll-out.

5.11. Incentive schemes for coastal shipping

5.11.1. Industry Representation

There is a need for a well-designed incentive scheme for coastal shipping in India to address the persistent cost and risk disadvantages that shippers and operators face during the transition from road and rail to coastal modes. Despite its inherent advantages (lower unit logistics cost, reduced emissions, and decongestion of highways) coastal shipping continues to suffer from first-mover risks, thin cargo volumes on many routes, and high initial operating costs, making it less competitive without targeted support.

5.11.2. Voyage based Coastal Incentive Scheme (SIMSC Model)

In 2016 a Scheme for Incentivizing Modal Shift of Cargo was deliberated. The key benefits for included transportation of the following categories of cargo through Indian flag vessels, River Sea Vessels or barges on coastal shipping and inland waterways routes.

Scheme for Incentivizing Modal Shift of Cargo (SIMSC):

- ***Bulk Cargo:*** Shippers of specific commodities (such as fertilisers, food grains, sugar and salt) could receive an incentive of Re. 1 per tonne per nautical mile, capped at 1,500 nautical miles per trip.
- ***Containerised Cargo:*** A fixed incentive of INR 3,000 per TEU (Twenty-foot Equivalent Unit) was offered for transporting any commodity in full container loads.
- ***Ro-Ro Vehicle:*** To promote automobile transport, the scheme proposed INR 300 for two wheelers and INR 3,000 for other vehicles moved via Ro-Ro vessels.

However, the scheme could not be implemented due to various reasons like less budgetary support or not approved. ***This scheme maybe again explored for implementation subject to update / recalibration of incentives considering latest logistics cost analysis, maybe undertaken by IPA.***

5.11.3. Fixed Rate State Incentive for coastal shipping (Kerala Model)

The Fisheries & Ports department of Kerala implemented the scheme providing incentives for Coastal Shipping at fixed rate serving as a practical example of a localised incentive scheme based on standard road to sea cost differentials. The Scheme was based upon the scientific study report by National Transportation Planning and Research Center (NATPAC) to assess the operating cost of container trailer vehicles plying at Vallarpadam ICTT to other state ports.

For example, moving a 20-foot container to Beypore Port earned an incentive of ₹12,790, while a trip to Azhikkal Port earned ₹20,774. At least 20% of this incentive must be shared with the traders/shippers to promote adoption. The Cost Analysis was carried out for fixing the freight rate by considering various factors involved in the operation of container trailers. This information has been used to arrive at the minimum freight rate and operating cost per kilometre.

The objective of the scheme was:

- To promote Coastal Shipping
- To reduce congestion on roads
- As per scientific study by the NATPAC to find out actual amount by considering various fixed, variable & semi variable costs
- Attract shipping trade & vessel operators in connection with coastal shipping movement in Kerala

The incentives offered included:

- 10% above the road transportation cost as per the NATPAC study report (as base rate) for a period of six months from 23.01.2022.
- Ordered that a minimum of 20% of the incentive should be shared with the traders/ exporters/ importers

Revival of such schemes for implementation at different states through Maritime States Development Council (MSDC) and Ministry of Ports, Shipping & Waterways may be reconsidered. Requirement of localised study to apply this scheme to specific port and its limited hinterland may be undertaken. It will require study of characteristics & different requirements at different ports and their hinterland to derive the real benefits.

06

Coastal Vessel Fleet – Supply Side Assessment

6. Coastal Vessel Fleet – Supply Side Assessment

6.1. Overview of the Coastal Vessel Fleet

India's coastal shipping fleet comprises a diverse mix of vessels operating under the Indian flag, supported by foreign flag vessels permitted under specific regulatory relaxations. As per Director General of Shipping report, **there are 816 self-propelled coastal vessels operating in India's Exclusive Economic Zone (EEZ), out of which 814 are active**.

The existing coastal fleet is characterised by an ageing profile, with a significant proportion of vessels exceeding 20 years of age. Older vessels tend to have lower fuel efficiency, higher operating costs, and limited compliance with emerging environmental norms, thereby constraining competitiveness and scalability of coastal services.

6.2. Vessel Types and Deployment Patterns

The coastal fleet primarily comprises:

- Bulk carriers and general cargo vessels, deployed for coal, iron ore, cement, steel, and building materials;
- Tankers, used extensively for coastal movement of POL products, crude oil, and chemicals;
- Multipurpose vessels, offering flexibility for mixed cargo and project cargo;
- Small container feeder vessels, which remain limited in number but serve niche coastal container corridors.

Large-capacity vessels (e.g., Supramax and above) are limited in the Indian-flag coastal fleet. Consequently, certain high-volume commodities rely either on smaller parcel sizes or on foreign-flag vessels operating under regulatory permissions, particularly for bulk and liquid cargo. This limits the ability of coastal shipping to fully exploit economies of scale on some long-haul inter-coastal corridors.

6.3. Major Operators and Market Participants

The coastal shipping market in India comprises a mix of:

- Public sector operators, notably the Shipping Corporation of India (SCI), which operates a fleet of bulk carriers, tankers, and multipurpose vessels on coastal routes;
- Large private shipping companies, including groups with integrated port and logistics operations, which deploy coastal vessels primarily for captive or long-term contract cargo;
- Medium and small private operators, who constitute a significant share of the coastal fleet and typically operate one to five vessels, often focused on specific commodities or regional corridors.

In addition, several port-led and industrial operators deploy vessels for captive coastal movement of coal, iron ore, petroleum products, and raw materials, particularly where predictable, high-volume flows exist. Industry bodies such as the Indian Coastal Conference Shipping Association (ICC-SA) represent a large number of these operators and play an important role in stakeholder engagement and policy feedback.

The market structure is therefore highly fragmented, with a small number of large operators controlling a significant share of cargo volumes, while a long tail of smaller operators compete on price, flexibility, and short-haul routes.

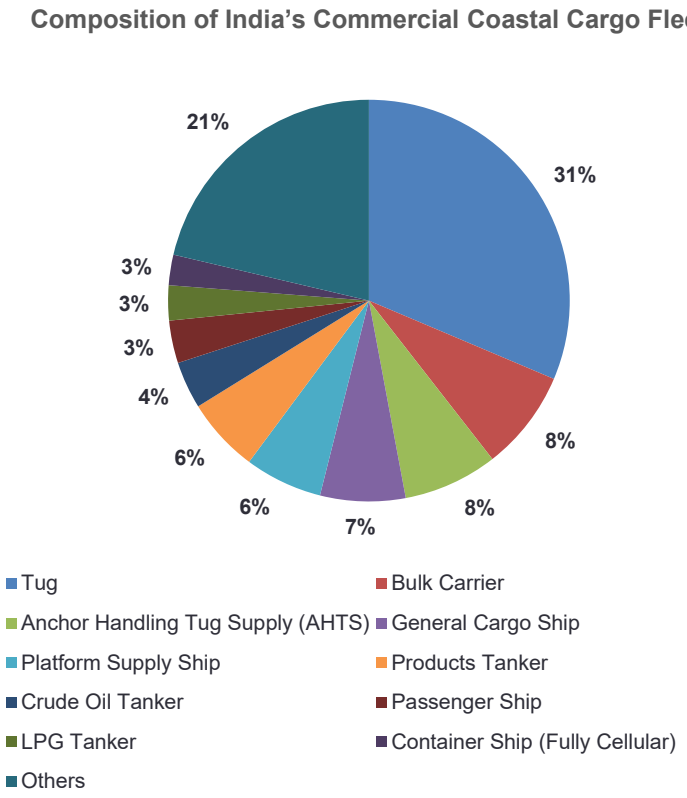


Figure 47: Composition of India's Commercial Coastal Cargo Fleet

Source: Indian Coastal Green Shipping Programme, 2023, Directorate General of Shipping

6.4. Age Profile of India's Commercial Coastal Cargo Fleet

Nearly 29% of India's commercial coastal fleet is over 20 years old, underscoring the urgency of fleet modernisation. The limited share of vessels under 10 years restricts the sector's ability to adopt greener fuels, comply with tightening emission norms, and offer reliable scheduled services. Container-capable and modern multipurpose vessels are particularly under-represented, despite policy emphasis on coastal containerisation and diversified cargo movement.

Table 61: Age Profile of India's Commercial Coastal Cargo Fleet

Vessel Age Category	Share of Fleet (%)	Approx. No. of Vessels	Operational Characteristics	Key Implications
≤ 10 years	26	208	Better fuel efficiency, higher reliability, partial compliance with newer environmental norms	Suitable for scaling coastal services and scheduled operations
10–20 years	45	369	Moderate efficiency, increasing maintenance requirements	Viable in short-to-medium term with retrofits
> 20 years	29	239	Lower fuel efficiency, higher O&M costs, limited environmental compliance	Constrains competitiveness; priority segment for fleet renewal
Total	100	816	—	—

Source: Indian Shipping Statistics, Directorate General of Shipping (2024), CSL's Capabilities in Coastal and Short-Sea Shipping, Cochin Shipyard Limited (White Paper, 2025), Industry inputs and fleet assessments referenced in ADB study Promotion of Coastal Shipping in India (2019)

Note: Fleet numbers and age profile are indicative ranges, as no single consolidated, real-time public database exists for coastal-only cargo vessels. Figures are consistent across multiple authoritative sources.

6.5. Market Structure and Contracting Practices

Coastal shipping in India is predominantly driven by:

- Contract-based cargo, particularly for coal, POL, iron ore, and fertilizers, where volumes are predictable and suitable for long-term arrangements;
- Captive and semi-captive movements, linked to power plants, refineries, and industrial units;
- Limited spot-market operations, mainly for general cargo and break-bulk.

The absence of large-scale, scheduled coastal liner services—especially for containers—has constrained wider adoption by smaller shippers. Aggregation of cargo, standardisation of service offerings, and improved schedule reliability remain key challenges in expanding the coastal shipping market beyond bulk-dominated segments.

6.6. Estimation of Vessel Demand for Coastal Shipping in India

In order to assess the adequacy of Indian-flagged vessels in meeting the coastal cargo transportation requirements of the country, an analytical exercise was undertaken to estimate the vessel demand for coastal coal movement, one of the largest and most consistently traded commodities in India's coastal shipping sector.

Coal was selected as a representative commodity for this assessment given its significant share in total coastal cargo volumes, its well-defined logistics chain, and the predominance of standardised large parcel movements using bulk carriers, which allows for robust estimation of vessel requirements. Further, coal movements are characterised by relatively stable demand, mechanised handling, and limited modal substitution, making them a suitable proxy for understanding structural capacity constraints in the Indian-flag coastal fleet.

6.6.1. Estimated Vessel Demand for Coastal Coal Shipping (Annual)

Table 62: Estimated Vessel Demand for Coastal Coal Shipping (Annual)

Indicator	Value
Existing Vessel Demand (FY2024-25)	
Total coastal coal cargo	127 Million Tonnes (MT)
Average vessel size	60,274 DWT
Average parcel size	47,518 MT
Average voyages per vessel per year	33
Average cargo moved per vessel per year	1.57 MT
Total vessels required (system-wide)	**81 vessels**
Indian-flag large bulk carriers	**22 vessels**
Foreign-flag vessels (under cabotage licence)	**59 vessels**
Indian-flag share of coastal coal cargo	27%
Foreign-flag share of coastal coal cargo	73%
Projected Vessel Demand for 2030	
Projected Coastal Coal Cargo	200 – 220 Million Tonnes (MT)
Projected Vessel Demand (system wide)	**127-140 vessels**

6.6.2. Input Data and Assumptions for vessel demand estimation

The estimation has been carried out specifically for coal cargo moved through coastal shipping, based on the following input data:

- The total coastal coal cargo handled during the year is 127 Million Tonnes, comprising 77 MT at Major Ports and 50 MT at Non-Major Ports. Coal movement through coastal shipping is dominated by large bulk carriers, primarily serving power sector and industrial consumers.
- The average vessel size deployed for coastal coal movement is 60,274 DWT, and the average parcel size per voyage is 47,518 MT, indicating the predominance of Panamax or near-Panamax class vessels rather than small coastal bulkers.
- For vessel operations, an average of 330 effective operating days per year has been assumed, accounting for maintenance and off-hire. The average round voyage cycle time has been taken as 10 days, comprising sailing time, loading, discharge, and reasonable allowance for waiting and port-related delays at mechanised coal terminals and power plant berths. Based on this, each vessel is assumed to complete 33 voyages per year.
- Indian-flag fleet availability has been assessed using the latest coastal shipping fleet data, which indicates 66 Indian-flag bulk carriers. However, only vessels of 50,000 DWT and above are considered suitable for handling current average coastal coal parcel sizes. On this basis, it has been conservatively assessed that approximately 22 Indian-flag bulk carriers are realistically deployable for this trade.

6.6.3. Methodology Adopted for Estimation

The estimation follows a demand-led vessel requirement approach, rather than relying solely on registered fleet numbers.

1. First, the annual cargo carrying capacity per vessel was computed by multiplying the average parcel size with the number of voyages per vessel per year, resulting in an average annual carrying capacity of approximately 1.57 Million Tonnes per vessel.
2. Second, the total number of vessels required system-wide was estimated by dividing the total coastal coal cargo (127 MT) by the annual carrying capacity per vessel, which yields a requirement of approximately 81 bulk carriers per year to service the entire coastal coal demand.
3. Third, the Indian-flag contribution was estimated by applying the same productivity norms to the subset of Indian-flag bulk carriers that are of adequate size for present-day coal parcels. The resulting Indian-flag carrying capacity is estimated at approximately 34–35 MT per year, equivalent to around 27% of total coastal coal cargo.
4. Finally, the balance cargo, amounting to approximately 92–93 MT per year, is inferred to be handled by foreign-flag bulk carriers operating under cabotage relaxations or specific licences, translating to a requirement of around 59 foreign-flag vessels annually.

The same methodology has been adopted for projected vessel demand for 2030 as well, considering coastal cargo growth of 200-220 MT by 2030.

6.7. Key Issues and Interventions

One of the key issues highlighted by the stakeholders with coastal shipping vessels is the limitations of vessel availability. The key issues behind limited vessel availability are as follows:

6.7.1. Dependence on Foreign Flagged Vessels (especially for Container and RoRo)

The Indian coastal shipping vessels, especially container vessels and RoRo vessels have an overdependence on foreign flagged vessels (licensed to operate in India for coastal movements). A similar dependency lies in the EXIM trade from Indian ports (both major and non-major). This dependency leads to Indian shipping's exposure to vulnerability of global supply chains. Any disruption in the international maritime logistics also directly affect the EXIM as well as coastal trade in India due to this dependency.

Bharat Container Shipping Liner (BCSL)

In order to overcome this dependency, India's first national container shipping carrier named Bharat Container Shipping Line has been launched.

- The Bharat Container Shipping Line is a Joint Venture between Shipping Corporation of India (SCI) responsible for ships, operations, chartering and the Container Corporation of India (CONCOR) responsible for containers and inland logistics.
- BCSL's initial rollout is backed by approximately USD 6.9 billion of investment, including support from the Maritime Development Fund that will deploy 50 to 100 container ships, operating on PPP model for trade to and from India.
- However, the primary focus of BCSL is EXIM movements, initial to south Asia and middle east and later to Europe, Africa and the Americans.
- The BCSL as initiative does not focus on coastal shipping yet and thus, does not cater to the key issue of vessel unavailability for Indian coastal movements.

Potential Interventions

Partnership with Cochin Shipyard Limited for Coastal Vessels

Considering the past experience of Cochin Shipyard Limited (CSL) in building ships for coastal movements in India, CSL's expertise may be leveraged for manufacturing of coastal vessels by BCSL. This can accelerate the fleet expansion of BCSL and reduce the dependence on the procurement of foreign built ships.

CSL has technical capabilities and a long-standing experience of designing and constructing ship and other types of vessels in India. The following table indicates number of ships built and being contracted by CSL for the coastal and short-sea leg utilization.

Table 63:Status of New Coastal Vessel Orders and Deliveries under Indian Shipyards.

Sr. No.	Vessel Name	Vessels contracted	Vessels delivered till date	Type	Yard / Facility
1	7000 DWT Eco Freighter	8	1	General Cargo Vessel (Multi-purpose vessel)	CSL
2	8000 DWT Mini General Cargo Vessel	4	4	Bulk Carrier	CSL
3	6300 DWT General Cargo Vessel	8	0	General Cargo Vessel (Multi-purpose vessel)	UCSL
4	3800 DWT General Cargo Vessel	6	1	General Cargo Vessel (Multi-purpose vessel)	UCSL
5	9000 DWT General Cargo Vessel	Under Discussion	-	General Cargo Vessel (Multi-purpose vessel)	UCSL/CSL
6	Zero – Emission Feeder Container Vessel	2	0	Cellular Container Vessel	CSL
7	2200 DWT Multi-purpose Vessel	1	0	General Cargo Vessel (Multi-purpose vessel)	HCSL

Source: White Paper, Cochin Shipyard Ltd., Dec 2025

BSCL could also venture into Coastal RoRo Cargo

As discussed earlier, key coastal shipping routes between major automobile manufacturing clusters of southern and western India have a high potential for coastal RoRo movements, reducing the existing load on road and rail-based movements of passenger cars.

Coastal legs between Chennai port / Kamarajar port and Mumbai port / JNPA, between Chennai port / Kamarajar and Pipavav / Mundra / Kandla port, between Mundra / Kandla and Mumbai port / JNPA / Cochin port, etc. are the key routes for automobile movements between Sriperumbudur in Tamil Nadu, Chakhan in Pune, Sanand, Gujarat and Gurugram, Haryana.

By acting as a neutral national carrier, BSCL can aggregate automobile volumes across OEMs, contract or commission purpose-built RoRo vessels, and provide scheduled, reliable services on key east–west coastal corridors.

This would de-risk initial operations, catalyse private participation, and enable modal shift from road and rail to coastal shipping delivering lower logistics costs, reduced congestion, and emissions benefits, while creating a stable demand base that justifies investment in dedicated RoRo terminals and vessels over the medium term.

Enable targeted financial support through existing shipbuilding schemes

The development of a dedicated coastal vessel fleet under BCSL can be supported through exclusive or ring-fenced funding for coastal and short-sea vessels under existing schemes such as **Shipbuilding Financial Assistance Scheme (SBFAS), Shipbuilding Development Scheme (SbDS) and the Maritime Development Fund (MDF).**

Preferential access to these instruments for Indian-built coastal vessels would improve project bankability, lower capital costs for operators, and directly link coastal shipping growth with domestic shipbuilding capacity creation.

Promote domestic shipbuilding and Atmanirbhar Bharat Objectives

Expanding BCSL's mandate to include coastal and short-sea vessels, particularly container feeders, RoRo and multipurpose vessels, would create assured domestic demand for Indian shipyards such as Cochin Shipyard Limited (CSL), UCSL and HCSL.

This would accelerate series construction of standardized coastal vessel designs, strengthen the indigenous shipbuilding ecosystem, support employment and vendor development, and reduce long-term dependence on foreign-built vessels for India's domestic maritime trade.

6.7.2. Underutilization of Foreign Vessels during Coastal Runs

While foreign-flag vessels are already permitted to undertake coastal runs under cabotage relaxations (subject to approvals for specific cargo types), current practices largely treat EXIM and coastal cargo as mutually exclusive during a voyage. This results in sub-optimal vessel utilisation, empty slots on coastal legs, and higher unit logistics costs for domestic cargo, especially in containerised and RoRo movements where service regularity and scale are critical.

Allow Co-loading of EXIM and Coastal Cargo on Foreign Vessels during Coastal Runs

Permitting co-loading of EXIM and coastal cargo on the same foreign vessel during its coastal leg would significantly improve vessel utilisation and service viability without requiring immediate addition of new tonnage.

For container shipping, this would allow domestic containers to be moved on otherwise under-utilised feeder or mainline vessels repositioning between Indian ports, thereby improving frequency, reducing freight rates, and supporting coastal containerisation.

In the case of RoRo and project cargo, co-loading would enable movement of domestic automobiles, machinery and over-dimensional cargo alongside EXIM units, helping overcome the current "thin

market" problem that discourages operators from deploying dedicated coastal RoRo or heavy-lift vessels.

This relaxation may be positioned explicitly as a transitional, time-bound measure to support market development until adequate indigenous capacity is created. As India moves towards developing assured, scheduled coastal container and RoRo services under Bharat Container Shipping Line (BSCL) and allied domestic operators, the reliance on foreign vessels for coastal co-loading can be progressively reduced.

Safeguards and operational considerations

The co-loading arrangement can be implemented with appropriate safeguards to ensure customs control, cargo segregation, and traceability, such as separate manifests for EXIM and coastal cargo, physical or virtual segregation onboard, and clearly defined loading/unloading sequences at ports. Since foreign vessels are already operating under customs and port clearance regimes, this change would largely be procedural rather than infrastructural in nature.

6.7.3. Berth availability for emergency repair of coastal vessels

Availability of ship-repair infrastructure, particularly for emergency repairs, has not kept pace with the growth of the coastal fleet. A review of Major Port annual reports, Ministry strategy documents (MIV-2030 and MAKV-2047), and ship-repair sector studies indicates that dedicated ship-repair berths, dry docks, or ship lifts are absent in most Major Ports. Emergency repair capability is largely concentrated on the West Coast, primarily around Cochin Shipyard Limited (CSL), with limited and uneven access on the East and South Coasts.

Policy documents such as MIV-2030 explicitly acknowledge this constraint by permitting exceptions for emergency repairs when domestic capacity is unavailable, while MAKV-2047 recommends development of regional ship-repair clusters to address capacity and geographic gaps. The absence of proximate repair berths increases vessel downtime, disrupts service schedules, and undermines the reliability and competitiveness of coastal shipping services.

Key issues highlighted during stakeholder consultations with coastal vessel operators, shipping lines, and port users:

- Non-availability of dedicated berths for emergency repairs at most Major Ports handling coastal cargo.
- In the event of machinery failure, hull damage, or class-mandated emergency works, coastal vessels are often required to:
    - wait for berth availability at cargo berths (subject to commercial priority), or
    - divert to distant repair yards, primarily on the West Coast.
- Smaller coastal vessels, operating on tight schedules and thin margins, are disproportionately affected, as even short repair delays can render services commercially unviable.
- Ports with high coastal cargo volumes (coal, cement, fertilizers, steel, POL) do not offer assured or ring-fenced repair access, leading to ad-hoc arrangements and operational uncertainty.

Industry stakeholders emphasised that the issue is not only the absence of full-scale dry docks, but also the lack of designated repair berths with utilities, access to riding squads, and streamlined port and customs procedures for emergency works.

Designate "Emergency Ship Repair Berths for Coastal Vessels" at select Major Ports.

These berths may be multi-purpose in nature but should provide priority access for coastal vessels requiring emergency repairs, and may be supported by SOPs for rapid permissions, customs facilitation, and safety clearances.

Encourage PPP or port-led development of basic repair infrastructure (utilities, workshops, crane access, riding squad facilitation) without necessarily creating full dry-dock facilities at every port.

Table 64:Locations for New Repair Berths

Recommended Locations for New Repair Berths	
Port	**Rationale**
East Coast – Visakhapatnam Port Authority (VPA)	Strategic position on the East Coast, catering to coal, steel, fertilizer, and coastal POL movements. Proximity to Hindustan Shipyard Limited (HSL) provides an ecosystem for skilled manpower and technical support. Acts as a natural repair hub for vessels operating along the Odisha–Andhra–Tamil Nadu coastal corridor.
South Coast – V.O. Chidambaranar Port Authority (VOCPA)	Key node for coastal movement of coal, cement, fertilizers, containers, and project cargo. Currently lacks dedicated repair berths despite regular coastal vessel calls. Well placed to serve the southern coastal circuit, reducing dependence on West Coast diversion and improving service reliability.
VOCPA – Inner harbour has been identified for setting up a ship repair and ship building Cluster.	

Leveraging Maritime Development Fund (MDF) for establishing dedicated ship repair facilities.

Maritime Development Fund (MDF) provides a flexible and sector agnostic financing framework that can be effectively leveraged for the development of ship-repair and emergency repair facilities at Major Ports. Given that ship repair constitutes a core maritime service and a revenue generating port linked infrastructure asset, projects such as dedicated repair berths, ship lifts, floating docks, and associated workshops are well aligned with the objectives of MDF.

Leveraging MDF support for establishing dedicated ship repair facilities for coastal vessels at Visakhapatnam Port Authority and V.O. Chidambaranar Port Authority would help bridge a critical infrastructure gap on the East and South Coasts, reduce vessel downtime, improve service reliability, and strengthen the overall competitiveness of India's coastal shipping ecosystem.

Provide priority access to coastal vessels at existing port repair facilities, as an alternative to developing new emergency repair berths.

These can serve as a practical alternative to developing new emergency repair berths. By allowing coastal vessels to receive faster berthing and repair support during breakdowns or emergencies, ports can reduce vessel downtime and turnaround time, avoid service disruptions, and improve schedule reliability.

07

Integration between Coastal Shipping and Inland Water Transport (IWT)

7. Integration between Coastal Shipping and Inland Water Transport (IWT)

7.1. Overview of the Inland Water Transport market in India and its contribution to existing linkage with coastal shipping segment

Inland water transport (IWT) sector in India has significant potential to complement coastal shipping for feeder and evacuation as against road and rail. Currently, the IWT sector's traffic volume stands at 146 million MT in FY-25, witnessing growth at a CAGR of approximately 15% in the last five financial years, wherein the contribution of cargo is over 90% by volume. This growth has been achieved through continued focus and investment in the IWT sector through policy interventions, infrastructure and service development, and operationalization of waterways which have been undertaken by the Inland Waterways Authority of India (IWAI). Below is a snapshot of the traffic growth experienced in the last five financial years.

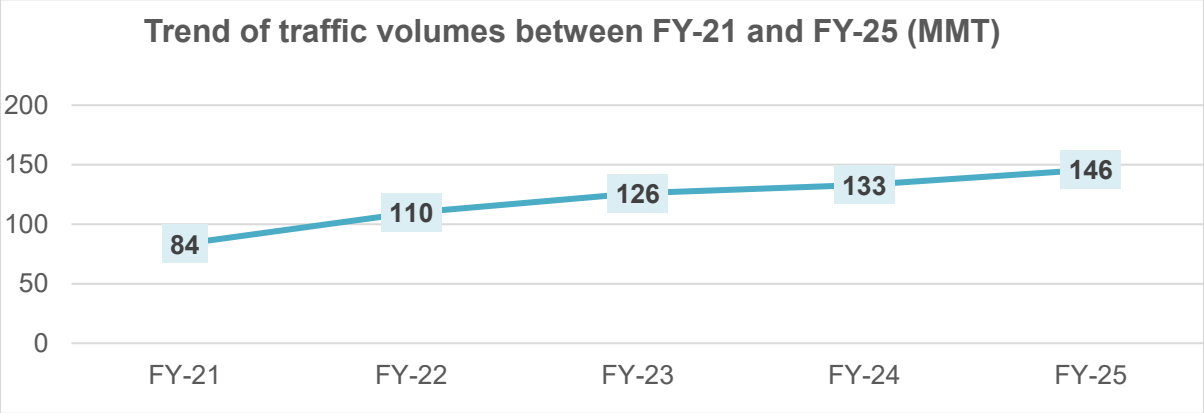


Figure 48: Trend of traffic volumes between FY-21 and FY-25 (MMT)

By concentrating its efforts on operationalization of waterways, IWAI currently has 32 operational national waterways which includes 29 being operational for cargo movement. Below is a detailed list of national waterways that have been gradually operational since 2013-14.

Table 65: India's Operational National Waterways (2013–14 to 2025–26)

Sl. #	NW No.	Inland Waterways Name	Cargo	River Cruise	Pax	Operational length (km)
Operational Waterways in 2013-14						
1	NW-1	Ganga-Bhagirathi-Hooghly River System (Haldia-Allahabad)	ü	ü	ü	1,620
2	NW-2	Brahmaputra River (Dhubri-Sadiya)	ü	ü	ü	891
3	NW-3	West Coast Canal	ü	ü	ü	205
4	NW-10	Amba River	ü		ü	45
5	NW-83	Rajpuri Creek	ü		ü	31
6	NW-85	Revadanda Creek-Kundalika River System	ü			31
7	NW-91	Shastri River - Jaigad Creek System	ü		ü	48
8	NW-68	Mandovi River	ü	ü	ü	41
9	NW-111	Zuari River	ü		ü	50

Sl. #	NW No.	Inland Waterways Name	Cargo	River Cruise	Pax	Operational length (km)
Total Length 2013-14						**2,962**
Operational Waterways in 2017-18						
10	NW-73	Narmada River	ü	ü		226
11	NW-100	Tapi River	ü		ü	436
Total Length 2017-18						**3,624**
Operational Waterways in 2018-19						
12	NW-4	Krishna Godavari River Systems	ü	ü	ü	82
13	NW-97	Sunderbans Waterway	ü	ü	ü	172
Total Length 2018-19						**3,878**
Operational Waterways in 2019-20						
14	NW-16	Barak River	ü		ü	121
15	NW-44	Ichamati River	ü		ü	63
16	NW-94	Sone River	ü			141
Total Length 2019-20						**4,203**
Operational Waterways in 2020-21						
17	NW-86	Rupnarayan River	ü		ü	72
Total Length 2020-21						**4,275**
Operational Waterways in 2021-22						
18	NW-5	East Coast Canal And Matai River/Brahmani-Kharsua-Dhamra Rivers/Mahanadi Delta Rivers	ü	ü	ü	233
19	NW-64	Mahanadi River	ü		ü	98
Total Length 2021-22						**4,606**
Operational Waterways in 2022-23						
20	NW-23	Budha Balanga	ü		ü	56
21	NW-8	Alappuzha-Changanassery Canal	ü	ü	ü	29
22	NW-9	Alappuzha-Kottayam – Athirampuzha Canal	ü	ü	ü	40
23	NW-14	Baitarni River	ü	ü	ü	48
24	NW-31	Dhansiri/Chathe	ü			114
Total Length 2022-23						**4,894**
Operational Waterways in 2024-25						
25	NW-48	Jawai-Luni-Rann Of Kutch River	ü			34

Sl. #	NW No.	Inland Waterways Name	Cargo	River Cruise	Pax	Operational length (km)
26	NW-53	(Kalyan-Thane-Mumbai Waterway, Vasai Creek And Ulhas River)	ü		ü	68
Total Length 2024-25						**4,996**
Operational Waterways in 2025-26						
27	NW-27	Cumberjua River	ü	ü	ü	17
28	NW-47	Jalangi River	ü		ü	84
29	NW-87	Sabarmati River		ü		34
30	NW-57	Kopili River	ü			6
31	NW-110	Yamuna River		ü		7
32	NW-40	Ghaghra River		ü		12
Total Length 2025-26 (Aug)						**5,155**

Source: Inland Waterways Authority of India

Coastal traffic is majorly handled on 14 of the 29 operational national waterways which are operational for cargo movement. The below diagram shows the 14 national waterways that have direct port linkages along with the major commodities that are moving along the coasts.

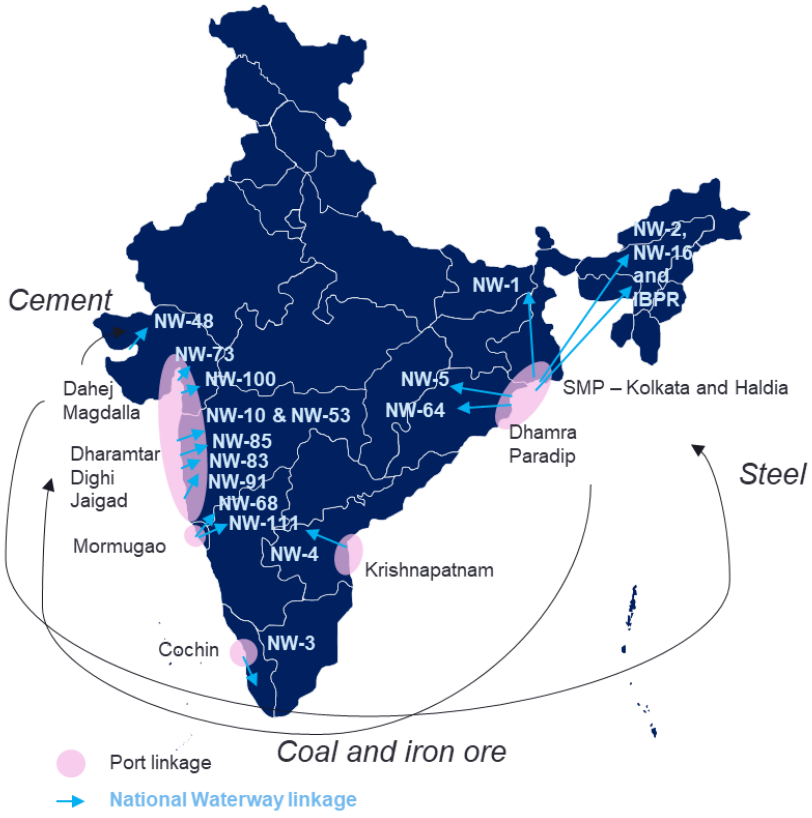


Figure 49: Strategic integration of National Waterways with coastal ports enables multimodal movement of coal, iron ore, cement, and steel across India

In terms of the voyage-wise characteristics of IWT traffic, the four broad segments are Coastal traffic, EXIM traffic, traffic on the Indo-Bangladesh Protocol route, and traffic within inland waters. Coastal traffic typically forms approximately 25-30% of the total IWT sector traffic volume currently handled on the operational national waterways. Below is a snapshot of the contribution of traffic volumes from the different traffic segments.

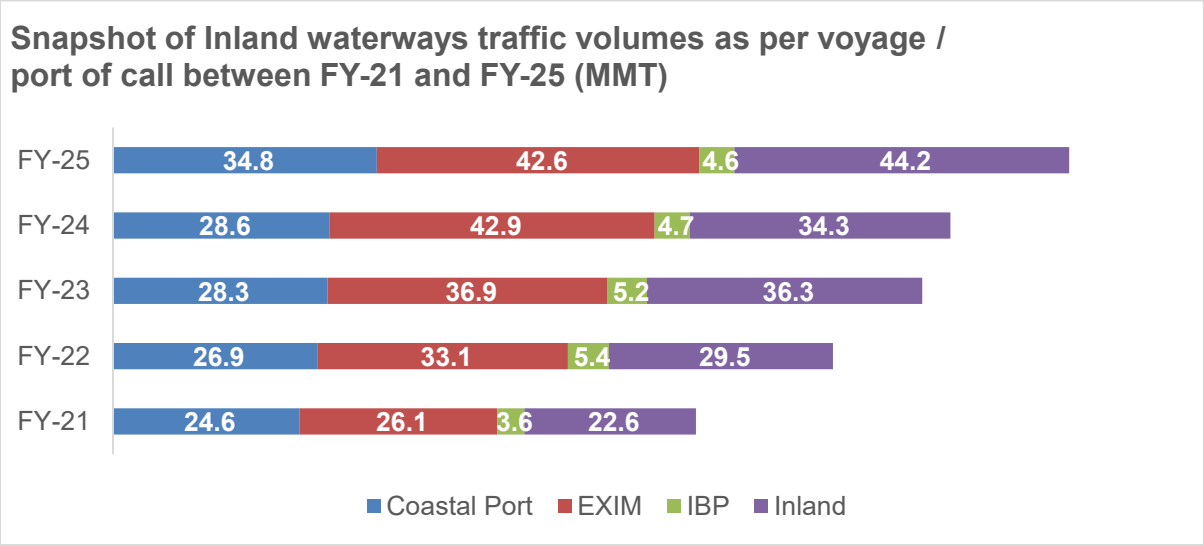


Figure 50: Snapshot of Inland waterways traffic volumes as per voyage / port of call between FY-21 and FY-25 (MMT)

Source: Study Team Analyses

7.2. Assessment of coastal traffic handled by the national waterways

Analysis of the traffic data recorded by the Inland Waterways Authority of India (IWAI) indicates that the following national waterways account for the maximum volume of coastal traffic handled by the National Waterways. Below is a year-on-year coastal traffic volumes handled across major national waterways.

Table 66:Assessment of coastal traffic handled by the national waterways

	Coastal Traffic Volume (in metric tonne)				
National Waterway	2020-21	2021-2022	2022-23	2023-24	2024-25
NW-100	1,38,62,362	1,70,94,327	1,54,45,354	1,67,35,846	1,83,93,996
NW-10	97,88,153	68,70,572	69,83,742	67,69,553	66,48,507
NW-91	4,93,393	24,80,002	53,64,618	42,88,953	38,08,503
NW-53					25,44,787
NW-48					24,02,067
NW-85	3,23,550	1,76,340	3,12,810	5,89,652	5,77,924
NW-4		5,083	1,56,300	1,00,450	2,50,910
NW-83	1,01,421			92,613	1,37,420
NW-3	1,846				1,519
NW-73			25,259		1,279
NW-2	1,755				

Source: Inland Waterways Authority of India

Key highlights of the coastal traffic handled on the above-mentioned national waterways are:

- Traffic handled on NW-100 is mostly characterized by the coastal cargo traffic handled by the Magdalla Port and private companies such as Ultratech and Ambuja
- NW-10 and NW-91 account for substantial iron ore handling for the captive requirements of JSW Steel Dolvi Works
- NW-48 has recently been operationalized under IWAI and is currently handling cement as the only commodity between Jakhau and Sangipuram
- In addition to the above mentioned major national waterways handling coastal traffic, other few waterways such as NW-1, NW-68 and NW-111 have additional potential to cater to future transportation requirements particularly to link the Kolkata Port and the Mormugao Port.

A deeper assessment of the major commodities under the coastal traffic that are currently moving on the national waterways are indicated in the following table.

Table 67:Commodity-wise cargo mix trend across FY 2021–FY 2025, highlighting dominance of iron ore, cement, coal, and steel-related cargo

Commodity	FY-21	FY-22	FY-23	FY-24	FY-25
Iron Ore	1,35,28,649	1,45,46,577	1,31,46,817	1,25,37,280	1,24,81,650
Iron Ore Fines	44,16,372	74,78,367	89,24,314	90,40,226	69,60,688
Cement	7,77,180	10,76,124	9,15,635	9,10,993	35,89,234
Clinker	7,04,891	7,26,264	8,20,952	9,88,773	32,60,847
Iron Ore Lumps	6,20,120	7,16,254	14,49,246	14,22,718	18,41,261
Coal	16,44,496	5,63,017	3,75,293	12,70,132	16,90,698
Steel Cargo	14,53,658	7,41,547	4,52,734	6,39,141	5,26,712
HR Coils		4,35,912	9,46,337	10,85,915	10,54,911
Truck					18,15,380
Iron Ore Pellets	71,432	20,070	6,23,600	1,67,140	1,57,589
Coking Coal	8,39,692				
Slag		19,515	50,076		3,99,270
Machinery	77,930	92,510	1,63,764	73,230	29,657
Car					3,84,607
Others	1,62,950	1,01,407			91,500
Ethylene	81,256	68,400	79,203	64,000	46,461
Mill Scale	37,980	97,952	46,100	62,900	58,000
Bentonite	14,255	28,577	54,390	98,225	72,700
Coke	21,602	1,03,882			57,750
Passengers					1,17,448
Molasses			76,764		

Commodity	FY-21	FY-22	FY-23	FY-24	FY-25
Quartzite	4,000	53,700	15,589		
Crude Palm Oil (CPO)		36,406		33,133	
Bentonite Lumps				33,214	35,200
Propylene	36,336	7,075	1,200	6,463	16,663
Limestone	13,000			54,000	
Steam Coal	9,909				55,650
Sugar			31,990	19,375	
Other Ore			48,078		
Liquefied Petroleum Gas (LPG)			22,482	18,594	
CSFO		5,083		29,326	
Rock Phosphate					26,609
VCM	4,314	5,594	4,996	2,965	7,752
Liquid effluent	22,000				
SILICA SAND			16,900		
Coal Fines			14,985		
Refined, Bleached & Deodorised Palm Oil (RBD)				12,990	
Caustic Soda	11,984				
Project Cargo		415			11,506
Ethyl Alcohol	10,834				
Butene-1		5,320	2,031	957	
Bitumen	3,198			3,731	
Butane				4,991	
Cement Clinker		2,907			
Billets	2,596				
Butadiene			2,557		
OLIFLUX			2,050		
Fuel	1,846				
Motorcycle					1,841
Container				385	329

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Iron Ore, Steel, Coal, Cement, Clinker, Machineries (including project cargo) are some of the major coastal traffic commodities which are handled on the waterways. In addition, liquid bulk goods such as chemicals and POL which are transported to and from majorly the Magdalla port also accounts for a substantial volume of the overall coastal traffic handled by the national waterways.

7.3. Exploring the scope for integrating inland water transport with coastal shipping

7.3.1. Market Considerations

The review of the overall IWT market and assessment of the coastal traffic within the IWT market indicated the following key points for consideration while exploring the scope for integrating inland water transport with coastal shipping.

- Magdalla is the largest originating point for coastal traffic bound to ports, captive ports, and inland water transport jetties / river port anchorage points. Diverse segment of cargo comprising bulk, break bulk and liquid bulk goods such as Coke, HR Coils, Iron Ore Fines, Machinery, Mill Scale, Steel, Cement, Clinker, chemicals and POL are being handled at Magdalla. The presence of the industrial areas within the hinterland such as Surat, Vapi, Bharuch and Jafrabad makes it suitable for handling significant volumes of coastal cargo for exports and indigenous consumption.
- The ports Dharamtar and Jaigad, which are operated by JSW, handle substantial volumes of Coal and Iron Ore for the captive usage of JSW Steel. The Coal and Iron Ore are majorly sourced from Dhamra and Paradip ports in Odisha and Vizag in Andhra Pradesh. Feedback from stakeholders at the Jaigad port has suggested that the port is also expected to increase its cargo handling capacity from its existing ~55 MTPA to ~80 MTPA along with diversification of commodities, such as salt from the coasts of the Kutch region of Gujarat.
- Paradip, Dhamra and Mormugao are the major consolidators of iron ore for distribution to steel plants. In addition, Paradip and Dhamra also handle substantial volume of coal for thermal power plants, steel plants and other captive power plants under heavy industries.
- In addition to the above, below are some of the other considerations based on consultation with industry stakeholders:
    - Linking Haldia with Dhamra and Paradip will enable the transportation of iron ore and coal to the hinterlands of West Bengal, Jharkhand, Bihar and Uttar Pradesh. Further, transportation of coal may also be looked at in the similar circuit by linking Talcher for easing the congestion on the existing railway networks.
    - Extension of the Jalvahak - Cargo Promotion Scheme to link inland waterways traffic with coastal traffic, particularly linking Haldia and Kolkata with coastal shipping routes
    - Timely vessels availability and seamless last mile connectivity including adequate cargo handling infrastructure at the terminals.

7.3.2. Potential IWT linkages with Coastal Shipping

In view of the market dynamics of inland water transport and the scope for larger integration with coastal shipping, below are some of the potential routes that are derived from the existing market size of coastal traffic within inland water transport and the market considerations for integrating inland water transport with coastal shipping.

Table 68:Illustrative commodity-wise coastal–inland waterway logistics corridors linking hinterlands, ports, and National Waterways across India

Commodity	Origin Hinterland	Origin National Waterway	Origin Port	Destination Port	Destination National Waterway	Destination Hinterland
Iron ore, pellets etc.	Keonjhar–Barbil	Brahmani–Baitarani system	Dhamra / Paradip	Haldia	NW-1	Eastern Uttar Pradesh, Bihar,

Commodity	Origin Hinterland	Origin National Waterway	Origin Port	Destination Port	Destination National Waterway	Destination Hinterland
	mining belt (Odisha)	(NW-5) / Mahanadi (NW-64)				Jharkhand steel clusters
Coal	Talcher	Brahmani River (NW-5) / NW-64	Paradip	Haldia	NW-1	Domestic coal requirement for NTPC Barh, Kahalgaon, Barauni (Bihar) and NTPC Rihand, Singrauli, Anpara, Obra power stations in Uttar Pradesh etc.
Coal	Indonesia / Australia	–	Ports in Indonesia / Australia	Haldia	NW-1	Imported coal requirement for power, cement, and industrial consumers in West Bengal, Bihar, Jharkhand, and eastern Uttar Pradesh, with Haldia serving as the primary import gateway
Coal	South Africa	–	Mundra	Haldia	NW-1	Imported coal requirement for power, cement, and industrial consumers in West Bengal, Bihar, Jharkhand, and eastern Uttar Pradesh, with Haldia serving as the primary import gateway
Coal	Talcher and IB Valley	Brahmani River (NW-5) / NW-64	Paradip	Ennore (Kamarajar)	–	Tamil Nadu power stations such as Ennore (Kamarajar), North Chennai, Tuticorin, and Mettur etc.
Coal	Haldia hinterlands	NW-1	Haldia	Krishnapatnam	NW-4 (Krishna)	Simhadri, Dr. NTTPS (Vijayawada), Krishnapatnam, and Kothagudem–Ramagundam complex etc.
Limestone	Odisha	NW-5	Gopalpur	Haldia	NW-1	Cement and grinding units in eastern Uttar Pradesh

Commodity	Origin Hinterland	Origin National Waterway	Origin Port	Destination Port	Destination National Waterway	Destination Hinterland
						(Mirzapur–Sonbhadra–Chandauli belt) and Bihar (Bhabua–Rohtas–Patna region) etc.
DAP / NPK	West Asia	–	Kandla	Haldia	NW-1	West Bengal, Bihar, Jharkhand, and eastern Uttar Pradesh
DAP / NPK	Kandla	–	Kandla	Kakinada	NW-4	Andhra Pradesh and Telangana agricultural belts etc.
Urea	Andra Pradesh and Telangana	NW-4	Kakinada	Kolkata	NW-16	Northeast India
Rice	Odisha	NW-5 / NW-64	Paradip	Kolkata, Mumbai, Kochi	NW-2 / NW-16	Northeast India, Western India and Kerala
Cement	Andra Pradesh	NW-4	Krishnapatnam	Haldia	NW-1	Haldia industrial belt (Haldia, Durgachak, Mecheda, Purba Medinipur) supported by NW-1 connectivity for supply from Bihar, Jharkhand, and Eastern UP
Cement	Gujarat	–	Pipavav	Haldia	NW-1	Haldia industrial belt (Haldia, Durgachak, Mecheda, Purba Medinipur) supported by NW-1 connectivity for supply from Bihar, Jharkhand, and Eastern UP
Clinker	Rajasthan / Gujarat	NW-48	Mundra	Haldia	NW-1	Cement and brick clusters in Haldia, Kolaghat, Uluberia, Sankrail, Budge Budge, and

Commodity	Origin Hinterland	Origin National Waterway	Origin Port	Destination Port	Destination National Waterway	Destination Hinterland
						nearby belt (West Bengal)
Clinker	Odisha	NW-5	Dhamra	Haldia	NW-1	Cement and brick clusters in Haldia, Kolaghat, Uluberia, Sankrail, Budge Budge, and nearby belt (West Bengal)
Clinker	Tamil Nadu	–	Tuticorin	Haldia	NW-1	Cement and brick clusters in Haldia, Kolaghat, Uluberia, Sankrail, Budge Budge, and nearby belt (West Bengal)
Fly ash	NTPC Talcher	NW-5	Paradip	Haldia	NW-1	Cement and brick manufacturing clusters located in Uluberia, Sankrail, Budge Budge, Dankuni, and Kolaghat–Haldia belt (West Bengal); Barh, Mokama, Begusarai, and Munger (Bihar); and Mirzapur (Uttar Pradesh)
Fly ash	Gujarat	NW-73	Hazira	Haldia	NW-1	Cement and brick manufacturing clusters located in Uluberia, Sankrail, Budge Budge, Dankuni, and Kolaghat–Haldia belt (West Bengal); Barh, Mokama, Begusarai, and Munger (Bihar); and Mirzapur (Uttar Pradesh)
Fly ash	NTPC Kahalgaon	NW-1	Haldia	Kakinada	NW-4	Cement grinding units and RMC plants in Kakinada–Rajahmundry–Eluru belt, demand from fly ash brick clusters in East

Commodity	Origin Hinterland	Origin National Waterway	Origin Port	Destination Port	Destination National Waterway	Destination Hinterland
						and West Godavari etc.

Source: Primary Data from Major Ports

7.4. Key Interventions for IWT and Coastal Shipping Linkages

Tailored interventions would be required to realize the future potential of the envisaged inland waterways and coastal shipping linkages. Based on the commodity-wise origin and destination hinterlands that may be potentially linked by the combination of national waterways and coastal shipping networks, specific interventions may be planned around three developmental fronts, namely –

- First and last mile connectivity between the inland waterways' jetties / ports and the production / consumption point
- Cargo handling and storage infrastructure
- Deployment of cargo vessels / barges

The below matrix indicates some of the potential interventions around these developmental fronts that may be considered further.

Table 69:Priority Development Interventions to Strengthen Coastal–Inland Waterway Logistics Corridors

Developmental interventions	Potential origin-destination pairs	Remarks on interventions
First and last mile connectivity	IWT jetties / terminals on NW-1 and NW-86	Establishment of road networks to and from the jetties in West Bengal, Jharkhand, Bihar, and Uttar Pradesh
Cargo handling and storage infrastructure	NW-5 / NW-64 – Paradip and Dhamra Loading and unloading jetty on NW-4 for agri produces and fertilizers IWT jetties / terminals on NW-1, NW-2 and NW-86	Terminal infrastructure for handling and storage of coal, rice, iron ore and other break bulk cargo
Deployment of cargo vessels / barges	Paradip and Dhamra – Haldia and Kolkata, Krishnapatnam	Dedicated cargo vessels for fly ash movement, lighterage operations between coastal shipping and inland waterways

08

Green Initiatives in Coastal Shipping

8. Green Initiatives in Coastal Shipping

India has reaffirmed its commitment to global climate action by pledging at COP-26 to reduce the carbon intensity of GDP by 45% by 2030 (from 2005 levels) and to achieve net-zero emissions by 2070. Within this framework, the maritime sector is strategically critical, as it handles nearly 95% of India's trade by volume and 65–68% by value, making it indispensable to economic growth and supply-chain integration.

At the same time, the environmental implications are significant. Globally, shipping accounts for about 3% of total greenhouse gas emissions, with approximately 858 million tonnes of CO_2 emitted in 2022. As India expands its ports, coastal shipping, and inland waterways, its maritime emissions footprint could grow unless decarbonisation is systematically embedded in sectoral planning. This highlights the urgency of integrating cleaner fuels, energy-efficient operations, and green port and shipping initiatives into India's maritime growth trajectory.

8.1. Overview of the policies and thrust areas in India

8.1.1. Harit Sagar – Green Port Guidelines (2023)

The Harit Sagar – Green Port Guidelines, issued by the Ministry of Ports, Shipping and Waterways in May 2023, form the cornerstone of India's port-led decarbonization strategy and explicitly recognize coastal shipping as a low-carbon transport alternative. The guidelines mandate Major Ports to actively facilitate green coastal shipping through targeted infrastructure creation, operational reforms, and incentive mechanisms.

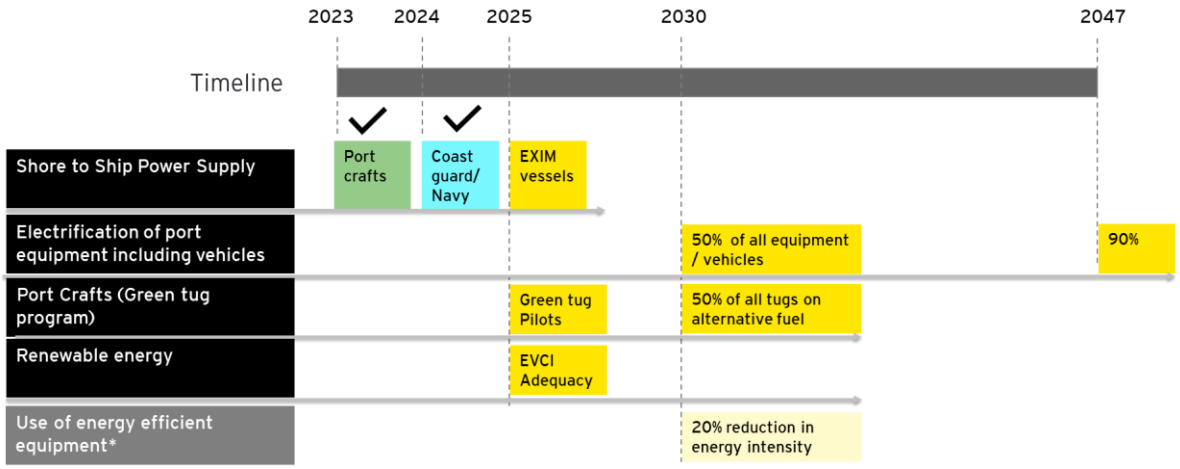

Figure 51: Phased roadmap for decarbonising port operations through shore power, electrification, green tugs, renewable energy, and energy efficiency measures.

Harit Sagar introduces quantified, time-bound decarbonization targets that directly affect coastal shipping operations. These include a reduction of more than 30% in CO_2 emissions per tonne of cargo by 2030 and more than 70% by 2047, compared to the baseline year. In addition, the guidelines specify greenhouse gas (GHG) emission reduction targets for coastal vessels of more than 10% by 2030 and more than 50% by 2047. To address emissions at berth, Harit Sagar mandates the provision of shore-to-ship power for small coastal vessels by 2024 and for EXIM vessels by 2025, alongside the introduction of port-level incentives for coastal vessels using cleaner fuels or shore power. Through these measures, Harit Sagar embeds coastal shipping firmly within India's long-term green maritime transition.

On its entirety, coastal shipping is explicitly mentioned as a focus area within Harit Sagar as an energy-efficient alternative mode of transport, capable of supporting national decarbonization objectives through modal shift, cleaner fuels, and reduced logistics intensity.

8.1.2. Shore-to-Ship Power (S2S) Roll-out for Coastal Vessels

Shore-to-Ship Power (S2S) represents one of the most direct and immediate decarbonization interventions for coastal shipping in India. Under Harit Sagar, Phase-2 shore power deployment by 2024 is explicitly targeted at small coastal vessels, recognizing their high frequency of port calls and suitability for early adoption.

Ports are required to develop the necessary electrical infrastructure, safety systems, and metering arrangements to enable vessels to switch off auxiliary engines while at berth. By eliminating at-berth emissions from diesel generators, shore power substantially reduces local air pollution and GHG emissions in port areas, delivering both climate and public health benefits.

8.1.3. Ports as "Energy Hubs" Rather Than Transit Points

The Government of India has identified green fuels as a critical pillar of maritime decarbonization, with explicit implications for coastal shipping. Policy directions mandate the establishment of green hydrogen and green ammonia bunkering facilities at all Major Ports by 2035, creating the foundational infrastructure required for fuel transition and making the Indian ports a Green Energy Hubs.

8.1.4. National Green Hydrogen Mission, (NGHM)

The Government has set an ambitious national target to build at least 5 million tonnes per annum (MMTPA) of green hydrogen production capacity by 2030, supported by about 125 GW of dedicated renewable energy capacity and significant investment to scale electrolyser manufacturing and supply chains.

In October 2025, the Ministry of New and Renewable Energy (MNRE) formally recognised three major Indian ports namely Deendayal Port Authority, V.O. Chidambaranar Port Authority, and Paradip Port Authority as Green Hydrogen Hubs under the NGHM. These hubs are intended to serve as strategic centres for integrated green hydrogen production, utilisation, storage, and future export activity, leveraging their coastal and industrial hinterland positions.

Ports like Kandla (Deendayal), Paradip, and Tuticorin (VOC) have been identified as the pilot ports for green hydrogen generation and to achieve the 5 MTPA Green Hydrogen target. These ports have been envisaged to act as the green bunkering hubs by Establishing infrastructure for Methanol and Ammonia refuelling, positioning India as a vital stop on the "Green Shipping Corridors" connecting the East to the West.

8.1.5. Green Tug Transition Programme (GTTP):

The Green Tug Transition Program (GTTP), launched in August 2024 by the Ministry of Ports, Shipping and Waterways (MoPSW). The GTTP is a critical initiative aimed at phasing out conventional diesel-powered harbor tugboats and replacing them with zero-emission or low-carbon alternatives. This transition is driven by several strategic imperatives: reducing the carbon footprint of port operations, improving air quality in port cities, fostering indigenous green shipbuilding capabilities under the "Make in India" initiative, and aligning with global decarbonization. The GTTP is structured around an ambitious, five-phase roadmap designed to systematically green India's entire harbor tug fleet by 2040. These targets are legally binding for all Major Port Authorities.

Table 70:Green Tug Transition Programme (GTTP): Phased roadmap for achieving 100% green tug operations at Indian Major Ports by 2040

GTTP Phase & Timeline	Key Targets & Mandates
Phase 1 (2024–2027)	Induction of **16 green tugs** across Major Ports.

Phase 2 (2028–2030)	**50% of the tug fleet** at all Major Ports must be green.
Phase 3 (2031–2033)	All new tugs built in India must adhere to **ASTDS-GTTP** (Advanced Sustainable Tug Design Standards).
Phase 4 (2034–2039)	Accelerated transition, with financial incentives for early adoption.
Phase 5 (By 2040)	**100% transition** to green tugs at all Indian Major Ports.

8.1.6. National Green Shipping Policy (Draft)

The National Green Shipping Policy (draft) complements Harit Sagar by extending the 2047 decarbonisation horizon from ports to the shipping sector, including coastal shipping. It aligns with India's maritime sector with IMO GHG reduction pathways, and Long-term decarbonisation with India's net-zero 2070 commitment, using 2047 as the transition anchor for ports and coastal shipping.

The policy objectives are:

- **Decarbonisation of Indian shipping**, with priority to coastal and short-sea segments where technological and operational interventions are most immediately viable.
- **Technology neutrality**, avoiding prescriptive mandates on fuels or propulsion systems, while encouraging multiple pathways such as electrification, alternative fuels, hybrid systems, and efficiency improvements.
- **Phased and just transition**, recognising the long asset life of vessels (20–30 years) and the need to protect competitiveness of Indian shipping.
- **Global alignment**, ensuring Indian-flag vessels remain compliant with evolving international norms and are not exposed to future trade or regulatory barriers.

Key Focus areas under the NGSP:

1. Green Vessels and Fleet Transition

A central focus of NGSP is fleet modernisation, particularly for the coastal segment, where vessels are smaller, older, and operate on repetitive routes. The policy encourages:

- New-build energy-efficient and alternative-fuel-ready vessels
- Retrofitting of existing vessels with efficiency technologies and OPS compatibility
- Adoption of hybrid and electric propulsion for short-sea and harbour operations

2. Alternative Fuels and Energy Transition

The policy places strong emphasis on **future fuels**, including green hydrogen, green methanol, ammonia, and biofuels, aligned with India's emerging clean energy ecosystem. Rather than mandating immediate fuel switching, NGSP promotes:

- Pilot projects and demonstrations
- Development of bunkering and safety standards
- Integration with national missions such as the green hydrogen programme

This approach allows India to build fuel supply chains in parallel with vessel readiness.

3. Port–Vessel Integration (Shore Power & Green Operations)

NGSP explicitly links vessel decarbonisation with port-side infrastructure, reinforcing the role of shore-to-ship power, green bunkering, and energy-efficient port operations. Coastal vessels—spending nearly 70% of operational time at ports—are identified as prime beneficiaries of this integration.

This creates continuity between Harit Sagar (ports) and NGSP (shipping), ensuring that investments on both sides are mutually reinforcing rather than siloed.

4. Market-Based and Financial Enablers

Recognising that shipping decarbonisation is capital-intensive, NGSP emphasises:

- Green finance and sustainability-linked lending
- Port-led incentives such as tariff rebates and priority berthing
- Public grants, blended finance, and risk-sharing mechanisms

Rather than relying solely on regulation, the policy seeks to shape market behaviour by improving project bankability and lowering cost of capital for green vessels.

5. Digitalisation and Operational Efficiency

Operational efficiency is treated as a first-order decarbonisation lever. NGSP promotes:

- Digital voyage and port-call optimisation
- Reduction of idle time and anchorage emissions
- Data-driven performance monitoring and reporting

These measures deliver immediate emissions reduction without waiting for fleet replacement.

8.2. Environmental Impact of Coastal Shipping in India

Emissions from India's coastal shipping system arise from a combination of sea-side vessel operations and land-side port and logistics activities, with sea-side sources accounting for roughly two-thirds of total emissions and land-side activities contributing the remaining one-third. Unlike deep-sea shipping, India's coastal operations are characterised by short voyages and long port stays, which significantly elevates the importance of port-side and auxiliary emissions in the overall emissions profile.

8.2.1. Sea-side Emissions from Vessels and Port Crafts

Sea-side emissions constitute the dominant component of coastal shipping emissions in India, contributing approximately 60–70% of total system-wide emissions. These emissions arise both from vessel propulsion during coastal voyages and from auxiliary and service-vessel operations within port limits.

Emissions from Coastal Cargo Vessels

Coastal cargo vessels represent the largest single emission source within the sea-side segment, contributing about 45–55% of total coastal shipping emissions. Analysis of 816 active coastal vessels shows that tankers, container vessels, and bulk carriers alone account for over half of the sector's total CO_2 emissions. A defining feature of Indian coastal shipping is that vessels spend nearly 70% of their operational time at ports, resulting in a relatively high contribution from auxiliary engines used for pumping, cargo handling, lighting, and hotel loads. Consequently, auxiliary engines account for roughly 40–45% of vessel emissions, while main engines during sailing contribute the remaining 55–60%.

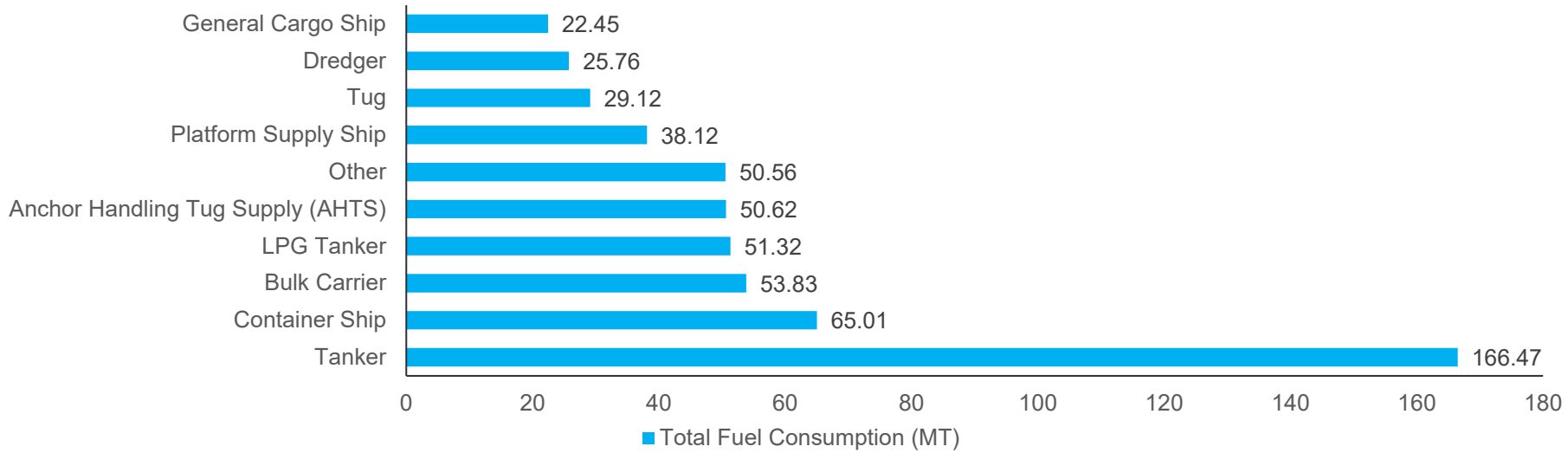

Figure 52: Total fuel consumption by the type of coastal vessel in India (source: DG shipping and DNV reports)

Emissions from Port Crafts and Service Vessels

Port crafts, including tugs, pilot boats, dredgers, and other service vessels, form a numerically large segment of the Indian coastal fleet and contribute approximately 15–20% of total coastal shipping emissions. Although smaller in size, these vessels operate on continuous high-power duty cycles within port waters, resulting in disproportionately high emissions intensity, particularly for NOx and particulate matter. Emission concentrations from port crafts are especially pronounced around major hubs such as Mumbai and ports in Gujarat.

Table 71: Total Emissions of Major Coastal Vessels in India by Vessel Type (in tonnes)

Vessel Type	No. of Vessels	BC Emissions	CH_4 Emissions	CO_2 Emissions	CO Emissions	N_2O Emissions	NMVOC Emissions	NOx Emissions	OC Emissions	PM Emissions	SO_2 Emissions
Tanker	106	29	41	514759	1031	17	340	9216	82	829	1319
Container Ship	20	12	18	204354	447	6	146	4237	36	377	551
Bulk Carrier	66	9	15	166920	368	5	120	3500	30	310	451
LPG Tanker	23	9	14	163402	350	5	115	3314	28	270	417

Vessel Type	No. of Vessels	BC Emissions	CH_4 Emissions	CO_2 Emissions	CO Emissions	N_2O Emissions	NMVOC Emissions	NOx Emissions	OC Emissions	PM Emissions	SO_2 Emissions
Anchor Handling Tug Supply	62	9	15	158886	368	4	119	2203	30	60	90
Platform Supply Ship	51	7	11	119797	274	3	89	1644	22	45	68
Tug	269	5	9	92510	215	2	70	1277	18	35	52
Dredger	20	5	7	81971	167	3	55	1088	13	33	51
General Cargo Ship	56	4	6	70925	149	2	49	1029	12	28	93
Other	143	9	12	157106	300	6	100	1886	24	86	175
Total	**816**	**98**	**147**	**1730629**	**3369**	**53**	**1202**	**29215**	**296**	**2074**	**3266**

(Source: Indian coastal green shipping programme DG shipping & DNV)

Table 72: Total Emissions of Major Coastal Vessels in India by Age in tonnes

Age Group (Years)	No. of Vessels	BC	CH_4	CO_2	CO	N_2O	NMVOC	NOx	OC	PM	SO_2
0–05	102	7	10	120687	250	4	82	1597	20	52	121
06–10	127	13	21	233040	512	7	167	3710	42	206	313
11–15	203	29	45	520615	1120	15	366	9162	91	680	1046
16–20	160	28	42	492889	1044	15	342	8978	84	723	1114
21–25	98	14	20	252428	505	8	167	4143	40	338	548
26–30	59	3	4	45215	100	1	33	764	8	50	84
31–35	16	2	2	28046	60	1	20	389	5	11	18
36–40	32	2	2	28875	61	1	20	365	5	11	17
41–45	14	0	0	5828	11	0	4	66	1	2	3
46–50	5	0	0	3006	7	0	2	42	1	1	3
Total	**816**	**98**	**147**	**1730629**	**3369**	**53**	**1202**	**29215**	**296**	**2074**	**3266**

8.2.2. Land-side Emissions from Port Operations and Logistics

Land-side activities account for approximately 30–40% of emissions associated with coastal shipping, with the majority of these emissions occurring within port estates and their immediate influence zones. These emissions are critical from a local air-quality perspective due to their proximity to urban populations.

Emissions from Cargo Handling and Intra-port Transport

Cargo handling equipment and intra-port transport constitute the largest land-side emission source, contributing roughly 15–25% of total coastal shipping-related emissions. Diesel-powered RTGs, mobile cranes, reach stackers, loaders, and terminal trucks dominate this footprint.

In container and bulk terminals, these activities account for a disproportionate share of NOx and particulate matter emissions, often exceeding 60% of local port-area air pollutants, due to sustained diesel operation at low speeds. Given that 70–90% of yard equipment in Indian ports remains diesel-powered, these emissions remain significant.

Emissions from Near-port Hinterland Transport

Short-haul hinterland transport within and immediately outside port gates contributes an additional 10–15% of total emissions linked to coastal shipping. These emissions primarily arise from diesel trucking associated with cargo evacuation and gate congestion.

While coastal shipping reduces long-distance road transport, the persistence of diesel-based last-mile movements concentrates emissions spatially around ports, particularly at bulk commodity hubs handling coal, cement, and fertilisers.

8.3. Potential Interventions for Green Coastal Shipping

To transition towards a greener coastal shipping paradigm, key thrust areas have been identified such as shore-to-ship power, electrification and mechanisation of cargo handling, induction of green vessels and development of green shipping corridors.

8.3.1. Shore to ship power supply

Shore power (cold ironing / Onshore Power Supply) represents a high-impact, near-term decarbonisation measure for India's coastal fleet, as coastal services are characterised by long berth dwell times, energy-intensive onboard systems, and port operations located close to dense urban populations.

During loading and unloading, vessels rely on auxiliary engines to power cargo pumps, conveyors, cranes, HVAC, lighting, and hotel loads. Replacing diesel generation with grid electricity therefore delivers immediate reductions in CO_2, NOx, SOx, and particulate emissions at the community level.

Typical Indian coastal vessels handle 2,000–20,000 tonnes per call, consume 1.5–6 tonnes of fuel per day at berth, and require 0.4–3 MW of electrical load, making them technically well suited for shore power.

Certain cargo segments are particularly strong candidates. **Cement and bagged cargo vessels** rely on pneumatic blowers, screw conveyors, and intensive lighting during discharge, often at less-mechanised berths where ships self-generate power. Self-geared bulk carriers and coasters operating at non-mechanised jetties use onboard cranes, winches, and lighting systems that draw substantial power while handling coal, fertilisers, grain, or aggregates. Ferries and Ro-Ro vessels, with high hotel loads and frequent, repetitive calls, are also well suited to shore power or fast-charging solutions, offering both emission and noise reduction benefits.

India has already put in place a supportive policy and regulatory framework for shore power, driven by the Government of India's green port and green shipping agenda. The Directorate General of Shipping (DGS) has issued recommended technical standards and a phased implementation roadmap for Shore-to-Ship Power Supply, prioritising vessel segments and port assets where emissions benefits are highest, and integration challenges are lowest.

The rollout sequence begins with harbour craft and port-owned vessels, extends to Indian-flag coastal vessels, and subsequently covers foreign-flag vessels. Interim operational and safety guidelines aligned with IMO practices and international electrical standards have also been notified, positioning India as regulatorily "policy-ready" for large-scale shore power deployment.

Infrastructure Readiness at Indian Ports

At the port level, shore power readiness is currently uneven but progressing. Several major ports have initiated OPS infrastructure, primarily for tugs, pilot boats, dredgers, and other port crafts. Electrical substations, cable management systems, and berth-level connection points have been developed on a pilot basis at select berths. However, large-scale readiness for commercial coastal vessels remains limited.

The principal infrastructure challenges include the need for significant electrical capacity augmentation, berth-wise standardisation of voltage and frequency, and integration of metering and billing systems. Retrofitting existing berths to support simultaneous OPS connections is capital-intensive and requires careful phasing to avoid operational disruption. As a result, most ports are currently "harbour-craft-ready" rather than fully "coastal-vessel-ready."

Vessel-Side Readiness: Indian-flag Coastal Vessels

Vessel-side readiness is the most critical constraint to widespread shore power adoption in India. The Indian coastal fleet is characterised by a large number of relatively small and ageing vessels engaged in bulk, liquid, and general cargo trades. Many of these vessels were not originally designed for OPS compatibility and require retrofitting of switchboards, transformers or converters, cabling, sockets, protection systems, and synchronisation equipment.

Based on the consultation with industry stakeholders, to retrofit existing vessel for shore power it requires dry docking of up to 4 months. And given the issues related to vessel availability this poses a logistical challenge.

Despite these constraints, Indian-flag coastal vessels are prioritised under the national rollout strategy. This prioritisation reflects both policy intent and practical considerations, as Indian-flag vessels are more amenable to regulatory mandates, incentive-based retrofitting schemes, and standardised compliance frameworks. Over the medium term, Indian coastal vessels calling regularly at high-traffic berths are expected to form the core user base for shore power in India.

DGS Circular No. 09 of 2025 explicitly covers coastal vessels by assigning them to Phase-2 OPS rollout and mandating IEC/IEEE 80005-3 (LVSC) standards, with power capacity up to 1 MVA, standardized connectors, SOP-based operations, and eligibility for carbon certification.

Future manufacturing of coastal vessels may be mandated for adoption for the above standards necessarily.

Foreign-flag Vessels in Coastal Shipping and Shore Power Readiness

Foreign-flag vessels participate in India's coastal shipping primarily due to cabotage relaxations and licensing provisions applicable to specific cargo segments, most notably container transshipment-related coastal legs and cases where suitable Indian tonnage is unavailable. While such vessels may already be OPS-compatible due to stricter environmental norms at international ports, their effective use of shore power in India remains limited.

From a readiness perspective, foreign-flag vessels face two key constraints.

- First, shore power infrastructure at Indian ports is not yet uniformly aligned with international OPS standards used by global fleets.
- Second, the phased national roadmap places foreign-flag vessels in a later implementation stage, reflecting both sovereignty considerations and the need to first stabilise OPS operations for domestic coastal trade.

Consequently, shore power usage by foreign-flag vessels in India is expected to remain selective in the near term.

Deployment models for store to ship power supply

Table 73:Global Shore Power (SPS) Delivery Models and Strategic Applicability for Indian Ports

Model Type	Description & Global Examples	Pros	Cons	Key Takeaways for India
1. Port Authority–Led	Port authority finances, builds, and operates SPS (e.g., Rotterdam, Oslo)	Strong control and policy alignment Easier standardization	High CAPEX burden Slower rollout if funds are limited	Best suited for major ports with strong central funding support
2. Utility-Led	Utility owns and operates SPS; port provides space (e.g., Seattle, Vancouver)	Utility expertise in tariffs and grid management Renewable integration Reduces port financial burden	Ports lose operational control Requires tight coordination	Ideal for states with strong DISCOMs (Tamil Nadu, Gujarat)
3. Public–Private Partnership (PPP)	Shared investment among port, utility, and private operators (e.g., LA & Long Beach, Shanghai)	Risk sharing Encourages innovation Faster scaling	Complex contracts Potential tariff disputes	Fits PPP-heavy ports (JNPA, Mundra, Ennore) for rapid adoption
4. Cluster / Consortium	Regional cooperation among ports (e.g., Swedish & Baltic port clusters)	Economies of scale Cross-port standardization	Coordination challenges Slower decision-making	Suitable for Sagarmala-linked small and regional ports
5. User-Investment / Co-Financing	Shipping lines co-invest in SPS (e.g., Stena Line, CMA CGM)	High utilization by committed users Low risk for ports	Dependent on user interest Limited for diverse traffic	Best for dedicated terminals (coal, LNG, containers) with long-term contracts
6. Mobile / Shared Infrastructure	Movable SPS units such as barges or trucks (e.g., Rotterdam barges, Shenzhen trucks)	Low CAPEX Flexible and modular Ideal pilot model	Limited capacity for large vessels Higher O&M costs	Best for pilot projects at mid-sized ports

Model Type	Description & Global Examples	Pros	Cons	Key Takeaways for India
7. Regulatory & Incentive-Based	Mandated SPS adoption supported by subsidies (e.g., California CARB, EU Fit for 55)	Rapid compliance Level playing field	Requires strong legal framework Risk of stakeholder resistance	Long-term goal: mandatory adoption post-2035 after infrastructure readiness

Global experience indicates that no single shore power (SPS) model fits all ports; outcomes depend on port size, traffic profile, institutional capacity, and grid readiness. Port authority–led models suit large, well-funded major ports due to better control and standardisation, while utility-led models lower port capex and work best where DISCOMs and grid infrastructure are strong.

At PPP and landlord ports, shared investment and user co-investment models enable faster rollout with balanced risk, particularly at dedicated terminals. Mobile SPS solutions are effective for pilots and early adoption. In the long term, mandates become viable only after infrastructure maturity. For India, a phased, mixed-model approach aligned to port typology offers the most practical path to scale.

8.3.2. Electrification and / or mechanization of cargo handling and transport activities

Cargo handling equipment and intra-port transport together constitute a significant share of port-side energy use and emissions. Globally and in port environments comparable to India, these activities account for roughly 25–45% of total port-area CO_2 emissions, excluding vessel emissions at sea. In container terminals, yard equipment and terminal trucks alone contribute 35–50% of terminal-level CO_2 emissions and as much as 60–80% of NOx and particulate matter (PM) emissions, owing to continuous diesel engine operation at low speeds.

Within this footprint, diesel-powered RTGs, terminal trucks, and mobile handling equipment dominate emissions. Diesel RTGs typically account for 30–45% of yard-equipment CO_2 emissions and up to 50% of NOx and PM from yard operations. Terminal trucks and prime movers add another 20–30% of operational emissions, while mobile cranes, reach stackers, and loaders contribute 15–25%, particularly at non-mechanised bulk and breakbulk berths. Although ancillary vehicles contribute a smaller share, their emissions are highly concentrated spatially, intensifying local air-quality impacts.

Electrification and mechanisation offer substantial and immediate emission reduction potential

Converting diesel RTGs to electric can reduce diesel consumption by 60–95%, translating into 50–80% reductions in CO_2 emissions and near-complete elimination of local NOx, SOx, and PM emissions. Electrifying terminal trucks typically delivers 70–90% reductions in operational CO_2, while electric cranes and battery-electric loaders reduce energy use by 20–60% and lifecycle emissions by 30–70%, depending on the equipment and grid mix.

At the port-system level, targeted electrification of high-utilisation cargo handling equipment can achieve 10–25% reductions in total port-area CO_2 emissions, along with 20–40% reductions in local air pollutants.

Additional benefits include 5–15% improvements in equipment availability and productivity due to lower maintenance needs, as well as perceptible noise reductions of 5–10 dB, which are particularly valuable for ports located in dense urban areas.

For Indian ports where 70–90% of yard equipment remains diesel-powered and many terminals operate adjacent to cities, electrification and mechanisation represent one of the highest-return decarbonisation and productivity interventions. These measures deliver immediate air-quality and cost benefits while increasing throughput, all without requiring proportional expansion of land or berth infrastructure.

8.3.3. Green Vessels

India's coastal fleet consists largely of smaller vessels with repetitive routes and predictable port calls. These characteristics make coastal shipping especially well-suited for early adoption of green technologies such as hybrid propulsion, alternative fuels, and shore power. Concentrated operations can allow targeted investments at select ports and berths and can help deliver relatively high environmental and economic returns.

Based on the emission analysis of the 816[17] active coastal vessels operating in India, it was estimated that the emissions from India's coastal shipping sector are heavily concentrated in a few vessel categories.

Tankers emerge as the single largest contributor to the emission profile of the Indian coastal fleet, generating about 514,758.95 tonnes of CO_2 between January and September 2022. This segment includes crude oil tankers, product tankers, chemical and product carriers, as well as asphalt and bitumen tankers, all of which have relatively high energy demand due to cargo handling and auxiliary operations.

Container ships constitute the second-largest source of emissions, accounting for approximately 204,354.40 tonnes of CO_2 during the same period. Their emissions are driven by frequent port calls, fixed service schedules, and auxiliary power requirements during cargo operations.

Bulk carriers rank third, with emissions of around 166,920.22 tonnes of CO_2, reflecting their significant but comparatively lower fuel consumption in coastal operations.

Taken together, these three vessel types — tankers, container ships, and bulk carriers, are responsible for about 51.2% of the total CO_2 emissions from the Indian coastal fleet, underscoring their central importance in any decarbonisation strategy.

High emission levels across these segments are closely linked to fuel consumption patterns. Tankers record the highest fuel use at about 166.47 thousand metric tonnes, far exceeding that of container ships (65.01 thousand metric tonnes) and bulk carriers (53.83 thousand metric tonnes). This disparity explains the dominant share of tanker emissions within the coastal fleet.

Geographic concentration of traffic further amplifies emissions. Higher CO_2 levels are observed in the Mumbai and Gujarat regions, driven by dense vessel movements and cargo volumes at major hubs such as Mumbai Port, Jawaharlal Nehru Port, and Kandla Port. These ports handle substantial tanker, container, and tug traffic, leading to prolonged port stays and higher aggregate fuel consumption.

Vessel age is another critical determinant of emissions intensity. The 11–15 year age group contributes the highest total emissions, estimated at 520,614.92 tonnes of CO_2. With an average age of 16.8 years and more than 50% of the Indian coastal fleet older than 15 years, fuel efficiency is generally lower than that of newer vessels designed to modern energy-efficiency standards.

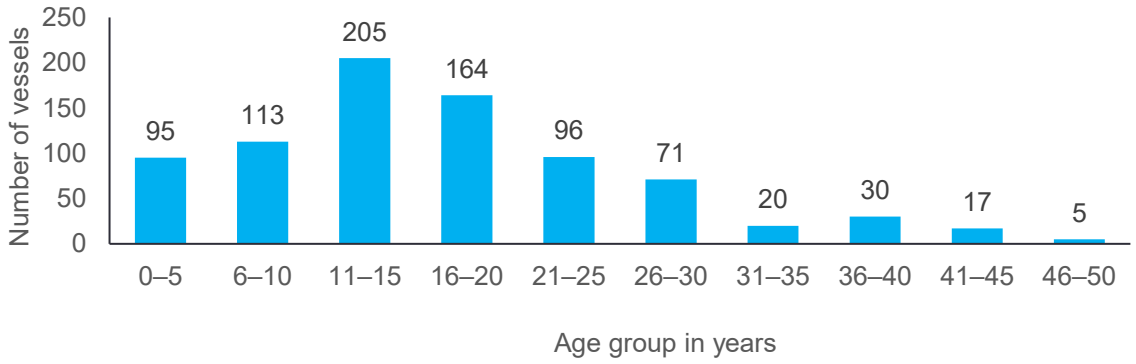

Figure 53: Age group distribution of Indian Coastal Vessels (Source: DG shipping and DNV reports)

[17] *Director General of Shipping, Indian Coastal Green Shipping Programme, 2023*

Further, the port-side operational characteristics significantly influence emissions. Indian coastal vessels spend nearly 70% of their operational time at ports, with only about 30% in transit. A substantial portion of fuel consumption occurs at berth to generate electricity for onboard systems, cargo handling, and pumping operations. As a result, tankers—along with ferries and cruise vessels—consume comparatively more fuel while stationary than other vessel types, highlighting the importance of interventions such as shore power and energy-efficient port operations.

Green Vessel Financing Programs for Maritime Decarbonization

Decarbonizing ocean-going vessels (OGVs) requires capital-intensive investments in cleaner fuels, energy-efficient ship designs, and retrofit technologies. Given the long asset life of vessels (20–30 years) and high capital costs, green vessel financing programs have emerged as a critical enabler, aligning lenders, ports, and shipowners toward emissions reduction goals. Leading ports and financial institutions in Europe and North America have pioneered mechanisms that link cost of capital, port charges, and access to finance with vessel environmental performance.

Typology of Green Vessel Financing Instruments:

Sustainability-Linked Lending

Green vessel financing is increasingly structured around sustainability-linked loans, where pricing incentives are tied to emissions performance rather than mandating a specific technology pathway. Interest margins are adjusted based on measurable indicators such as carbon intensity (AER/CII alignment), compliance with IMO greenhouse-gas trajectories, and the adoption of alternative fuels or energy-saving technologies.

A widely adopted global framework is the Poseidon Principles, under which signatory banks assess and disclose the climate alignment of their shipping portfolios. As of 2024, Poseidon Principles signatories account for over 60% of global ship finance by loan volume, underscoring the mainstreaming of climate-linked credit in shipping.

Port-led financial incentives for green vessels

Ports increasingly play a quasi-financial role in improving the economics of cleaner vessels by reducing operating costs and operational risk. Common instruments include port fee rebates linked to environmental performance, priority berthing and operational advantages, and long-term tariff certainty for green vessels. Tools such as the **Environmental Ship Index** directly monetize emissions performance by offering port charge discounts, thereby improving cash flows and indirectly enhancing the bankability of green shipping projects.

Mormugao Port's "Harit Shrey" Green Vessel Incentive Scheme

India's first major port to introduce green vessel incentives by linking discounts on port charges to a vessel's environmental performance using the Environmental Ship Index (ESI). Vessels with higher ESI scores, indicating better air emissions performance, receive rebates on port charges, rewarding cleaner operations.

This incentive makes Mormugao one of the few ports in Asia (alongside select ports in Japan and Oman) offering such environmental performance-linked incentives.

Public grants and blended finance models

Public sector support remains critical in de-risking early adoption of low- and zero-emission shipping technologies. Governments and port authorities deploy capital grants for first-of-a-kind vessels, demonstration funding for alternative fuels such as methanol, ammonia, and hydrogen, and blended finance structures that combine public grants with private debt. These instruments are particularly important where technology risk is high and commercial lenders remain cautious, enabling projects to reach financial close and scale over time.

Specific Support for Harbour and Coastal Tugs

Under GTTP - VGF for Green Tugs: Explicitly include Viability Gap Funding (VGF) to address the higher CAPEX of hybrid and battery-electric tugs, which is currently missing from the report's tug-specific interventions.

International Case Examples

Table 74:International Case Examples

Case / Jurisdiction	Financing Approach	Key Instruments	Role of Ports	Role of Finance / Markets	Impact on Vessel Economics
San Pedro Bay Ports (USA) – Port of Long Beach & Port of Los Angeles	Tariff-linked incentives (indirect financing)	Green Ship Incentive (GSI) – dockage rebates linked to NOx, SOx, GHG Vessel Speed Reduction (VSR) Program: cumulative savings > USD 5 million/year Technology Advancement Program (TAP) – public co-funding for pilots	Ports internalize environmental performance into port pricing; no direct lending	Lenders benefit from improved cash-flow predictability and lower operating risk	Reduces lifecycle OPEX, improves debt serviceability without market distortion
Port of Rotterdam (EU) – Port of Rotterdam	Market-based + regulatory finance integration	EU ETS (Maritime) FuelEU Maritime Port fee differentiation for shore power and cleaner fuels	Port acts as interface between carbon markets, fuel infrastructure, and operators	Banks adjust loan margins based on carbon intensity and fuel readiness; Poseidon Principles alignment	Lower WACC for green vessels; accelerated fleet renewal
EU (System Level) – European Union	Carbon revenue recycling & blended finance	Fit for 55 package EU ETS Maritime revenues Innovation Fund	Ports become implementation hubs for green corridors and bunkering	Public funds de-risk first movers; private capital scales proven solutions	Self-reinforcing loop: carbon cost funds decarbonization
China (Major Coastal Ports) – China	State-led green finance & directed lending	Green credit guidelines Policy bank lending (CDB, EXIM Bank) Shore power subsidies	Ports mandated to provide shore power and LNG bunkering	State-owned banks offer preferential interest rates for green vessels	Lower cost of capital via policy direction; rapid infrastructure rollout

Case / Jurisdiction	Financing Approach	Key Instruments	Role of Ports	Role of Finance / Markets	Impact on Vessel Economics
Singapore – Singapore	Explicit green vessel financing & grants	Green Ship Programme (GSP) Green Port Programme Green Financing Scheme (GFS)	Port authority co-funds retrofits and newbuilds	Direct co-financing, grants, and interest support reduce lender risk	Strong pull for global green tonnage calling at Singapore

8.3.4. Green Shipping Coastal Corridors

Green Shipping Corridors are defined maritime routes where vessels, ports, and enabling infrastructure are jointly configured to achieve significantly lower or near-zero greenhouse gas emissions. Unlike isolated ship- or port-level interventions, corridors adopt a systems approach, integrating vessel technology, fuel supply, port infrastructure such as shore power, operational practices, and regulatory coordination.

Globally, this concept is promoted under the broader climate agenda of the International Maritime Organization to accelerate decarbonisation by focusing on routes with predictable traffic and cargo flows.

Indian coastal shipping is particularly well suited for early corridor deployment due to short sailing distances, repetitive port pairs, and high port dwell times.

Coastal vessels frequently operate between the same ports, enabling alignment of fuel availability, shore power, and operating standards at both ends. For India, green corridors also advance national objectives led by the Ministry of Ports, Shipping and Waterways, including emission reduction, modal shift from road and rail, port-led development, and energy security.

Corridors also provide a targeted framework for fleet renewal and retrofitting, which is critical given that over 50% of India's coastal fleet is older than 15 years. By concentrating investments and policy support on a limited number of high-impact routes, India can achieve measurable emissions reductions without waiting for a fleet-wide transition.

Implementation depends on several interdependent enablers. Vessel readiness is foundational, requiring new-build green vessels or retrofits for alternative fuels, hybrid propulsion, or shore power compatibility. Port infrastructure is equally critical, including shore power, safe bunkering for fuels such as green methanol or ammonia, standardised electrical and safety systems, and adequate grid capacity, areas where Indian ports are currently at different stages of readiness, necessitating coordination.

Global Best Practices

Case Review: Rotterdam — Oslo Green Shipping Corridor

An MoU between the Cities/Ports of Rotterdam and Oslo and private partners (notably Samskip) aims to operate regular short-sea services using zero-emission SeaShuttle vessels (green-hydrogen / zero-emission concept) on scheduled loops between Rotterdam and ports in the Oslofjord region. This is an archetypal green shipping corridor: route-focused, fuel-and-vessel aligned, and public–private governed. The routes consist of short-sea containerised / general cargo, regional feed for hinterlands, and some small RoRo/liner parcels.

The vessels deployed or planned on this corridor are short-sea container feeders and SeaShuttle-type vessels, typically in the range of 600–1,200 TEU capacity. Actual parcel sizes per sailing are usually 400–900 TEU, consisting mainly of palletised consumer goods, industrial cargo, and regional feeder traffic. Services operate on weekly or bi-weekly fixed schedules, which is critical for fuel and infrastructure planning.

From an energy perspective, these vessels are designed around alternative fuels, notably green hydrogen fuel cells or green methanol dual-fuel engines. Installed propulsion power typically ranges from 8–12 MW, while at-berth electrical demand (hotel load, auxiliaries, reefers) is in the order of 1.5–

3.0 MW. Shore power connections at 6.6 kV or 11 kV are provided to eliminate auxiliary engine use during port stays. Fuel consumption equivalence for these vessels is approximately 15–25 tonnes of methanol per day (or hydrogen energy equivalent) during sailing, with zero fossil fuel use at berth.

Key dependencies required for this movement were

- Green hydrogen production or green methanol supply at scale with a pilot bunkering to start
- Dual-end port readiness such as bunkering / refuelling or hydrogen bunkering procedures at both Rotterdam and Oslo nodes
- Vessel retrofits / newbuilds and class approvals for hydrogen use and fuel-system safety.
- Commercial offtake such as minimum cargo volumes and carrier commitment for scheduled loops.

Success factors:

- Strong port leadership and early MoU to coordinate public and private partners (ports, shipowner Samskip, energy suppliers)
- Route predictability: regular weekly loops allow predictable fuel/energy planning and economies for alternative-fuel logistics.
- Integrated planning across fuels, vessels, and port operations with a bi-nodal action

Case Review 2: Los Angeles — Long Beach Clean Shipping / Shore Power Corridor

The San Pedro Bay ports (Los Angeles & Long Beach) form one of the world's largest "clean port" complexes. Their Clean Air Action Plan and California CARB "At-Berth" regulations have driven mandatory shore power use for container vessels at many terminals — turning shore power adoption into near-routine practice for container calls. This corridor is regulatory-and-lease-driven rather than purely voluntary.

The vessel types in focus were the large container ships such as the full ocean feeders of 8000 – 18000 TEUs per vessel and a berth stay of 1- 2 days calling the transpacific / intra-America services and refrigerated/container vessels. And the shore power systems installed at these ports are correspondingly large. Each berth is equipped to deliver 6–12 MW of continuous electrical power at 6.6 kV or 11 kV (60 Hz). Transformer capacities typically range from 10–20 MVA per berth, with multiple high-voltage cables and automated cable-management systems. By using shore power, each container vessel avoids burning approximately 10–20 tonnes of marine gas oil per day at berth, achieving up to 90% reduction in local NOx, SOx, and particulate emissions.

Key infrastructure & dependencies.

- Terminal-level shore power electrification with high voltage shore connections, conversion equipment, and safety interlocks.
- Grid capacity and local distribution upgrades to handle simultaneous container calls.
- Regulatory enforcement defined by the CARB At-Berth rules and terminal lease clauses requiring shore power readiness.
- Carrier compliance related to plugging in and using shore power rather than auxiliary engines.

Success factors:

The success was driven by a strong and enforceable regulatory mandate that made shore power use compulsory, supported by effective monitoring and penalties.

- High cargo volumes ensured meaningful emission reductions per connection, justifying large capital investments.
- Shore power was integrated into terminal design and lease conditions, while major shipping lines were already fleet-ready to comply.
- Reliable grid infrastructure enabled high-power operations, and clear economic benefits at berth reinforced adoption.
- Over time, standardisation and learning effects further reduced costs and operational complexity.

Pilot Initiatives in India

Studies are underway to launch domestic coastal green shipping corridor linking Kandla (Deendayal Port) to Thoothukudi (V. O. Chidambaranar Port), to promote cleaner fuels and reduce maritime emissions.

Partnerships are forming to support green coastal shipping corridors: Unifeeder and Sagarmala Finance Corporation (SMFCL) signed an MoU to jointly design, finance and scale commercially sustainable coastal and short-sea shipping corridors to lower logistics costs and cut emissions.

Actionable Roadmap for Green Coastal Corridors in India

Phase	Action Item	Key Actions / Deliverables	Responsible Agency	Timeline
Phase 1: Corridor Identification & Governance	Notify pilot Green Coastal Corridors	Identify and notify 2–3 pilot corridors based on cargo volumes, port readiness, and feasibility (bulk, container, Ro-Ro).	MoPSW, DGS	0–3 months
	Define corridor-specific green standards	Specify emissions benchmarks, eligible fuels, OPS usage, and reporting requirements applicable to corridor vessels.	MoPSW, DGS	3–6 months
Phase 2: Infrastructure & Regulatory Enablement	Enable green port infrastructure	Ensure shore power for coastal vessels, interim/final LNG–methanol bunkering solutions, and fuel storage at corridor ports.	Major Ports, State Maritime Boards	6–18 months
	Notify Green Corridor Vessel Certification	Issue DGS guidelines covering OPS compatibility, fuel readiness, emissions reporting, and safety standards.	DGS	6–12 months
	Standardise port incentives	Implement uniform port dues rebates, priority berthing, and tariff certainty for certified green corridor vessels.	MoPSW, Major Ports	6–12 months
Phase 3: Financing & Fleet Deployment	Launch Green Corridor financing window	Provide sustainability-linked loans, interest subvention, and longer tenors through DFIs/Sagarmala Finance.	SFMCL / MDF	12–18 months
	Provide capital grants / VGF	Offer VGF or capital subsidy for first-of-a-kind green coastal vessels deployed on notified corridors.	MoPSW, DEA	12–24 months
Phase 4: Operations, Monitoring & Scale-up	Scale up to national network	Expand from pilot corridors to additional routes, ports, and cargo segments with tighter emissions thresholds.	MoPSW	36–48 months

8.3.5.Initiatives under National Green Shipping Policy

To improve the outcomes of the Green Coastal Shipping, the following maybe explored to enhance the coastal shipping outcomes:

Operationalizing the Financial Framework

Maritime Development Fund (MDF): Utilize the INR 11500 crore corpus components for enhancement of coastal infrastructure and coastal shipping tonnage which comes through the Maritime Investment Fund for equity/blended finance and the Interest Incentivization Fund (IIF) for debt subvention of up to 3%.

Tiered Finance Stack: Adopt the Tiered Green Shipbuilding Finance Framework, which combines SBFAS (25% assistance), MDF equity, IIF support, and Green Bonds to achieve a lower Weighted Average Cost of Capital (WACC) for zero-emission coastal vessels.

De-Risking Technology and Retrofitting

As discussed earlier the long dry-docking periods and high costs required for shore power retrofitting are a major logistical challenge, to address these the following maybe considered:

Results Based Finance (RBF): It may be explored to introduce RBF via the MDF specifically for retrofitting existing fleets, which would move the financial burden from upfront subsidies to performance-based outcomes.

Shipbreaking Credit Note: To encourage fleet renewal, a provision may be included where 40% of a ship's scrap value is issued as a credit note, reimbursable against the construction of a new green vessel at an Indian yard.

09

Action Framework to promote Coastal Shipping

9. Action Framework to promote Coastal Shipping

Coastal shipping is widely recognised as a cost-efficient, environmentally sustainable, and congestion-reducing mode of domestic freight transport in India. However, its modal share has remained limited due to infrastructure bottlenecks, policy distortions, procedural frictions, and weak financial viability. The Action Framework presented in this report directly addresses these constraints through a targeted, implementation-oriented set of interventions grounded in commodity-wise analysis and extensive stakeholder consultations.

The framework consolidates evidence-based interventions across key coastal commodities, coal, iron ore, steel, cement, fertilisers, foodgrains, POL, containers, and Ro-Ro cargo, along with cross-cutting sectoral issues affecting ports, vessels, rail, and inland waterways. Interventions are linked to specific corridors, ports, schemes, and institutions, enabling immediate translation into execution plans.

Infrastructure interventions focus on removing physical bottlenecks through selective berth and draft upgrades, dedicated coastal cargo yards, specialised handling and storage facilities, east-coast bunkering infrastructure, emergency ship-repair berths, and strengthened coastal–rail–IWT interfaces.

Policy interventions aim to correct structural distortions by rationalising rail freight for short-haul movements, extending coastal incentives to uncovered commodities, enabling transitional cabotage relaxations for containers and Ro-Ro, aligning coal and fertiliser linkage policies with coastal economics, and permitting co-loading of EXIM and coastal cargo where appropriate.

Process interventions target reduction of delays and uncertainty through a Coastal Cargo Facilitation Centre, standardised national SOPs, digital customs and immigration clearances, structured return-cargo planning, and simplified subsidy reimbursement mechanisms.

Financial interventions address cost competitiveness through GST rationalisation on bunker fuel, restoration of ITC for coastal multimodal transport, port-service exemptions for agri cargo, viability support for Ro-Ro services, rationalised port tariffs, and ring-fenced access to shipbuilding and maritime finance for Indian-built coastal vessels.

A key strategic element is the phased development of Indian coastal vessel capacity, particularly for container and Ro-Ro services. Limited short-term reliance on foreign vessels is envisaged as a transitional measure, while medium- to long-term actions focus on domestic fleet creation through targeted shipbuilding finance and partnerships with Indian shipyards.

Timeframe Definition:

- Short term: 0–2 years (quick-win policy, process, and incentive reforms)
- Medium term: 2–5 years (infrastructure upgrades, fleet induction, corridor stabilisation)
- Long term: 5–10 years (domestic fleet maturity, network scale-up, structural modal shift)

Overall, the Action Framework provides a clear, prioritised, and execution-ready roadmap for scaling up coastal shipping in India by aligning infrastructure delivery, policy reform, process simplification, and financial viability within defined timelines and institutional responsibilities.

The Comprehensive Action Framework for Costal Shipping in India is presented in the table below.

9.1. Comprehensive Action Framework for Coastal Shipping in India

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
1.	Coal **Shortfall in rake allocation for first-mile evacuation**	Allocation of rakes by Indian Railways falls short of indents for coal movement from MCL/ECL to Paradip Port. **Rake supply is about 31 rakes/day against an operational capacity of 42 rakes/day**, creating a first-mile bottleneck.	Strengthen coordination among Railways, Coal Companies, Ports and GENCOS. Provide assured or priority rake allocation for coal meant for coastal shipping/RSR mode. Introduce dedicated rake quotas for Paradip-bound thermal coal.	MoR, Indian Railways, MoC, Paradip Port, GENCOS	Short-term
2.	Coal **Prioritize RSR over congested long haul rail corridors**	Long-haul rail corridors such as Howrah–Nagpur–Wardha and Bilaspur–Nagpur are among the most congested rail freight routes, leading to rake shortages, delays, and unreliable coal supply through all-rail routes.	GENCOs may prioritise RSR movement for long-distance coal supply on saturated rail corridors to western and southern power plants. GENCOs may sign long term agreements (10-15 years) with ports, with minimum cargo guarantee per year, which will enable ports to develop adequate infrastructure to handle coal cargo.	MoPSW, MoR, GENCOS, Ports	Medium-term
3.	Coal **Draft limitations at discharge ports**	While Paradip has draft capability to accommodate Panamax and Capesize-class bulk carriers for coal, non-availability of ~16 m draft at several discharge ports (such as KPL, VoCPA, etc.) restricts deployment of large bulk carriers, leading to underutilisation of Paradip's capacity and loss of scale economies. ***Example:*** V.O. Chidambaranar Port currently handles vessels with drafts up to 14.2 m. Coal from Paradip for TTPS and NTPL is handled at Coal Jetty-1 and	Expedite capital dredging at key discharge ports – KPL and VoCPA. Capital dredging is planned at VoCPA to increase the drafts of 2 berths after strengthening the berth structure (VOC III and IV berths) to 15.5m, proposed to be completed by June 2028.	KPL, VoCPA, MoPSW	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
		NCB-1, with available drafts of 14.2 m and 14.0 m, respectively. Hence, the deployment of fully laden bulk carriers with 16 m draft is presently constrained.			
4.	Coal **Limited nomination of vessels by GENCOs**	Inadequate or delayed nomination of vessels by GENCOs slows evacuation of coal from ports, leading to congestion and higher dwell time.	Encourage advance and bulk nomination of vessels by GENCOs. Concerned ports may explore service-level agreements or incentives linked to timely evacuation by GENCOs.	GENCOS, Ports	Short-term
5.	Coal **Moratorium on GPWIS scheme for rake procurement**	Procurement of GPWIS rakes by Paradip Port could increase coal and iron ore handling by ~17.5 MTPA, but a moratorium on the GPWIS scheme by MoR from 2023–2027 restricts such investments. Estimated investment requirement is ~₹900 crore.	MoPSW may coordinate with MoR to discuss relaxation of the moratorium for concerned ports and allow phased implementation of GPWIS-based rake procurement for coal evacuation.	MoPSW, MoR	Medium-term
6.	Coal **Rationalization (swapping) of coal linkage patterns for western power plants**	Several power plants in Gujarat and Maharashtra have existing coal linkages with SECL, which is about 600 km from Paradip Port. This leads to preference of rail as a preferred mode of transport on such routes, however, the congestion on these rail corridors limits the freight movement. On the other hand, first mile distance of 600 km from SECL to Paradip Port makes coastal routing uneconomical compared to sourcing from MCL, which is about 200 km from Paradip Port.	MoPSW may coordinate with MoC to undertake linkage rationalisation to align coal sources with coastal shipping economics. • Facilitate coal linkage rationalization between SECL and MCL, enabling power plants in Gujarat and Maharashtra to source coal from MCL, reducing rail haulage by ~400 km and lowering coastal logistics costs for RSR movement of coal.	MoC, MoPSW	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
			MoC may factor logistics cost and coastal viability in coal linkage decisions.		
7.	Coal **Environmental restrictions on coal handling at Mumbai Port**	There is demand to handle ~1.5 MT of coal for MAHAGENCO at Mumbai Port, but due to pollution-related restrictions by the State Pollution Control Board, coal handling at berth is not permitted. Coal is handled only at anchorage through lighterage.	MoPSW may coordinate with MoEF&CC and the State Pollution Control Board to expedite issuance of clear norms for coal handling and storage. Develop SOPs for environmentally compliant berth-based coal handling and storage at Mumbai Port.	MoPSW, MbPA, MoEF&CC, SPCB	Short-term
8.	Coal and Steel **Under-utilisation of coastal shipping for movement of NTPC coal to Andhra Pradesh via Visakhapatnam Port from SMPA (HDC) due to absence of backhaul cargo**	Coal for NTPC power plants located in Andhra Pradesh and adjoining regions has an existing linkage of about 1.5 MTPA from collieries of Eastern Coalfields Limited (ECL) in the Asansol–Dhanbad belt. At present, this coal is largely transported through all-rail routes, involving long overland haulage and mobilisation of about 35 rakes per month, resulting in higher logistics costs and congestion on saturated rail corridors. At the same time, coastal shipping on the eastern coast–east coast corridor remains under-utilised, particularly due to the lack of assured return-leg cargo, which adversely affects vessel utilisation and freight economics.	Promote coastal movement of NTPC coal from ECL mines through SMPA (HDC) as the load port and VPA as the discharge port, with onward evacuation to power plants by rail. Facilitate dedicated RSR routing and coordinated rake planning for NTPC coal on the eastern coast–east coast corridor. Leverage return-leg cargo by enabling movement of steel and related cargo of Steel Authority of India Limited (SAIL) from VPA to HDC, followed by rail evacuation to steel plants at Durgapur, Bokaro, etc. Encourage bundled freight contracts combining NTPC coal (southbound) and SAIL steel cargo (northbound) to improve vessel utilisation, reduce unit coastal freight cost, and enhance overall viability of coastal shipping.	MoPSW, NTPC, SAIL, Ports, MoR	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
9.	Iron Ore **Rake shortfall for evacuation of iron ore from mines to Ports under Category D allotment by MoR**	As per the Ministry of Railways' rake allotment guidelines, freight traffic is prioritised under Category A, B, C and D, with iron ore movement to ports presently classified under Category D, the lowest priority category. • Category A – National priority (coal for power plants, fertilizers, food grains) • Category B – Core industrial and energy commodities • Category C – Important but less critical traffic • Category D – Low-priority / discretionary traffic, largely market-driven This categorisation results in residual and uncertain rake allocation, particularly during periods of high demand from higher-priority commodities, leading to systemic delays in rake placement for iron ore evacuation to ports and a consequent modal shift towards road transport. **For example: Paradip Port -** rail-handling capacity of 18 rakes per day for iron ore, but rake supply averaged only 3.83 rakes/day in FY 2022–23 and 4.09 rakes/day in FY 2023–24.	MoPSW may coordinate with MoR for **reclassification of iron ore rakes from Category D to Category C** for assured and adequate supply of iron ore/pellet rakes. Upgrading priority would increase daily rake flows, immediately clearing indent backlogs, restoring rail's modal share, and reducing costly road diversion.	MoR, MoPSW	Short Term
10.	Iron Ore **Develop iron ore slurry pipeline systems linking**	Iron ore slurry pipeline technology is already operational in India, with three functional pipelines (two by AM/NS India and one by BRPL) of 200–300 km length, and the Draft Logistics Plan for the Iron & Steel Sector estimates that ~27 MTPA of	VPA and PPA (high iron ore volume ports) may collaborate with captive iron ore, palletisation and steel industries to develop plant-to-port slurry pipeline systems under PPP models.	PPA and VPA	Long Term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	mines, plants, and ports	iron ore can be shifted from road to pipeline systems. However, despite handling large iron ore and pellet volumes, major ports have not actively promoted or integrated plant-to-port slurry pipeline systems into their evacuation and coastal shipping strategies, resulting in continued dependence on road and rail for first-mile movement and limited aggregation of captive cargo for coastal shipping.	*Large upcoming palletisation capacity near Paradip (Thriveni – 24 MTPA, Essar – 14 MTPA, AMNS – 12 MTPA under progress)* Such pipelines would enable low-cost, low-emission first-mile evacuation, structurally favour coastal shipping as the downstream mode, and assure long-term captive cargo for ports while reducing dependence on road and rail.		
11.	Iron Ore **Coastal cargo rebate on CRC not available for iron ore and pellets**	Creates a cost disadvantage for coastal movement of iron ore compared to other bulk commodities	Extend concession on CRC to iron ore and pellets to align incentives with policy objectives of promoting coastal shipping	MoPSW and Major Ports	Short Term
12.	Iron Ore **Rail connectivity to Gandhamardan mines in Odisha**	Gandhamardan iron ore mines in Odisha lack direct rail connectivity, requiring iron ore to be evacuated entirely by long-haul road transport, with transit times of 2 days to nearby ports and 3–4 days to Paradip Port under prevailing operating conditions. This dependence on road-based evacuation leads to heavy congestion on port approach roads, slower turnaround at port gates, and inability to aggregate bulk volumes efficiently at ports, thereby directly constraining the scale, reliability, and economic viability of coastal shipping from Odisha ports.	MoPSW may coordinate with Indian Railways and State Government for development of last-mile rail connectivity (rail sidings / spur lines) linking Gandhamardan iron ore mines to the nearest railway network.	MoR, MoPSW, Ports	Long Term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
13.	Iron Ore **Lack of incentives for using Major Ports at both loading and discharge ends (e.g., Paradip/Vizag to Mumbai)**	Reduces attractiveness of coastal shipping for large steel producers despite high volumes (JSW moves ~9–10 MTPA annually) from Paradip / Vizag Port on east coast to Mumbai Port on West Coast.	Introduce differential port charge incentives for coastal cargo handled at Major Ports at both ends. Harmonise iron ore handling tariffs across ports such as Visakhapatnam Port Authority and Paradip to avoid distortion.	MoPSW, Major Ports	Short Term
14.	Iron Ore **Congestion at Mumbai Port during peak demand; limited draft and dependence on lighterage**	Increases vessel waiting time, turnaround time, and freight costs, reducing reliability of coastal services	Improve anchorage draft from ~11.8 m to ~13.5 m, strengthen traffic management and scheduling at Mumbai Port Authority, and augment mechanised bulk handling capacity	MbPA	Medium Term
15.	Iron Ore **Lack of adequate storage space at Mormugao Port for iron ore and pellets aggregation**	Following the post-2012 decline in iron ore traffic and tightening of environmental norms in Goa, Mormugao Port Authority (MgPA) no longer maintains large contiguous stockyard space for iron ore and pellets. Current handling is constrained by limited environmentally compliant storage capacity, restricting bulk aggregation required for coastal shipping. Industry stakeholders expressed need for adequate storage at MgPA for aggregation of iron ore cargo for coastal shipping.	Develop dedicated storage yards and mechanised stacking, reclaiming facilities at Mormugao Port Authority	MgPA	Medium Term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
16.	Iron Ore **Presence of shipwrecks in the Mandovi River affecting barge movement to Mormugao Port**	Safety risks, navigational constraints, and higher insurance and operating costs for iron ore barges	Expedite removal of shipwrecks and channel clearance in the Mandovi River to improve navigational safety and reliability of barge-based iron ore transport	MoPSW, IWAI	Long Term
17.	Iron Ore **Road connectivity between iron mines and railway sidings in Odisha**	Stakeholders have highlighted persistent poor road connectivity and deteriorated road conditions between major iron ore mines and their nearest railway sidings in Odisha, particularly from: • the Gandhamardan mines to Banspani and Jakhapura rail sidings • the Joda–Barbil iron ore cluster to Barbil and Banspani rail sidings • the Koira–Bolani–Kalta mining belt to Bolani and Barsuan rail sidings. These constrained last-mile road links result in truck congestion, delayed rake loading, and limits bulk aggregation required for coastal shipping.	MoPSW, through Sagarmala, may coordinate with Odisha State Govt. for development of adequate road infrastructure connecting the specified iron mine areas with their respective railway sidings.	MoPSW, Odisha State Govt.	Medium Term
18.	POL **Absence of Coastal Tariff Incentives for POL Cargo**	**Absence of coastal cargo discount for POL products** Port users associated with the petroleum industry highlighted that concession on coastal Cargo Related Charges (CRC) is currently extended by ports for several	Extend concession to POL products, at least on a pilot basis. Introduce time-bound or volume-linked incentives for incremental coastal POL volumes.	MoPSW, Port Authorities	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
		bulk commodities, but POL products are excluded. Given the high-volume and repeatable nature of POL cargo, the absence of such incentives makes coastal shipping less competitive vis-à-vis pipelines and rail.	Harmonise the concession across Major Ports to avoid port-specific distortions.		
19.	POL **Lack of bunkering facilities on the east coast**	Indian Oil Corporation Limited (IOCL) indicated strong demand for bunkering services on the east coast, **estimating ~8 VLCCs and ~8 Suezmax vessels per month** requiring bunkering support. Bunkering demand of ~16 large crude tankers per month translates into a minimum viable **bunkering capacity of ~0.8 MTPA, with 1.0 MTPA** recommended for operational resilience.	Detailed demand assessment for setting up dedicated bunkering facilities at suitable east coast ports (e.g. Paradip, Visakhapatnam, Kamarajar) Develop bunkering terminals under PPP mode with oil PSUs and private players Position east coast ports as regional bunkering hubs for coastal and EXIM tankers.	Port Authorities, Oil PSUs, MoPSW	Medium-term
20.	Steel **Fragmented parcel sizes of steel cargo**	Typical steel consignments are in the range of 1,000–3,000 tonnes, whereas coastal vessels require 8,000–12,000 tonnes for economic operations. Lack of aggregation results in underutilised vessels and higher freight rates.	SMPA, PPA and VoCPA may develop port-based steel aggregation yards to consolidate cargo from multiple producers. Ports may explore tie ups with cargo aggregators to enable multi-shipper cargo pooling mechanisms for coastal steel movement.	SMPA, Paradip Port, Aggregators	Medium-term
21.	Steel **Lack of specialised steel-handling infrastructure**	Steel is frequently handled at general cargo berths at loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA), with limited mechanisation, leading to longer dwell time and higher risk of cargo damage, especially for HR coils and plates.	Loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA) may develop dedicated steel-handling facilities (coil yards, covered sheds, C-hook cranes, forklifts).	Port Authorities	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
22.	Steel **Absence of assured return cargo and poor vessel utilisation**	Coastal vessels carrying steel often operate one-way, returning empty, resulting in vessel utilisation below ~60% and elevated freight rates.	Ports may explore tie ups with cargo aggregators to facilitate route-based two-way cargo planning, pairing steel with return cargo such as scrap, project cargo, or bulk inputs.	Ports, Aggregators	Medium-term
23.	Steel **High Handling Charges due to Equipment Substitution**	**Higher handling charges due to substitution of TRF cranes with HMCs** Stakeholders highlighted that HR plates and coils moved from DPA (Kandla) to Tuticorin are normally handled using TRF (track / trestle rail-mounted fixed) cranes, which have relatively low handling charges. When TRF cranes are unavailable due to maintenance, Harbour Mobile Cranes (HMCs) are deployed, resulting in significantly higher handling charges, sharply increasing total logistics cost despite no change in service requirement from the customer.	Ports may offer rebates on HMC charges for coastal steel cargo when HMCs are deployed due to port-side constraints (e.g., TRF under maintenance). Standardise handling charges for coastal steel cargo across ports, distinguishing clearly between customer-driven and port-driven equipment deployment.	Port Authorities, MoPSW	Short-term
24.	Cement / Clinker **Shift in Cement Manufacturing Geography Affecting Logistics Patterns**	**Cement companies are shifting Grinding Units closer to Demand Centres** Cement manufacturing has increasingly moved towards a “split-location model”	Port-based clinker hubs may be developed at Pipavav and Krishnapatnam as primary aggregation nodes near clinker belts, and at Cochin and New Mangalore as consumption-side hubs, enabling a hub-and-spoke coastal logistics model aligned with the cement industry’s shift toward demand-proximate grinding units.	Ports, Cement Companies	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
25.	Fertilisers **Continued preference for rail transport despite availability of freight subsidy**	Fertiliser, being a subsidised commodity, is eligible for freight subsidy when moved through coastal shipping; however, fertiliser marketing entities (FMEs) continue to rely predominantly on rail, even where coastal shipping is a viable option.	Ministry of Chemicals and Fertilizers, in coordination with concerned agencies, may examine introduction of a **modal preference framework** wherein rail transport is adopted only in cases where coastal shipping is not feasible. Major Ports and terminal operators (CoPA, VoCPA, ChPA) may consider extending concessions in container handling charges for fertiliser cargo to further enhance the cost competitiveness of coastal shipping.	Dept. of Fertilisers, Ports	Short-term
26.	Fertilisers **Exclusion of Imported Fertiliser from Coastal Freight Subsidy**	Currently, subsidy benefits for coastal and inland waterway movement are available only for domestically produced fertiliser, whereas a larger demand for coastal movement exists for imported fertiliser handled at ports.	Ministry of Chemicals and Fertilizers may examine extension of freight subsidy eligibility to imported fertiliser moved through coastal shipping and inland waterways, in line with the existing framework for domestic fertiliser, to encourage higher coastal volumes.	Dept. of Fertilisers	Medium-term
27.	Fertilisers **Inadequate parcel size for containerised fertiliser cargo**	Fertiliser cargo volumes in isolation are often insufficient to achieve optimal parcel sizes, affecting service viability and frequency.	Major Ports (CoPA, VoCPA, ChPA) may facilitate cargo aggregation by enabling combined movement of fertiliser containers with other compatible containerised commodities such as foodgrains, cotton, salt, sugar, etc. Major Ports may explore tie-ups with cargo aggregators and logistics service providers to consolidate volumes and support regular coastal sailings.	Ports, Aggregators	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
28.	Fertilisers **Delays and procedural complexity in freight subsidy reimbursement for coastal shipping**	Stakeholders highlighted delays in reimbursement, non-standardised procedures across modes, and cumbersome online submission processes, which act as a deterrent to adoption of coastal and multimodal transport.	Ministry of Chemicals and Fertilizers, in coordination with implementing agencies, may standardise reimbursement procedures across transport modes and fast-track online reimbursement mechanisms for coastal and multimodal movements. In the longer term, the Government may examine adoption of a standardised, mode-neutral freight subsidy framework, independent of the mode of transportation, to improve predictability and ease of doing business.	Dept. of Fertilisers	Medium-term
29.	Automobiles / Ro-Ro **Empty return cost of coastal Ro-Ro vessels**	Empty return cost is one of the largest components of voyage cost, contributing ~37% of total voyage cost. Due to the absence of suitable return cargo from the west coast to the south, automobile shippers moving cars from south to west have to bear the full cost of empty return, making coastal Ro-Ro movement uncompetitive compared to road and rail. Unlike coastal shipping, road and rail operators can divert to alternative routes to secure return cargo, thereby optimising asset utilisation.	Introduce a **policy support mechanism for coastal Ro-Ro vessels** to offset empty return costs (e.g. viability gap support, minimum revenue guarantee, or voyage-based incentive). Facilitate aggregation of potential return cargo through a centralised platform to improve utilisation.	MoPSW	Short-term
30.	Automobiles / Ro-Ro	Existing international Ro-Ro liners already call at multiple Indian ports and often sail with significant unutilised capacity after loading EXIM cars.	CBIC and DGS may explore allowing mixing of coastal and EXIM cargo on foreign-flag Ro-Ro vessels calling at multiple Indian ports.	CBIC, DGS, MoPSW	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	Restrictions on Mixing Coastal and EXIM Cargo	However, current restrictions do not allow mixing of coastal and EXIM cargo, leading to inefficient capacity utilisation and higher costs for coastal movements.	Permit discharge of coastal automobiles from KPL to west coast ports (JNPA or ports in Gujarat) during onward EXIM voyages, similar to the exception provided to Mumbai Port recently for a specific case. Such exemption could be provided by CBIC for all major ports handling coastal Ro-Ro cargo.		
31.	Automobiles / Ro-Ro **Limited availability of dedicated Indian coastal Ro-Ro services**	The absence of a dedicated Indian coastal Ro-Ro operator limits scale, frequency, and pricing flexibility for automobile movement. While demand exists, the business case for procuring Ro-Ro vessels remains weak due to high capital costs and uncertain cargo commitment.	Bharat Container Shipping Liner (BCSL), the proposed JV between Shipping Corporation of India and Container Corporation of India, may be given a mandate to operate Ro-Ro vessels for coastal automobile cargo, alongside EXIM cargo. Enable blended coastal–EXIM operations to improve revenue certainty.	MoPSW, SCI, CONCOR	Medium-term
32.	Automobiles / Ro-Ro **Fragmented OEM Volumes and Thin Market**	Stakeholder consultations indicate that, unlike bulk commodities, automobile cargo is highly fragmented across multiple OEMs, each with its own production plants, distribution networks, dealer commitments, and service-level requirements. On any given origin–destination pair, individual OEM volumes are often insufficient to support a dedicated coastal Ro-Ro sailing at economic scale.	Bharat Container Shipping Liner (BCSL) may be positioned as a central cargo aggregator for automobile OEMs, pooling fragmented volumes across manufacturers, corridors, and time windows. By aggregating assured demand and contracting vessels at scale, BCSL could enable deployment of Ro-Ro vessels with higher utilisation, improve sailing frequency, and reduce per-unit logistics costs.	MoPSW, BCSL	Medium-term
33.	Systemic Reform	Domestic cargo volumes are dispersed across multiple shippers and destinations;	Establish port-led or port-facilitated coastal cargo aggregation	MoPSW, IPA,	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	Institutionalised Coastal Cargo Aggregation	individual shippers rarely generate cargo volumes sufficient to fully load a coastal vessel. Coastal operators are compelled to sail vessels at 50–60% utilisation, which directly impacts voyage economics and discourages service expansion. Without systematic cargo aggregation and port-based storage support, coastal shipping cannot achieve the scale efficiencies required to meaningfully compete with rail or road	mechanisms, either through a dedicated port entity or a neutral third-party aggregator. Such aggregation can enable economically viable parcel sizes, improve vessel load factors, and stabilise coastal service schedules. A **Coastal Cargo Promotion Centre (CCPC) may be established under IPA.** Develop dedicated coastal cargo yards within port limits, distinct from EXIM cargo storage areas at DPA, MbPA, NMPA, CoPA, VoCPA, KPL and PPA.	Port Authorities	
34.	Systemic Reform **Cabotage relaxations to enhance vessel availability**	Stakeholders highlighted limited availability of Indian-Flagged vessels for carrying coastal cargo. Further, the limited cabotage scope restricts foreign-flagged vessels to carry domestic laden containers and essential dry bulk commodities (coal and iron ore) between Indian ports and leads to under-utilised foreign vessels. The current exemptions are limited to EXIM Transhipment, empty containers, agriculture, and fertilizers cargo only. However, data trends post-2018 provide a strong justification for further liberalization as Major Ports have reported significant growth in coastal trade (for commodities exempted from cabotage regulation as per 2018 orders) since the initial relaxations were implemented:	A practical middle path is to further reduce the time required to convert a foreign-flagged vessel for coastal operations. Although the conversion process has already been shortened from about five days to two days, this timeline remains too long for commercial decision-making in container and bulk trades. Reducing the conversion time to less than 04 hours through digital approvals and pre-clearance would allow foreign vessels to be deployed quickly for coastal legs whenever Indian vessels are unavailable.	MoPSW, DGS	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
		• Average number of foreign-flagged vessels participating in coastal cargo movement of exempted commodities per year increased from 74 in 2014-2018 period to 298 in 2019-2025 period. • Average coastal cargo volume carried by foreign-flagged vessels of exempted commodities per year increased from 0.7 MT in 2014-2018 period to 4.7 in 2019-2025 period, demonstrating that increased vessel supply directly correlates with higher coastal throughput			
35.	Systemic Reform **Optimizing Bunker Cost and SOP for accounting**	Price differential of 50–55% premium on bunker fuel at Mumbai Port and other Indian ports as compared to leading international bunkering hubs such as Singapore, Fujairah and Rotterdam Bunker fuel supplied to coastal vessels attracts 5% GST, in contrast, global bunkering hubs treat bunkers as tax-free international supplies. Difficulty in segregating import (foreign) bunker and coastal bunker and ambiguity on customs duty applicability on remaining bunker at the time of conversion further complicates bunkering processes.	Consider zero-rating or full GST exemption on bunker fuel supplied to coastal vessels, similar to international bunkering hubs. Alternatively, introduce a refund-based or deemed-export mechanism to ensure complete tax neutrality without cash-flow impact on operators. Issue a uniform national SOP clarifying treatment of bunkers already on board at the time of conversion, methodology for accounting duty-paid vs non-duty-paid bunkers and documentation requirements and time limits	MoF, GST Council, CBIC	Short-term
36.	Systemic Reform	Under the GST framework, multimodal transportation of goods, including services combining coastal shipping with road	Allow ITC at 5% GST, at least for notified coastal and multimodal transport services, which would	MoF, GST Council	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	Input Tax Credit for Coastal Multimodal Transport	and/or rail, was originally taxed at 12% with full Input Tax Credit (ITC). However, subsequent rate rationalisation reduced the GST rate to 5%, while explicitly disallowing ITC This has led to an increase in effective logistics cost, despite the nominal reduction in the headline GST rate.	directly reduce logistics costs by 6–8% for coastal multimodal movements, and enhance coastal shipping competitiveness.		
37.	Systemic Reform **GST on Port Charges for Agricultural Produce**	Under the GST framework, transportation of agricultural produce by road, rail, inland waterways and coastal vessels is fully exempt from GST. Port-related services such as berth hire, wharfage, pilotage and towage, cargo handling, port storage and warehousing, continue to attract 18% GST, even when the cargo handled is agricultural produce.	GST exemption applicable to transportation of agricultural produce be explicitly extended to port-related services, when such services are rendered exclusively for handling agricultural produce.	MoF, CBIC	Short-term
38.	Systemic Reform **Coastal–Foreign Vessel Conversion Procedures**	Many coastal ports in India do not have full Customs, Immigration and other border-control facilities required for converting a vessel from coastal to foreign-going trade (reverse conversion after completion of coastal leg by foreign vessel). As a result, vessels are often forced to divert to a limited number of EXIM-enabled ports only to complete conversion formalities, even when no cargo operations are planned there.	Notify additional coastal ports for limited foreign-going (EXIM) clearance or provide on-call Customs and Immigration facilities to enable reverse conversion without requiring vessel diversion. Issue a uniform national SOP for reverse conversion Introduce digital and remote clearance mechanisms for Customs and Immigration	CBIC, BoI, MoPSW	Short-term
39.	Systemic Reform	Rail becomes uncompetitive for short-haul port connectivity: For distances below 250 km, rail freight costs approach or exceed road transport costs, despite rail being	Create a dedicated coastal cargo rail category with a reduced minimum chargeable distance (e.g., 50–100 km instead of prevailing slabs). Apply	MoR, Indian Railways	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	Short-Haul Rail Tariffs for Coastal Connectivity	operationally more suitable for bulk coastal cargo. While the sea leg may be cheaper than long-haul rail or road, high short-haul rail tariffs significantly dilute overall logistics savings, making coastal routes unattractive for shippers.	flatter tapering for distances up to 300 km when cargo is demonstrably linked to coastal shipping. Allow zonal railways to notify pilot concessions for identified coastal corridors (e.g., eastern coast coal, west coast steel and cement).		
40.	Systemic Reform **Telescopic benefit in freight rates for RSR for non-coal bulk commodities**	For non-coal bulk cargo as well, charging full rail freight on both pre-haulage and post-haulage legs significantly increases total logistics cost, often making direct all-rail or road movement more competitive than RSR.	Railway Board may notify telescopic rail freight benefit for RSR movement of select bulk commodities such as iron ore, steel, cement, fertilisers and foodgrains.	Railway Board	Medium-term
41.	Systemic Reform **Incentive schemes for coastal shipping**	Need for a well-designed incentive scheme for coastal shipping in India to address the persistent cost and risk disadvantages that shippers and operators face during the transition from road and rail to coastal modes. Despite its inherent advantages (lower unit logistics cost, reduced emissions, and decongestion of highways) coastal shipping continues to suffer from first-mover risks, thin cargo volumes on many routes, and high initial operating costs, making it less competitive without targeted support.	Voyage based Coastal Incentive Scheme (SIMSC Model) ***Scheme for Incentivizing Modal Shift of Cargo (SIMSC):*** • Bulk Cargo: Shippers of specific commodities (such as fertilisers, food grains, sugar and salt) could receive an incentive of Re. 1 per tonne per nautical mile, capped at 1,500 nautical miles per trip. • Containerised Cargo: A fixed incentive of INR 3,000 per TEU (Twenty-foot Equivalent Unit) was offered for transporting any commodity in full container loads. • Ro-Ro Vehicle: To promote automobile transport, the scheme proposed INR 300 for two wheelers	MoPSW / IPA	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
			and INR 3,000 for other vehicles moved via Ro-Ro vessels. The scheme could not be implemented due to various reasons like less budgetary support or not approved. This scheme maybe again explored for implementation subject to updation / recalibration of incentives considering latest logistics cost analysis, which maybe undertaken by IPA. ***Fixed Rate State Incentive for coastal shipping (Kerala Model):*** Revival of such schemes for implementation at different states through Maritime States Development Council (MSDC) and Ministry of Ports, Shipping & Waterways may be reconsidered.		
42.	Vessel Availability **Dependence on Foreign Flagged Vessels (especially for Container and RoRo)**	Absence of Indian coastal container vessels and Ro-Ro vessels to operate regular coastal services	Leverage BCSL to pilot coastal container services. BCSL may partner with CSL for manufacturing of coastal vessels in India. Exclusive or ring-fenced funding for coastal and short-sea vessels under existing schemes such as Shipbuilding Financial Assistance Scheme (SBFAS), Shipbuilding Development Scheme (SbDS) and the Maritime Development Fund (MDF).	MoPSW, BCSL	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
43.	Vessel Availability **Underutilization of Foreign Vessels during Coastal Runs**	While foreign-flag vessels are already permitted to undertake coastal runs under cabotage relaxations (subject to approvals for specific cargo types), current practices largely treat EXIM and coastal cargo as mutually exclusive during a voyage. This results in sub-optimal vessel utilisation, empty slots on coastal legs, and higher unit logistics costs for domestic cargo.	Allow Co-loading of EXIM and Coastal Cargo on Foreign Vessels during Coastal Runs. This relaxation may be positioned explicitly as a transitional, time-bound measure to support market development until adequate indigenous capacity is created.	MoPSW, DGS, CBIC	Short / Medium-term
44.	Vessel Availability **Emergency Ship Repair Infrastructure**	Dedicated ship-repair berths, dry docks, or ship lifts are absent in most Major Ports with limited and uneven access on the East and South Coasts. The absence of proximate repair berths increases coastal vessel downtime, disrupts service schedules, and undermines the reliability and competitiveness of coastal shipping services.	Emergency Repair Berths at VPA and VoCPA (strategic positions on East and South Coast), given west coast may be served by Cochin Port in coordination with Cochin Shipyard. Encourage PPP or port-led development of basic repair infrastructure (utilities, workshops, crane access, riding squad facilitation) without necessarily creating full dry-dock facilities at every port. **Or** provide priority access to coastal vessels at existing port repair facilities, as an alternative to developing new emergency repair berths	MoPSW, VPA, VoCPA, CSL	Medium-term
45.	Coastal–IWT Interlinkage **First and Last-Mile Connectivity to IWT Terminals**	IWT jetties / terminals on NW-1 and NW-86	Establishment of road networks to and from the jetties in West Bengal, Jharkhand, Bihar, and Uttar Pradesh	IWAI, State Govts.	Medium-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
46.	Coastal–IWT Interlinkage **Cargo handling and storage infrastructure**	NW-5 / NW-64 – Paradip and Dhamra Loading and unloading jetty on NW-4 for agri produces and fertilizers IWT jetties / terminals on NW-1, NW-2 and NW-86	Terminal infrastructure for handling and storage of coal, rice, iron ore and other break bulk cargo.	IWAI, Ports	Medium-term
47.	Coastal–IWT Interlinkage **Vessel Availability**	Paradip and Dhamra – Haldia and Kolkata, Krishnapatnam	Deploy dedicated cargo vessels for fly ash movement, lighterage operations between coastal shipping and inland waterways	IWAI	Medium-term
48.	Green Initiatives in Costal Shipping **Shore to Ship Power Supply**	Typical Indian coastal vessels handle 2,000–20,000 tonnes per call, consume 1.5–6 tonnes of fuel per day at berth, and require 0.4–3 MW of electrical load, making them technically well suited for shore power. Further, based on the consultation with industry stakeholders, to retrofit existing vessel for shore power it requires dry docking of up to 4 months. And given the issues related to vessel availability this poses a logistical challenge.	In terms of Shore Power Infrastructure Readiness at Ports, most ports are currently “harbour-craft-ready” rather than fully “coastal-vessel-ready.” Ports with heavy coastal traffic (PPA, VPA, KPL and DPA) may develop OPS infrastructure for coastal vessels on priority. DGS Circular No. 09 of 2025 explicitly covers coastal vessels by assigning them to Phase-2 OPS rollout and mandating IEC/IEEE 80005-3 (LVSC) standards, with power capacity up to 1 MVA, standardized connectors, SOP-based operations, and eligibility for carbon certification. Future manufacturing of coastal vessels may be mandated for adoption for the above standards necessarily.	MoPSW, Ports, DGS	Long Term
49.	Green Initiatives in Costal Shipping **Electrification of cargo handling**	Globally and in port environments comparable to India, these activities account for roughly 25–45% of total port-area CO_2 emissions, excluding vessel	At the port-system level, targeted electrification of high-utilisation cargo handling equipment can achieve 10–25% reductions in total port-area CO_2	MoPSW, Ports	Short Term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
	and transport activities	emissions at sea. In container terminals, yard equipment and terminal trucks alone contribute 35–50% of terminal-level CO_2 emissions and as much as 60–80% of NOx and particulate matter (PM) emissions, owing to continuous diesel engine operation at low speeds.	emissions, along with 20–40% reductions in local air pollutants. Ports to prepare equipment electrification roadmap for dedicated coastal cargo berths on priority.		
50.	Green Initiatives in Costal Shipping **Emissions from Coastal Vessel Fleet**	Tankers, container ships, and bulk carriers, are responsible for about 51.2% of the total CO_2 emissions from the Indian coastal fleet, underscoring their central importance in any decarbonisation strategy. Higher CO_2 levels are observed in the Mumbai and Gujarat regions, driven by dense vessel movements and cargo volumes at major hubs such as Mumbai Port, Jawaharlal Nehru Port, and Kandla Port. These ports handle substantial tanker, container, and tug traffic, leading to prolonged port stays and higher aggregate fuel consumption.	Develop and operationalise a National Green Coastal Vessel Financing & Incentives Framework integrating sustainability-linked lending, port-based incentives, and public/blended finance to accelerate adoption of low- and zero-emission coastal vessels. Mandate port dues rebates, priority berthing, and tariff certainty for certified green vessels, supported by a standardised environmental rating system applicable across Major and select Non-Major Ports. Provide capital grants/VGF and blended finance support for first-of-a-kind green coastal vessels to de-risk technology adoption and improve project bankability under SBAFS / SbDS / MDF.	MoPSW, Ports	Long Term
51.	Green Initiatives in Costal Shipping **Green Shipping Coastal Corridors**	Indian coastal shipping is particularly well suited for early corridor deployment due to short sailing distances, repetitive port pairs, and high port dwell times.	Identify and notify 2–3 pilot corridors based on cargo volumes, port readiness, and feasibility (bulk, container, Ro-Ro). Specify emissions benchmarks, eligible fuels, OPS usage, and	MoPSW, Ports, DGC, SFMCL, MDF	Long Term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
			reporting requirements applicable to corridor vessels. Ensure shore power for coastal vessels, interim/final LNG–methanol bunkering solutions, and fuel storage at corridor ports. Issue DGS guidelines covering OPS compatibility, fuel readiness, emissions reporting, and safety standards. Provide sustainability-linked loans, interest subvention, and longer tenors through DFIs/Sagarmala Finance.		
52.	Green Initiatives in Costal Shipping **Initiatives under National Green Shipping Policy**	Need to operationalise a dedicated financial and de-risking framework for coastal shipping, as the sector continues to face high capital costs, limited access to long-tenure finance, and elevated technology risks, especially for green and future-ready vessels.	**Operationalizing the Financial Framework** ***Maritime Development Fund (MDF):*** Utilize the INR 11500 crore corpus components for enhancement of coastal infrastructure and coastal shipping tonnage which comes through the Maritime Investment Fund for equity/blended finance and the Interest Incentivization Fund (IIF) for debt subvention of up to 3%. ***Tiered Finance Stack:*** Adopt the Tiered Green Shipbuilding Finance Framework, which combines SBFAS (25% assistance), MDF equity, IIF support, and Green Bonds to achieve a lower Weighted Average Cost of Capital (WACC) for zero-emission coastal vessels.	MoPSW	Short-term

S. No.	Commodity / Theme	Issue / Constraint	Specific Intervention	Responsible Agency	Timeframe
			De-Risking Technology and Retrofitting As discussed earlier the long dry-docking periods and high costs required for shore power retrofitting are a major logistical challenge, to address these the following maybe considered: ***Results Based Finance (RBF):*** It may be explored to introduce RBF via the MDF specifically for retrofitting existing fleets, which would move the financial burden from upfront subsidies to performance-based outcomes. ***Shipbreaking Credit Note:*** To encourage fleet renewal, a provision may be included where 40% of a ship's scrap value is issued as a credit note, reimbursable against the construction of a new green vessel at an Indian yard.		

9.2. Capacity Enhancement / Mechanization Plans of Major Ports for Coastal Shipping

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
1	Chennai Port Authority (ChPA)	1	Non-mechanised	Coastal berths planned to be awarded on PPP in FY2025-26 Satellite port at Pondicherry for coastal containers	PPP award proposed in FY 2025-26; mechanisation envisaged post-PPP Pondicherry MoU expired on 26.02.2024; extension sought till 26.02.2026, pending response
2	Cochin Port Authority (CoPA)	1	Mechanised	Existing dedicated coastal berth; coastal priority at cement berths & container terminal	Dedicated berth already mechanised No additional coastal berths planned due to surplus capacity (47% utilisation)
3	Kamarajar Port Limited (KPL)	2	Mechanised	Mechanised coal berths	Coal Berth-1 & 2 mechanised and operational Coal Berth-3 & 4 constructed; mechanisation in progress by TNPGCL
4	Jawaharlal Nehru Port Authority (JNPA)	1	Semi-mechanised	PPP-based upgrade of coastal berth; liquid berths LB-3 & LB-4	Coastal berth upgrade by NSDTPL under construction; COD May 2026 LB-3 & LB-4 (4.5 MTPA) awarded to JSW Infra; operations expected Feb 2026 (not exclusive coastal)
5	Paradip Port Authority (PPA)	5	Mechanised	All coastal berths mechanised	Dedicated coastal capacity (~71.2 MTPA) adequate till 2030 No new mechanisation or coastal berth planned
6	V.O. Chidambaranar Port Authority (VOCPA)	1	Non-mechanised	Mechanisation of NCB-III; Ro-Ro facility planned	NCB-III mechanisation (6.96 MTPA) under construction; target Q1 2027 Ro-Ro facility (0.6 MMT) at planning stage

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
7	Visakhapatnam Port Authority (VPA)	1	Non-mechanised	Coastal cargo handled at existing and other suitable berths	No dedicated coastal mechanisation project proposed at present
8	Deendayal Port Authority (DPA)	NIL	NA	Conversion of Bandar Area jetties; CJ-17 berth; Ro-Ro Pax facilities	Bandar Area jetty conversion proposed; DPR/planning stage CJ-17 multipurpose berth proposed; approval awaited Ro-Ro Pax at Muldwarka held up due to non-issuance of non-conditional NOC by M/s Ambuja Cement Ltd.; project duration 8 months (onshore) + 9 months (offshore) Ro-Ro Pax at Pipavav held up due to non-issuance of NOC by M/s Swan Defence & Heavy Industries Ltd.; project duration 18 months from award
9	Mumbai Port Authority (MbPA)	3	Non-mechanised	Semi-mechanisation of Indira Dock berths	O&M tender floated; operator to deploy handling equipment post award
10	Mormugao Port Authority (MgPA)	NIL	NA	Dedicated coastal berth at Vasco Bay; Berth-9 redevelopment	Vasco Bay coastal berth (2 MTPA, ₹203 Cr) under EIA; completion target 2030-31 Berth-9 (4.71 MTPA) proposed under Sagarmala; target 2028-29
11	Syama Prasad Mookerjee Port Authority (SMPA)	3	1 mechanised (at HDC)	At KDS, out of 32 berths at KPD and NSD, 23 berths are either mechanized or will be mechanized by 2030. Hence coastal cargo will be handled in Mechanized/ semi-mechanized as well as	Phased mechanisation / semi-mechanisation of multiple berths planned up to 2030. Berth wise plan details given in the following table.

S. No.	Port	Dedicated Coastal Berths	Mechanisation Level	Capacity Development / Mechanisation Plan	Indicative Timeline / Current Status (with specifics)
				a few non-mechanized berths of KDS, as per requirement. At HDC there is a dedicated berth for Coastal Thermal Coal export which is already mechanized. Other than the dedicated berth there are various multipurpose berths where coastal cargo is being handled	
12	New Mangalore Port Authority (NMPA)	2	Non-Mechanised	Study to be undertaken to evaluate mechanization of the costal berths including other general cargo berths Mechanization of Berth No. 14 for handling containers and other cargo on DBFOT basis (Phase-2) Construction of Berth No. 17 (new berth) Deepening and reconstruction of Berth No. 9 to handle deep-draft oil tankers 5000-ton capacity enhancement of M/s UltraTech Cements by addition of 1 silo and increasing ship unloading capacity Strengthening of Berth No. 8 for handling coastal iron ore imports Construction of 2 covered storage sheds (area 3500 sqm each) with holding capacity of 8750 tons inside customs bonded area	No plan for additional dedicated coastal berths. Mechanization of Berth No. 14 - Phase-2 activities have commenced as of 26.08.2025 and on-ground construction activities work have commenced from December 2025. Scheduled date of completion -25.08.2026. Berth No. 17 - Proposal estimate under preparation – Target completion Dec 2028 Berth No. 9 - Proposal forwarded to Ministry for obtaining grants under Sagarmala Scheme – Target completion – FY 2028-29 Cement silo - Work is in progress – Target Completion - 20.02.2026 Berth No. 8 - Work terminated on 02.12.2025 and balance work invited through risk & cost. Target completion – Dec 2026 2 covered storage sheds completed.

Source: Primary data from Major Ports

SMPA is planning to Mechanize/Semi-Mechanize maximum of its Multipurpose berth by the end of 2030, for which Berth Mechanization plan is provided below:

Table 75: Berth Mechanization plan of SMPA

#	List of Projects	KDS/HDC	Project Cost in INR Cr	COD Year
1	Reconstruction of Berth No. 8 and Mechanization of berth no. 7 & 8	KDS	698.84	2028
2	Integrated Mechanization of 1-5 NSD and construction of Outer Terminal at NSD, KDS	KDS	832.25	2029
3	Development of Cement storage bulk Terminal at KPD-II (West)	KDS	487.36	2030
4	Extended Port at Balagarh	KDS	538.2	2030
5	Multimodal terminal at KPD II (East)	KDS	215	2030
6	Rejuvenation of KPD Phase 2 (Berth 8,10,12)	KDS	86.15	2032
7	Mechanization of Berth No. 2 at HDC	HDC	298.26	2026
8	Mechanization of Berth No. 5 at HDC	HDC	343.58	2028
9	Mechanization of Berth No. 9 & 10 at HDC	HDC	679.58	2030
10	Integrated of Berth No. 11 & 12 and development of Outer Terminal at HDC	HDC	697	2030

Source: Primary data from Major Ports

9.3. Port Connectivity Infrastructure Projects of Major Ports (Road and Rail)

9.3.1. Road Connectivity Infrastructure Projects at Major Ports

#	Port	Project	Status	Target Completion Timeline
1	ChPA	Double Decked Elevated Corridor from Chennai Port –Maduravoyal	Works ongoing - Physical Progress (as on December 2025) • Overall physical progress remains below 15% across all packages. • Package–I shows the highest progress at 14.15%. • Package–IV has the lowest progress at 5.37%, indicating delay. • Progress across Packages II and III is almost similar (around 13–14%)	Feb 2027

#	Port	Project	Status	Target Completion Timeline
2	CoPA	Expanding existing 2 lane NH 966B to four (4) lane connecting Willingdon Island to Kundanoor Jn. (8 KMs) - to be implemented by NHAI.	Alignment finalization is under progress.	Land acquisition will be the next subsequent step.
3	DPA	Construction of ROB in lieu of Existing LC 1A at Km 363.625 on NH-8A, KFTZ to Kandla Road in the State of Gujarat	Work awarded to NH division on deposit basis. Work Order was issued by NHD- Gandhidham to Contractor on 24/03/2025 with dated of start of work from 01/04/2025, but after lapse of 09 months no progress at site only partial site cleaning work is done. The various correspondence and DO letters and meetings were held and requested to submit the corrected MoU. The same is still awaited.	project Duration is 24 months from the date of award of work
4	DPA	widening & improvement of existing 2/4 lanes KK ROAD into 6 lane road. (NH-141 to NH-8A (Chainage at 354KM))	Work in progress	29.03.2026
5	DPA	Construction of 6-lane link road connecting to KK-Road to NH-8A (NH-141 to NH-8A (Chainage at 349.5 KM))	Expedite with NHAI	NIL
6	KPL	Development of Concrete Road leading from NCTPS Main Road to KPL coal stock yard and (ii) Reconstruction of Two no's bridge at km 3/519 and km 4/124 in the existing road (km 0/000 to km 4/390).	Work in progress	Jan 2027
7	KPL	Construction of the North Gate Complex, including the complex building, connecting concrete roads and other associated facilities.	The project is in the pipeline, and approval for the estimates is yet to be obtained	May 2027
8	NMPA	NH-75 Bengaluru - Hassan -Mangaluru through Shiradi Ghats (140 KM)	Ongoing	Mar 2026
9	NMPA	2 to 4 Laning of NH-169 from Mangalore to Moodabidri to Karkala (40 kms)	Ongoing	Mar 2027
10	NMPA	Construction of 4 lane flyover bridge from KIOCL to Baikampady along NH 66 (3.5 Kms)	DPR and bid documents has been submitted for approval of Competent Authority by NHAI	Dec 2028
11	PPA	8 laning of Chandikhole-Paradip section of NH-53 (76 Kms)	Under Implementation	Oct 2026

#	Port	Project	Status	Target Completion Timeline
12	SMPA	Revamping/Upgradation of 06 (six) roads	Under implementation stage	Mar 2026
13	SMPA	Thorough upgradation and resurfacing of Taratala Road (old & new) from Diamond Harbour Road crossing to Ramnagar crossing	Under implementation stage	Oct 2026
14	SMPA	Renovation of Bascule Bridge at Kolkata Dock System	Under implementation stage	May 2027
15	SMPA	Development of Road connecting Shalimar Road from Foreshore road towards godown with M-55 grade Concrete Paver Block topping, development of Drain, road berm and other allied works	Under implementation stage	Nov 2026
16	VoCPA	Nagapattinam - Kanniyakumari via Tuticorin (ECR) road connectivity (348 km)	Under Process	
17	VPA	Construction of flyover/underpass at Visakhapatnam Airport junction to ensure flow of container trailers to-from MMLP set up at NH-16	Work in progress	31.05.2026
18	VPA	Flyover from seahorse junction area to dock area	Approval stage	24 months from the date of commencement
19	VPA	4 to 6 laning of road connecting VPT convent junction to Sheelanagar	Work in progress	31.05.2026

Source: Primary Data from Major Ports

9.3.2. Rail Connectivity Infrastructure Projects at Major Ports

#	Port	Project	Status	Target Completion Timeline
1	CoPA	Electrification of Rail link from Willingdon Island to Ernakulam Junction (5 kms)	The project is stalled due to objection from Navy regarding overhead lines interfering with Naval Aircraft.	NA
2	DPA	Construction of Road Over Bridge (ROB) at LC-235	Work in progress	25.12.2026

#	Port	Project	Status	Target Completion Timeline
3	DPA	Provision of Long-Haul loop line in Gandhidham Yard	LoA has been issued to W/R on deposit basis on 06.01.2025. Thereafter, W/R submitted a tentative higher revised cost vide letter dated 21.04.2025. Accordingly, DPA, vide letter dated 05.06.2025, requested W/R to submit the final revised Detailed Estimate along with DPR for the subject project at the earliest, with proper justification, so that after finalization the same may be placed before the Board of DPA for approval. Till date, reply from W/R is still awaited.	
4	DPA	Doubling & electrification of existing Tuna-GIMB line to cater railway traffic of newly developed facilities at Tuna-Tekra for Container Terminal and Multipurpose Cargo berth up to the Take-off point	DPR is submitted to western railway for approval on 29.07.2025. Compliance report along with updated DPR, ES P & L section submitted to railway authority after the observations raised by Western railway	Project Duration is 18 months from the date of award of work
5	DPA	Electrification of railway network inside and outside of Cargo Jetty	The work for electrification of railway network inside and outside of Cargo Jetty is near completion.	
6	KPL	Development of Common user railway siding for (i) General Cargo, (ii) End loading Motor Vehicle (MV) and Non-Hazardous Liquid and (iii) Road 2 Electrification.	Southern Railway has accorded in-principle approval for the Feasibility Study Report on 14.01.2026. Preparation of the Detailed Project Report is in progress.	Sep-27
7	PPA	3rd & 4th line between Jarapada - Budhapank with flyover at Talcher (47 Kms)	Under Implementation	Mar'2027
8	PPA	3rd and 4th line from Budhapank- Salegaon via Rajatgarh (86 Kms)	Under Implementation	Dec'2026
9	PPA	Bhadrak - Vizanagagram 3rd Line (385 kms) – 'Project replaced with Bhadrak-Nergundi 3rd line'	Under Implementation	Sept'2030

#	Port	Project	Status	Target Completion Timeline
10	PPA	Flyover between Siju-Paradip (6.2 Kms)	Under Implementation	Jul'2028
11	PPA	Doubling of Haridaspur-Paradip Rail line (82 Kms) – 'Project Added'	Under Development	-
12	VoCPA	Doubling of Madurai-Maniyachi-Tuticorin rail line (158.81 kms)		
13	VoCPA	Rail line between Madurai-V. O . Chidambaranar via Aruppukkottai (143.50 kms)		
14	VoCPA	Electrification and doubling from Milavittan railway station to Marshalling yard and Milavittan station to Tuticorin station (17.60 km)		

Source: Primary Data from Major Ports

Annexures

10. Annexure-1: Organization wise interventions for coastal shipping

10.1. Major Ports

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
1.	VoCPA and KPL	Coal **Draft limitations at discharge ports**	While Paradip has draft capability to accommodate Panamax and Capesize-class bulk carriers for coal, non-availability of ~16 m draft at several discharge ports (such as KPL, VoCPA, etc.) restricts deployment of large bulk carriers, leading to underutilisation of Paradip's capacity and loss of scale economies. ***Example:*** V.O. Chidambaranar Port currently handles vessels with drafts up to 14.2 m. Coal from Paradip for TTPS and NTPL is handled at Coal Jetty-1 and NCB-1, with available drafts of 14.2 m and 14.0 m, respectively. Hence, the deployment of fully laden bulk carriers with 16 m draft is presently constrained.	Expedite capital dredging at key discharge ports – KPL and VoCPA. Capital dredging is planned at VoCPA to increase the drafts of 2 berths after strengthening the berth structure (VOC III and IV berths) to 15.5m, proposed to be completed by June 2028.	Medium-term
2.	SMPA and VPA	Coal and Steel **Under-utilisation of coastal shipping for movement of NTPC coal to Andhra Pradesh via Visakhapatnam Port from SMPA (HDC) due to**	Coal for NTPC power plants located in Andhra Pradesh and adjoining regions has an existing linkage of about 1.5 MTPA from collieries of Eastern Coalfields Limited (ECL) in the Asansol–Dhanbad belt.	Promote coastal movement of NTPC coal from ECL mines through SMPA (HDC) as the load port and VPA as the discharge port, with onward evacuation to power plants by rail.	Medium-Term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
		absence of backhaul cargo	At present, this coal is largely transported through all-rail routes, involving long overland haulage and mobilisation of about 35 rakes per month, resulting in higher logistics costs and congestion on saturated rail corridors. At the same time, coastal shipping on the eastern coast–east coast corridor remains under-utilised, particularly due to the lack of assured return-leg cargo, which adversely affects vessel utilisation and freight economics.	Facilitate dedicated RSR routing and coordinated rake planning for NTPC coal on the eastern coast–east coast corridor. Leverage return-leg cargo by enabling movement of steel and related cargo of Steel Authority of India Limited (SAIL) from VPA to HDC, followed by rail evacuation to steel plants at Durgapur, Bokaro, etc. Encourage bundled freight contracts combining NTPC coal (southbound) and SAIL steel cargo (northbound) to improve vessel utilisation, reduce unit coastal freight cost, and enhance overall viability of coastal shipping.	
3.	PPA and VPA	Iron Ore **Develop iron ore slurry pipeline systems linking mines, plants, and ports**	Iron ore slurry pipeline technology is already operational in India, with three functional pipelines (two by AM/NS India and one by BRPL) of 200–300 km length, and the Draft Logistics Plan for the Iron & Steel Sector estimates that ~27 MTPA of iron ore can be shifted from road to pipeline systems. However, despite handling large iron	VPA and PPA (high iron ore volume ports) may collaborate with captive iron ore, palletisation and steel industries to develop plant-to-port slurry pipeline systems under PPP models. *Large upcoming palletisation capacity near Paradip (Thriveni – 24 MTPA, Essar – 14 MTPA, AMNS – 12 MTPA under progress)*	Long Term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
			ore and pellet volumes, major ports have not actively promoted or integrated plant-to-port slurry pipeline systems into their evacuation and coastal shipping strategies, resulting in continued dependence on road and rail for first-mile movement and limited aggregation of captive cargo for coastal shipping.	Such pipelines would enable low-cost, low-emission first-mile evacuation, structurally favour coastal shipping as the downstream mode, and assure long-term captive cargo for ports while reducing dependence on road and rail.	
4.	MbPA	Iron Ore **Congestion at Mumbai Port during peak demand; limited draft and dependence on lighterage**	Increases vessel waiting time, turnaround time, and freight costs, reducing reliability of coastal services	Improve anchorage draft from ~11.8 m to ~13.5 m, strengthen traffic management and scheduling at Mumbai Port Authority, and augment mechanised bulk handling capacity	Medium term
5.	MgPA	Iron Ore **Lack of adequate storage space at Mormugao Port for iron ore and pellets aggregation**	Following the post-2012 decline in iron ore traffic and tightening of environmental norms in Goa, Mormugao Port Authority (MgPA) no longer maintains large contiguous stockyard space for iron ore and pellets. Current handling is constrained by limited environmentally compliant storage capacity, restricting bulk aggregation required for coastal shipping. Industry stakeholders expressed need for adequate storage at MgPA for aggregation of iron	Develop dedicated storage yards and mechanised stacking, reclaiming facilities at Mormugao Port Authority	Medium term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
			ore cargo for coastal shipping.		
6.	PPA, VPA and KPL	POL **Lack of bunkering facilities on the east coast**	Indian Oil Corporation Limited (IOCL) indicated strong demand for bunkering services on the east coast, **estimating ~8 VLCCs and ~8 Suezmax vessels per month** requiring bunkering support. Bunkering demand of ~16 large crude tankers per month translates into a minimum viable **bunkering capacity of ~0.8 MTPA, with 1.0 MTPA** recommended for operational resilience.	Detailed demand assessment for setting up dedicated bunkering facilities at suitable east coast ports (e.g. Paradip, Visakhapatnam, Kamarajar) Develop bunkering terminals under PPP mode with oil PSUs and private players Position east coast ports as regional bunkering hubs for coastal and EXIM tankers.	Medium Term
7.	SMPA, PPA and VoCPA	Steel **Fragmented parcel sizes of steel cargo**	Typical steel consignments are in the range of 1,000–3,000 tonnes, whereas coastal vessels require 8,000–12,000 tonnes for economic operations. Lack of aggregation results in underutilised vessels and higher freight rates.	SMPA, PPA and VoCPA may develop port-based steel aggregation yards to consolidate cargo from multiple producers. Ports may explore tie ups with cargo aggregators to enable multi-shipper cargo pooling mechanisms for coastal steel movement.	Medium term
8.	SMPA, PPA, DPA, ChPA, KPL, VoCPA	Steel **Lack of specialised steel-handling infrastructure**	Steel is frequently handled at general cargo berths at loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA), with limited mechanisation, leading to longer dwell time and	Loading ports (SMPA, PPA, and DPA) and destination ports (ChPA, KPL, VoCPA, DPA) may develop dedicated steel-handling facilities (coil yards, covered sheds, C-	Medium term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
			higher risk of cargo damage, especially for HR coils and plates.	hook cranes, forklifts).	
9.	DPA and VoCPA	Steel **High Handling Charges due to Equipment Substitution**	**Higher handling charges due to substitution of TRF cranes with HMCs** Stakeholders highlighted that HR plates and coils moved from DPA (Kandla) to Tuticorin are normally handled using TRF (track / trestle rail-mounted fixed) cranes, which have relatively low handling charges. When TRF cranes are unavailable due to maintenance, Harbour Mobile Cranes (HMCs) are deployed, resulting in significantly higher handling charges, sharply increasing total logistics cost despite no change in service requirement from the customer.	Ports may offer rebates on HMC charges for coastal steel cargo when HMCs are deployed due to port-side constraints (e.g., TRF under maintenance). Standardise handling charges for coastal steel cargo across ports, distinguishing clearly between customer-driven and port-driven equipment deployment.	Short term
10.	CoPA, NMPA	Cement / Clinker **Shift in Cement Manufacturing Geography Affecting Logistics Patterns**	**Cement companies are shifting Grinding Units closer to Demand Centres** Cement manufacturing has increasingly moved towards a "split-location model"	Port-based clinker hubs may be developed at Pipavav and Krishnapatnam as primary aggregation nodes near clinker belts, and at Cochin and New Mangalore as consumption-side hubs, enabling a hub-and-spoke coastal logistics model aligned with the cement industry's shift toward demand-proximate grinding units.	Medium term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
11.	CoPA, VoCPA, ChPA	Fertilisers **Inadequate parcel size for containerised fertiliser cargo**	Fertiliser cargo volumes in isolation are often insufficient to achieve optimal parcel sizes, affecting service viability and frequency.	Major Ports (CoPA, VoCPA, ChPA) may facilitate cargo aggregation by enabling combined movement of fertiliser containers with other compatible containerised commodities such as foodgrains, cotton, salt, sugar, etc. Major Ports may explore tie-ups with cargo aggregators and logistics service providers to consolidate volumes and support regular coastal sailings.	Short term
12.	PPA, VPA, KPL and DPA	Green Initiatives in Costal Shipping **Shore to Ship Power Supply**	Typical Indian coastal vessels handle 2,000–20,000 tonnes per call, consume 1.5–6 tonnes of fuel per day at berth, and require 0.4–3 MW of electrical load, making them technically well suited for shore power. Further, based on the consultation with industry stakeholders, to retrofit existing vessel for shore power it requires dry docking of up to 4 months. And given the issues related to vessel availability this poses a logistical challenge.	In terms of Shore Power Infrastructure Readiness at Ports, most ports are currently "harbour-craft-ready" rather than fully "coastal-vessel-ready." Ports with heavy coastal traffic (PPA, VPA, KPL and DPA) may develop OPS infrastructure for coastal vessels on priority. DGS Circular No. 09 of 2025 explicitly covers coastal vessels by assigning them to Phase-2 OPS rollout and mandating IEC/IEEE 80005-3 (LVSC) standards, with power capacity up to 1	Long Term

S. No.	Major Port(s)	Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
				MVA, standardized connectors, SOP-based operations, and eligibility for carbon certification. Future manufacturing of coastal vessels may be mandated for adoption for the above standards necessarily.	
13.	All Major Ports	Green Initiatives in Costal Shipping **Electrification of cargo handling and transport activities**	Globally and in port environments comparable to India, these activities account for roughly 25–45% of total port-area CO_2 emissions, excluding vessel emissions at sea. In container terminals, yard equipment and terminal trucks alone contribute 35–50% of terminal-level CO_2 emissions and as much as 60–80% of NOx and particulate matter (PM) emissions, owing to continuous diesel engine operation at low speeds.	At the port-system level, targeted electrification of high-utilisation cargo handling equipment can achieve 10–25% reductions in total port-area CO_2 emissions, along with 20–40% reductions in local air pollutants. Ports to prepare equipment electrification roadmap for dedicated coastal cargo berths on priority.	Short Term

10.2. Ministry of Ports, Shipping and Waterways (MoPSW)

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Iron Ore	**Coastal cargo rebate on CRC not available for iron ore and pellets**	Creates a cost disadvantage for coastal movement of iron ore compared to other bulk commodities	Extend concession on CRC to iron ore and pellets to align incentives with policy objectives of promoting coastal shipping	Short Term
	Lack of incentives for using Major Ports at both loading and discharge ends (e.g., Paradip/Vizag to Mumbai)	Reduces attractiveness of coastal shipping for large steel producers despite high volumes (JSW moves ~9–10 MTPA annually) from Paradip / Vizag Port on east coast to Mumbai Port on West Coast.	Introduce differential port charge incentives for coastal cargo handled at Major Ports at both ends. Harmonise iron ore handling tariffs across ports such as Visakhapatnam Port Authority and Paradip to avoid distortion.	Short Term
	Road connectivity between iron mines and railway sidings in Odisha	Stakeholders have highlighted persistent poor road connectivity and deteriorated road conditions between major iron ore mines and their nearest railway sidings in Odisha, particularly from: · the Gandhamardan mines to Banspani and Jakhapura rail sidings · the Joda–Barbil iron ore cluster to Barbil and Banspani rail sidings · the Koira–Bolani–Kalta mining belt to Bolani and Barsuan rail sidings. These constrained last-mile road links result in truck congestion, delayed rake loading, and limits bulk aggregation required for coastal shipping.	MoPSW, through Sagarmala, may coordinate with Odisha State Govt. for development of adequate road infrastructure connecting the specified iron mine areas with their respective railway sidings.	Medium Term

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
POL	**Absence of Coastal Tariff Incentives for POL Cargo**	Port users associated with the petroleum industry highlighted that concession on coastal Cargo Related Charges (CRC) is currently extended by ports for several bulk commodities, but POL products are excluded. Given the high-volume and repeatable nature of POL cargo, the absence of such incentives makes coastal shipping less competitive vis-à-vis pipelines and rail.	Extend concession to POL products, at least on a pilot basis. Introduce time-bound or volume-linked incentives for incremental coastal POL volumes. Harmonise the concession across Major Ports to avoid port-specific distortions.	Short-term
Automobiles / Ro-Ro	**Empty return cost of coastal Ro-Ro vessels**	Empty return cost is one of the largest components of voyage cost, contributing ~37% of total voyage cost. Due to the absence of suitable return cargo from the west coast to the south, automobile shippers moving cars from south to west have to bear the full cost of empty return, making coastal Ro-Ro movement uncompetitive compared to road and rail.	Introduce a **policy support mechanism for coastal Ro-Ro vessels** to offset empty return costs (e.g. viability gap support, minimum revenue guarantee, or voyage-based incentive). Facilitate aggregation of potential return cargo through a centralised platform to improve utilisation.	Short-term
	Systemic Reform **Coastal Cargo Promotion Centre (CCPC)**	Domestic cargo volumes are dispersed across multiple shippers and destinations; individual shippers rarely generate cargo volumes sufficient to fully load a coastal vessel. Coastal operators are compelled to sail vessels at 50–60% utilisation, which directly impacts voyage economics and discourages service expansion.	Establish port-led or port-facilitated coastal cargo aggregation mechanisms, either through a dedicated port entity or a neutral third-party aggregator. Such aggregation can enable economically viable parcel sizes, improve vessel load factors, and stabilise coastal service schedules. A **Coastal Cargo Promotion Centre (CCPC) may be established under IPA.**	Medium-term

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
	Green Initiatives in Coastal Shipping **Shore to Ship Power Supply**	Further, based on the consultation with industry stakeholders, to retrofit existing vessel for shore power it requires dry docking of up to 4 months. And given the issues related to vessel availability this poses a logistical challenge.	DGS Circular No. 09 of 2025 explicitly covers coastal vessels by assigning them to Phase-2 OPS rollout and mandating IEC/IEEE 80005-3 (LVSC) standards, with power capacity up to 1 MVA, standardized connectors, SOP-based operations, and eligibility for carbon certification. Future manufacturing of coastal vessels may be mandated for adoption for the above standards necessarily.	Long Term
	Green Initiatives in Costal Shipping **National Green Coastal Vessel Financing & Incentives Framework**	Tankers, container ships, and bulk carriers, are responsible for about 51.2% of the total CO_2 emissions from the Indian coastal fleet, underscoring their central importance in any decarbonisation strategy.	Develop and operationalise a National Green Coastal Vessel Financing & Incentives Framework integrating sustainability-linked lending, port-based incentives, and public/blended finance to accelerate adoption of low- and zero-emission coastal vessels.	Long Term

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
	Green Initiatives in Costal Shipping **Incentives for operating Green Vessel Fleet**	Higher CO_2 levels are observed in the Mumbai and Gujarat regions, driven by dense vessel movements and cargo volumes at major hubs such as Mumbai Port, Jawaharlal Nehru Port, and Kandla Port. These ports handle substantial tanker, container, and tug traffic, leading to prolonged port stays and higher aggregate fuel consumption.	Mandate port dues rebates, priority berthing, and tariff certainty for certified green vessels, supported by a standardised environmental rating system applicable across Major and select Non-Major Ports.	
	Green Initiatives in Costal Shipping **Green Shipping Corridors**	Indian coastal shipping is particularly well suited for early corridor deployment due to short sailing distances, repetitive port pairs, and high port dwell times.	Identify and notify 2–3 pilot corridors based on cargo volumes, port readiness, and feasibility (bulk, container, Ro-Ro). Specify emissions benchmarks, eligible fuels, OPS usage, and reporting requirements applicable to corridor vessels. Issue DGS guidelines covering OPS compatibility, fuel readiness, emissions reporting, and safety standards.	Long Term
	Green Initiatives in Costal Shipping **Initiatives under National Green Shipping Policy**	Need to operationalise a dedicated financial and de-risking framework for coastal shipping, as the sector continues to face high capital costs, limited access to long-tenure finance, and elevated technology risks, especially for green and future-ready vessels.	**Operationalizing the Financial Framework** ***Maritime Development Fund (MDF):*** Utilize the INR 11500 crore corpus components for enhancement of coastal infrastructure and coastal shipping tonnage which comes through the Maritime Investment Fund for equity/blended finance and the	

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
			Interest Incentivization Fund (IIF) for debt subvention of up to 3%. ***Tiered Finance Stack:*** Adopt the Tiered Green Shipbuilding Finance Framework, which combines SBFAS (25% assistance), MDF equity, IIF support, and Green Bonds to achieve a lower Weighted Average Cost of Capital (WACC) for zero-emission coastal vessels. **De-Risking Technology and Retrofitting** As discussed earlier the long dry-docking periods and high costs required for shore power retrofitting are a major logistical challenge, to address these the following maybe considered: ***Results Based Finance (RBF):*** It may be explored to introduce RBF via the MDF specifically for retrofitting existing fleets, which would move the financial burden from upfront subsidies to performance-based outcomes. ***Shipbreaking Credit Note:*** To encourage fleet renewal, a provision may be included where 40% of a ship's	

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
			scrap value is issued as a credit note, reimbursable against the construction of a new green vessel at an Indian yard.	

10.3. Ministry of Railways

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Coal	Shortfall in rake allocation for first-mile evacuation	Allocation of rakes by Indian Railways falls short of indents for coal movement from MCL/ECL to Paradip Port. Rake supply is about 31 rakes/day against an operational capacity of 42 rakes/day, creating a first-mile bottleneck.	Provide assured or priority rake allocation for coal meant for coastal shipping/RSR mode. Introduce dedicated rake quotas for Paradip-bound thermal coal.	Short Term
	Moratorium on GPWIS scheme for rake procurement	Procurement of GPWIS rakes by Paradip Port could increase coal and iron ore handling by ~17.5 MTPA, but a moratorium on the GPWIS scheme by MoR from 2023–2027 restricts such investments. Estimated investment requirement is ~₹900 crore.	MoPSW may coordinate with MoR to discuss relaxation of the moratorium for concerned ports and allow phased implementation of GPWIS-based rake procurement for coal evacuation.	Medium-term

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Iron Ore	Rake shortfall for evacuation of iron ore from mines to Ports under Category D allotment by MoR	As per the Ministry of Railways' rake allotment guidelines, freight traffic is prioritised under Category A, B, C and D, with iron ore movement to ports presently classified under Category D, the lowest priority category. This categorisation results in residual and uncertain rake allocation, particularly during periods of high demand from higher-priority commodities, leading to systemic delays in rake placement for iron ore evacuation to ports and a consequent modal shift towards road transport. For example: Paradip Port - rail-handling capacity of 18 rakes per day for iron ore, but rake supply averaged only 3.83 rakes/day in FY 2022–23 and 4.09 rakes/day in FY 2023–24.	MoPSW may coordinate with MoR for reclassification of iron ore rakes from Category D to Category C for assured and adequate supply of iron ore/pellet rakes. Upgrading priority would increase daily rake flows, immediately clearing indent backlogs, restoring rail's modal share, and reducing costly road diversion.	Short Term
Iron Ore	Rail connectivity to Gandhamardan mines in Odisha	Gandhamardan iron ore mines in Odisha lack direct rail connectivity, requiring iron ore to be evacuated entirely by long-haul road transport, with transit times of 2 days to nearby ports and 3-4 days to Paradip Port under prevailing operating conditions. This dependence on road-based evacuation leads to heavy congestion on port approach roads, slower turnaround at port gates, and inability to aggregate bulk volumes efficiently at ports, thereby directly constraining the scale, reliability, and economic viability of coastal shipping from Odisha ports.	MoPSW may coordinate with Indian Railways and State Government for development of last-mile rail connectivity (rail sidings / spur lines) linking Gandhamardan iron ore mines to the nearest railway network.	Long Term

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Systemic Reform	Short-Haul Rail Tariffs for Coastal Connectivity	Rail becomes uncompetitive for short-haul port connectivity: For distances below 250 km, rail freight costs approach or exceed road transport costs, despite rail being operationally more suitable for bulk coastal cargo. While the sea leg may be cheaper than long-haul rail or road, high short-haul rail tariffs significantly dilute overall logistics savings, making coastal routes unattractive for shippers.	Create a dedicated coastal cargo rail category with a reduced minimum chargeable distance (e.g., 50-100 km instead of prevailing slabs). Apply flatter tapering for distances up to 300 km when cargo is demonstrably linked to coastal shipping. Allow zonal railways to notify pilot concessions for identified coastal corridors (e.g., eastern coast coal, west coast steel and cement).	Medium-term
Systemic Reform	Telescopic benefit in freight rates for RSR for non-coal bulk commodities	For non-coal bulk cargo as well, charging full rail freight on both pre-haulage and post-haulage legs significantly increases total logistics cost, often making direct all-rail or road movement more competitive than RSR.	Railway Board may notify telescopic rail freight benefit for RSR movement of coal for private GENCOs and select bulk commodities such as iron ore, steel, cement, fertilisers and foodgrains.	Medium-term

Support in fast-track development of following rail connectivity infrastructure projects:

#	Port	Project	Status	Target Completion Timeline
1	CoPA	Electrification of Rail link from Willingdon Island to Ernakulam Junction (5 kms)	The project is stalled due to objection from Navy regarding overhead lines interfering with Naval Aircraft.	NA
2	DPA	Construction of Road Over Bridge (ROB) at LC-235	Work in progress	25.12.2026
3	DPA	Provision of Long-Haul loop line in Gandhidham Yard	LoA has been issued to W/R on deposit basis on 06.01.2025. Thereafter, W/R submitted a tentative higher revised cost vide letter dated 21.04.2025. Accordingly, DPA, vide letter dated 05.06.2025, requested W/R to submit the final revised Detailed Estimate along with DPR for the subject project at the earliest, with proper justification, so that after	

#	Port	Project	Status	Target Completion Timeline
			finalization the same may be placed before the Board of DPA for approval. Till date, reply from W/R is still awaited.	
4	DPA	Doubling & electrification of existing Tuna-GIMB line to cater railway traffic of newly developed facilities at Tuna-Tekra for Container Terminal and Multipurpose Cargo berth up to the Take-off point	DPR is submitted to western railway for approval on 29.07.2025. Compliance report along with updated DPR, ES P & L section submitted to railway authority after the observations raised by Western railway	Project Duration is 18 months from the date of award of work
5	DPA	Electrification of railway network inside and outside of Cargo Jetty	The work for electrification of railway network inside and outside of Cargo Jetty is near completion.	
6	KPL	Development of Common user railway siding for (i) General Cargo, (ii) End loading Motor Vehicle (MV) and Non-Hazardous Liquid and (iii) Road 2 Electrification.	Southern Railway has accorded in-principle approval for the Feasibility Study Report on 14.01.2026. Preparation of the Detailed Project Report is in progress.	Sep-27
7	PPA	3rd & 4th line between Jarapada - Budhapank with flyover at Talcher (47 Kms)	Under Implementation	Mar'2027
8	PPA	3rd and 4th line from Budhapank- Salegaon via Rajatgarh (86 Kms)	Under Implementation	Dec'2026
9	PPA	Bhadrak - Vizanagagram 3rd Line (385 kms) – 'Project replaced with Bhadrak-Nergundi 3rd line'	Under Implementation	Sept'2030
10	PPA	Flyover between Siju-Paradip (6.2 Kms)	Under Implementation	Jul'2028
11	PPA	Doubling of Haridaspur-Paradip Rail line (82 Kms) – 'Project Added'	Under Development	-
12	VoCPA	Doubling of Madurai-Maniyachi-Tuticorin rail line (158.81 kms)		

#	Port	Project	Status	Target Completion Timeline
13	VoCPA	Rail line between Madurai-V. O . Chidambaranar via Aruppukkottai (143.50 kms)		
14	VoCPA	Electrification and doubling from Milavittan railway station to Marshalling yard and Milavittan station to Tuticorin station (17.60 km)		

10.4. Ministry of Coal

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Coal	**Rationalization (swapping) of coal linkage patterns for western power plants**	Several power plants in Gujarat and Maharashtra have existing coal linkages with SECL, which is about 600 km from Paradip Port. This leads to preference of rail as a preferred mode of transport on such routes, however, the congestion on these rail corridors limits the freight movement. On the other hand, first mile distance of 600 km from SECL to Paradip Port makes coastal routing uneconomical compared to sourcing from MCL, which is about 200 km from Paradip Port.	MoPSW may coordinate with MoC to undertake linkage rationalisation to align coal sources with coastal shipping economics. Facilitate coal linkage rationalization between SECL and MCL, enabling power plants in Gujarat and Maharashtra to source coal from MCL, reducing rail haulage by ~400 km and lowering coastal logistics costs for RSR movement of coal. MoC may factor logistics cost and coastal viability in coal linkage decisions.	Medium-term

10.5. Ministry of Power (MoP) / GENCOs

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe

Coal	**Prioritize RSR over congested long haul rail corridors**	Long-haul rail corridors such as Howrah–Nagpur–Wardha and Bilaspur–Nagpur are among the most congested rail freight routes, leading to rake shortages, delays, and unreliable coal supply through all-rail routes.	GENCOs may prioritise RSR movement for long-distance coal supply on saturated rail corridors to western and southern power plants. GENCOs may sign long term agreements (10-15 years) with ports, with minimum cargo guarantee per year, which will enable ports to develop adequate infrastructure to handle coal cargo.	Medium-term
Coal	**Limited nomination of vessels by GENCOs**	Inadequate or delayed nomination of vessels by GENCOs slows evacuation of coal from ports, leading to congestion and higher dwell time.	Encourage advance and bulk nomination of vessels by GENCOs.	Short-term

10.6. Ministry of Chemical and Fertilizers

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Fertilisers	**Continued preference for rail transport despite availability of freight subsidy**	Fertiliser, being a subsidised commodity, is eligible for freight subsidy when moved through coastal shipping; however, fertiliser marketing entities (FMEs) continue to rely predominantly on rail, even where coastal shipping is a viable option.	Ministry of Chemicals and Fertilizers, in coordination with concerned agencies, may examine introduction of a **modal preference framework** wherein rail transport is adopted only in cases where coastal shipping is not feasible.	Short-term
Fertilisers	**Exclusion of Imported Fertiliser from Coastal Freight Subsidy**	Currently, subsidy benefits for coastal and inland waterway movement are available only for domestically produced fertiliser, whereas a larger demand for coastal movement exists for imported fertiliser handled at ports.	Ministry of Chemicals and Fertilizers may examine extension of freight subsidy eligibility to imported fertiliser moved through coastal shipping and inland waterways, in line with the existing framework for domestic fertiliser, to encourage higher coastal volumes.	Medium-term

Fertilisers	**Delays and procedural complexity in freight subsidy reimbursement for coastal shipping**	Stakeholders highlighted delays in reimbursement, non-standardised procedures across modes, and cumbersome online submission processes, which act as a deterrent to adoption of coastal and multimodal transport.	Ministry of Chemicals and Fertilizers, in coordination with implementing agencies, may standardise reimbursement procedures across transport modes and fast-track online reimbursement mechanisms for coastal and multimodal movements. In the longer term, the Government may examine adoption of a standardised, mode-neutral freight subsidy framework, independent of the mode of transportation, to improve predictability and ease of doing business.	Medium-term

10.7. Ministry of Environment, Forest and Climate Change (MoEF&CC)

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Coal	**Environmental restrictions on coal handling at Mumbai Port**	There is demanded to handle ~1.5 MT of coal for MAHAGENCO at Mumbai Port, but due to pollution-related restrictions by the State Pollution Control Board, coal handling at berth is not permitted. Coal is handled only at anchorage through lighterage.	MoPSW may coordinate with MoEF&CC and the State Pollution Control Board to expedite issuance of clear norms for coal handling and storage.	Short-term
			Develop SOPs for environmentally compliant berth-based coal handling and storage at Mumbai Port.	

10.8. Ministry of Finance (MoF)

Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
Systemic Reform **Optimizing Bunker Cost and SOP for accounting**	Price differential of 50–55% premium on bunker fuel at Mumbai Port and other Indian ports as compared to leading international bunkering hubs such as Singapore, Fujairah and Rotterdam Bunker fuel supplied to coastal vessels attracts 5% GST, in contrast, global bunkering hubs treat bunkers as tax-free international supplies.	Consider zero-rating or full GST exemption on bunker fuel supplied to coastal vessels, similar to international bunkering hubs. Alternatively, introduce a refund-based or deemed-export mechanism to ensure complete tax neutrality without cash-flow impact on operators.	Short-term
	Difficulty in segregating import (foreign) bunker and coastal bunker and ambiguity on customs duty applicability on remaining bunker at the time of conversion further complicates bunkering processes.	Issue a uniform national SOP clarifying treatment of bunkers already on board at the time of conversion, methodology for accounting duty-paid vs non-duty-paid bunkers and documentation requirements and time limits	
Systemic Reform **Input Tax Credit for Coastal Multimodal Transport**	Under the GST framework, multimodal transportation of goods, including services combining coastal shipping with road and/or rail, was originally taxed at 12% with full Input Tax Credit (ITC). However, subsequent rate rationalisation reduced the GST rate to 5%, while explicitly disallowing ITC	Allow ITC at 5% GST, at least for notified coastal and multimodal transport services, which would directly reduce logistics costs by 6–8% for coastal multimodal movements, and enhance coastal shipping competitiveness.	Short-term
Systemic Reform **GST on Port Charges for Agricultural Produce**	Under the GST framework, transportation of agricultural produce by road, rail, inland waterways and coastal vessels is fully exempt from GST.	GST exemption applicable to transportation of agricultural produce be explicitly extended to port-related services, when such services are rendered exclusively for handling agricultural produce.	Short-term

10.9. Bharat Container Shipping Liner (BCSL)

Commodity	Theme	Issue / Constraint	Specific Intervention	Timeframe
Automobiles / Ro-Ro	**Limited availability of dedicated Indian coastal Ro-Ro services**	The absence of a dedicated Indian coastal Ro-Ro operator limits scale, frequency, and pricing flexibility for	Bharat Container Shipping Liner (BCSL), the proposed JV between Shipping Corporation of India and Container Corporation of India, may be given a mandate to operate Ro-Ro vessels for coastal	Medium-term

		automobile movement. While demand exists, the business case for procuring Ro-Ro vessels remains weak due to high capital costs and uncertain cargo commitment.	automobile cargo, alongside EXIM cargo. Enable blended coastal–EXIM operations to improve revenue certainty.	
Automobiles / Ro-Ro	**Fragmented OEM Volumes and Thin Market**	Stakeholder consultations indicate that, unlike bulk commodities, automobile cargo is highly fragmented across multiple OEMs, each with its own production plants, distribution networks, dealer commitments, and service-level requirements. On any given origin–destination pair, individual OEM volumes are often insufficient to support a dedicated coastal Ro-Ro sailing at economic scale.	Bharat Container Shipping Liner (BCSL) may be positioned as a central cargo aggregator for automobile OEMs, pooling fragmented volumes across manufacturers, corridors, and time windows. By aggregating assured demand and contracting vessels at scale, BCSL could enable deployment of Ro-Ro vessels with higher utilisation, improve sailing frequency, and reduce per-unit logistics costs.	Medium-term
	Dependence on Foreign Flagged Vessels (especially for Container and RoRo)		BCSL may partner with CSL for manufacturing of coastal vessels in India.	

10.10. CBIC

Theme	Issue / Constraint	Specific Intervention	Timeframe

Systemic Reform Coastal–Foreign Vessel Conversion Procedures	Many coastal ports in India do not have full Customs, Immigration and other border-control facilities required for converting a vessel from coastal to foreign-going trade (reverse conversion after completion of coastal leg by foreign vessel). As a result, vessels are often forced to divert to a limited number of EXIM-enabled ports only to complete conversion formalities, even when no cargo operations are planned there.	Notify additional coastal ports for limited foreign-going (EXIM) clearance or provide on-call Customs and Immigration facilities to enable reverse conversion without requiring vessel diversion. Issue a uniform national SOP for reverse conversion Introduce digital and remote clearance mechanisms for Customs and Immigration	Short-term
Restrictions on Mixing Coastal and EXIM Cargo	Existing international Ro-Ro liners already call at multiple Indian ports and often sail with significant unutilised capacity after loading EXIM cars. However, current restrictions do not allow mixing of coastal and EXIM cargo, leading to inefficient capacity utilisation and higher costs for coastal movements.	CBIC and DGS may explore allowing mixing of coastal and EXIM cargo on foreign-flag Ro-Ro vessels calling at multiple Indian ports. Permit discharge of coastal automobiles from KPL to west coast ports (JNPA or ports in Gujarat) during onward EXIM voyages.	Short-term
Vessel Availability Underutilization of Foreign Vessels during Coastal Runs	While foreign-flag vessels are already permitted to undertake coastal runs under cabotage relaxations (subject to approvals for specific cargo types), current practices largely treat EXIM and coastal cargo as mutually exclusive during a voyage. This results in sub-optimal vessel utilisation, empty slots on coastal legs, and higher unit logistics costs for domestic cargo.	Allow Co-loading of EXIM and Coastal Cargo on Foreign Vessels during Coastal Runs. This relaxation may be positioned explicitly as a transitional, time-bound measure to support market development until adequate indigenous capacity is created.	Short / Medium-term

10.11. IWAI

Commodity / Theme	Issue / Constraint	Specific Intervention	Timeframe
Presence of shipwrecks in the Mandovi River affecting	Safety risks, navigational constraints, and higher insurance and operating costs for iron ore barges	Expedite removal of shipwrecks and channel clearance in the Mandovi River to improve navigational safety and reliability of barge-based iron ore transport	Long Term

barge movement to Mormugao Port			
Coastal–IWT Interlinkage **First and Last-Mile Connectivity to IWT Terminals**	IWT jetties / terminals on NW-1 and NW-86	Establishment of road networks to and from the jetties in West Bengal, Jharkhand, Bihar, and Uttar Pradesh	Medium-term
Coastal–IWT Interlinkage **Cargo handling and storage infrastructure**	NW-5 / NW-64 – Paradip and Dhamra Loading and unloading jetty on NW-4 for agri produces and fertilizers IWT jetties / terminals on NW-1, NW-2 and NW-86	Terminal infrastructure for handling and storage of coal, rice, iron ore and other break bulk cargo.	Medium-term
Coastal–IWT Interlinkage **Vessel Availability**	Paradip and Dhamra – Haldia and Kolkata, Krishnapatnam	Deploy dedicated cargo vessels for fly ash movement, lighterage operations between coastal shipping and inland waterways	Medium-term

11. Annexure-2: Record of Meetings and Discussions

Record of Discussion

Consultative workshop on coastal shipping with Traffic Managers of Major Ports (18 Dec 2025)

A consultative workshop on Coastal Shipping in India was held under the chairmanship of the Chairman, Committee on Coastal Shipping and Paradip Port Authority on 18 Dec 2025 to understand the key issues affecting coastal shipping in India, with specific focus on operational and infrastructure challenges, policy and regulatory aspects, documentation procedures, tariff-related concerns, and other associated matters.

The participants included the Traffic Managers of all the 12 Major Ports, their nominated officers, and the Committee members. Following are the key inputs emerging from the deliberations:

- Need for inter-port collaboration and coordinated support to enhance coastal cargo movement was emphasised by Haldia and Paradip Ports – example PPA and SMPA have collaborated to tap into the cargo destined for North East and Nepal, which will be handled in PPA, through lighterage operations, and moved to Haldia through smaller vessels, reducing the last mile distance and cost as compared to entire cargo being unloaded in Dhamra Port and moving by road / rail to final destination.
- High potential coastal cargo corridors may be identified which can be initiated immediately - such as KPL - JNPA for automobile cargo by coastal shipping
- Domestic and imported fertilizer may be targeted for coastal shipping
- Ports may coordinate with OMC's to enhance Crude and POL handling capacity through upgradation of pipelines
- Bunkering charges for coastal shipping may be assessed and optimized to reduce coastal shipping cost
- Policy for free time storage for Coastal Container Cargo may be relooked as aggregation of coastal container takes more time as compared to EXIM container cargo
- Demand aggregation is crucial for coastal shipping – higher parcel size and regular availability of cargo volume will promote strengthening of scheduled services for coastal shipping
- Cabotage relaxations may be further provided for other commodities as well to promote vessel availability for coastal shipping
- Digitization of custom processes may be fast-tracked for EoDB for coastal shipping
- Potential for Salt cargo to be shifted from road to coastal shipping at DPA – regular barge service may be required
- Requirement for dedicated coastal berths for container vessels to improve operational efficiency and reduce turnaround time was highlighted

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Record of Discussion

Consultative workshop on coastal shipping with Industry Stakeholders (23 Dec 2025)

A consultative workshop on Coastal Shipping in India was held under the chairmanship of the Chairman, Committee on Coastal Shipping and Paradip Port Authority on 23 Dec 2025 to understand the key issues affecting coastal shipping in India, with specific focus on operational and infrastructure challenges, policy and regulatory aspects, documentation procedures, tariff-related concerns, and other associated matters.

More than 100 stakeholders participated in the workshop including industry representatives, stevedores, shipping agents, trade associations, and port officials, who shared practical challenges, highlighted bottlenecks, and suggested measures to improve the efficiency and competitiveness of coastal shipping. Some of the major stakeholders / organizations included - DP World, AM/NS, GENCOs from TN, AP, King Metals and Alliance Limited, IFFCO, NTPL, Assam Steel, K Logistics, JSW Steel, TSAA, and Indian Oil among others.

Following are the key inputs emerging from the deliberations, categorised by the nature of issue / suggestion:

1. Infrastructure and Operational Constraints

- Insufficient deep-draft anchorages at Mumbai leading to pre-berthing delays for coastal vessels in peak demand season.
- Priority berthing for coastal vessels not consistently implemented, affecting fixed-schedule services. As container services operate on fixed window schedules, it was suggested that priority berthing norms for coastal container vessels be strictly adhered to optimize coastal container logistics cost.
- Over the past decade, V.O. Chidambaranar Port (Tuticorin) had developed reliable coastal connectivity with Mundra Port, which served as a critical alternative transshipment route to Port of Colombo during disruptions. However, rapid capacity saturation at Mundra has led to withdrawal of coastal feeder services and re-prioritisation of vessel rotations towards long-haul international routes, resulting in the loss of this secondary transshipment option. The absence of redundancy has increased dependence on a single foreign hub, reducing supply chain resilience and adversely impacting trade reliability, logistics costs, and service continuity for cargo originating from South India.
- Draft limitations at coastal berths in Major Ports restrict handling of large vessels (Handymax / ~70,000 MT vessels) specifically for bulk shipments.
- Inadequate supply of railway rakes: BOBRN rakes at Paradip Port to handle more iron ore cargo originating from mines in the hinterland
- Storage / Staking Area requirement near ports for cargo aggregation: Example - Storage issues at MCHP until vessel declaration, preventing advance cargo stacking.
- Tidal constraints reduce loading capacity, impacting vessel viability.
- Lack of designated berths for emergency repairs for coastal vessels at major ports
- Inadequate dredging and presence of legacy wrecks in rivers affecting barge movement and safety.

GST, Taxation & Subsidies

- Shift of multimodal transport GST from 12% to 5% removed Input Tax Credit, increasing effective costs. The Input Tax Credit on multimodal transport may be provided to further enhance cost competitiveness of coastal shipping.
- While transportation of agricultural produce by road, rail, inland waterways and coastal vessels is exempt from GST, port-related services such as berth hire, wharfage, pilotage, towage, cargo

handling and port storage continue to attract 18% GST, even when the cargo handled is agricultural produce. Request to extend agri-cargo GST exemption to port charges as well to enhance cost competitiveness of coastal shipping.

- Suggest to waive off GST on bunkering to promote domestic bunkering.
- Suggest extending subsidies / incentives under Shipbuilding Schemes to Shipowners as well to promote coastal shipping.
- Subsidies available for indigenous fertilizer/coastal cargo not extended to imported fertilizer moved coastally.

Railway & Logistics Coordination

- Acute shortage of IR rakes (Eastern & South Eastern Railway) affecting coal and steel movements.
- Dependence on limited eastern railway rakes increases delays and costs. This also leads to dependency on private rake players.
- Road transport not viable due to significantly higher costs compared to rail.

Regulatory & Procedural Issues

- Foreign-flag vessels carrying coastal cargo charged as foreign run unless converted at berth, increasing costs.
- Increased domestic coal movement has led to shortage of vessel availability. Existing permission/licensing requirements for foreign-flag vessels create cost arbitrage. Relaxation/exemption for essential commodities such as coal may be considered.
- Lack of uniform coastal tariff application for Indian-flag vessels carrying costal cargo.
- Repeated requirements for free fatigue and PHO clearance for short coastal runs. Shipping agents suggest a need for standardisation or relaxation.
- PHO requirements continue at some ports despite removal of immigration checks for coastal trade
- Further immigration check posts aren't available at every coastal terminal thereby creating a need for arrival at a terminal with such facility thereby leading to multiple tariffs for foreign flagged vessels carrying coastal cargo.
- Conversion allowed only at ports with immigration check posts, forcing unnecessary diversions.
- Absence of a clear legal document/framework for carriage of coastal cargo.
- Double scanning of transshipment containers at multiple ports; request to scan only at final discharge port.
- Requirement to file Bill of Coastal Goods even when vessels carry both EXIM and coastal containers—seen as time-consuming.
- Coastal tariffs often dependent on discretionary discounts at EXIM ports, creating uncertainty.

Cargo-Specific Issues

- Coal: shortage of vessels due to increased domestic movement; relaxation requested for foreign-flag vessel licensing for essential commodities.
- Iron ore & steel: coastal operations constrained by port charges, rake shortages, and berthing delays.
- Fertilizers & agri cargo: GST and subsidy asymmetry increases logistics cost.
- Automobiles/Ro-Ro: request to allow foreign-flag car carriers to move coastal cargo; support needed for empty-leg viability.
- Containers: shorter free time and cutting time for coastal cargo compared to EXIM cargo increases storage charges and discourages customers.

Policy & Strategic Suggestions

- Allocate a portion of PSU cargo with first right of refusal to coastal shipping.
- Promote mixed EXIM-coastal container services to improve route viability.
- Introduce incentivised tariffs for coastal and transshipment cargo.
- Extend volume-based discounts and uniform incentives across ports.
- Develop domestic bunkering facilities (e.g., Paradip) to retain volumes currently going to foreign ports.
- Provide land at ports (e.g., Mumbai) for semi-mechanised coastal coal handling facilities.
- Address fishing-net interference near ports through coordination and cost-sharing mechanisms.

Port Charges & Tariffs

- High port charges for coastal vessels, especially at eastern ports (Paradip, Vizag), making coastal shipping less competitive.
- Significant PDA differences between ports (e.g., Paradip vs Vizag nearly double).
- Dual charges such as wharfage at both load and discharge ports increase costs.
- Storage charges for coastal cargo at private terminals are high.
- Pilotage and pilot costs are high; exemption or reduction requested for coastal vessels.
- Conversion charges (foreign to coastal) and bunker duty are high.

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Record of Discussion

Consultative workshop on coastal shipping with Traffic Managers of Major Ports (19 Jan 2026)

A consultative workshop on Coastal Shipping in India was held under the chairmanship of Chairman, Paradip Port Authority and Committee for Coastal Shipping, to discuss the draft Coastal Shipping Action Framework Report prepared by the Committee on Coastal Shipping constituted by MoPSW. The objective was to solicit inputs from Major Ports and DG Shipping, identify gaps in the draft report, and agree on specific revisions and additions required for finalization of the report.

It was highlighted that inputs from several ports on the draft report, connectivity, mechanisation, and coastal berth status were still pending. Emphasis was placed on the need for timely submission of inputs by ports and agencies, given the importance of meeting Ministry timelines.

Key Inputs received on the Draft Report

- ***Mechanisation plans and status of dedicated coastal berths:*** Ports were requested to share their mechanisation plans and status of dedicated coastal berths, and to explicitly indicate where such investments are not required; all Major Ports to submit mechanisation and dedicated coastal berth inputs.
- ***Fertilizers:*** It was noted that there is a need for guidelines from Ministry of Chemicals and Fertilizers regarding prioritization of coastal shipping mode as a preferred mode of transport by Fertilizers Marketing Entities for all types of Fertilizers transported across India on OD pairs where rail network is congested. Such OD pairs can be notified by MoR/MoCF and FMEs may be incentivised to shift to coastal shipping mode.
- ***Cargo Aggregation:*** It was discussed that small and fragmented parcel sizes across several coastal commodities (including fertilisers, food grains, salt, cotton, sugar and other compatible cargo) make it difficult to deploy dedicated coastal services, as volumes at individual origins or destinations are often insufficient to achieve optimal parcel sizes. Stakeholders noted that while aggregation across multiple commodities is conceptually feasible, aggregation does not happen organically, as it involves commercial risk, coordination effort, and additional logistics costs, with no assured incentive for private players to undertake this role.

It was suggested that ports may consider empanelling or licensing aggregators at the local level, similar to licensed stevedores, to formalise the aggregation function and provide operational certainty. It was suggested that ports may need to provide targeted support to aggregators, such as concessional or subsidised land for aggregation yards, volume-based tariff discounts, or incentive mechanisms linked to volumes aggregated and moved coastally.

- ***Food Grains:*** Stakeholders noted that food grain flows are seasonal and directional, which makes deployment of dedicated coastal services challenging unless volumes are aggregated across multiple origins or combined with other compatible cargo. Therefore, the potential for modal shift of food grain would be limited.
- ***Automobile:*** Stakeholders informed that an upcoming automobile manufacturing facility of VinFast is planned in the Tuticorin region, which is expected to significantly add to automobile production volumes in the hinterland of the port, improving the viability of regular Ro-Ro or automobile coastal services. Further, Deendayal Port Authority (DPA) informed the meeting that it has already undertaken a study on coastal shipping of automobiles for its port. DPA indicated that the findings of this study would be shared.
- Stakeholders highlighted that promotion of coastal shipping is inherently port-specific, as infrastructure development, tariff setting, coordination with Railways and Roads, and engagement with cargo aggregators are undertaken at the individual port level; coastal

shipping initiatives should therefore be driven primarily by Port Authorities and there's ***no requirement to formulate a separate entity*** to oversee the coastal shipping sector in India.

- ***Coastal Cargo Facilitation Centre:*** A national-level coordination mechanism was discussed as a facilitative arrangement to support Major Ports in cargo aggregation and inter-agency coordination, under IPA with participation from IWAI and DG Shipping as well. Stakeholders noted potential confusion with the use of the term CCFC due to its association with Customs processes and indicated that an alternative terminology should be used to avoid misinterpretation.
- Stakeholders agreed with the issue of shortage of ***emergency repair berths for coastal vessels***, noting that vessels currently divert to foreign ports such as Colombo from VoCPA for emergency repairs, leading to increased downtime and costs. It was observed that limited emergency repair facilities directly affects vessel availability, turnaround time, and reliability of coastal shipping services.
- DG Shipping highlighted the importance of strengthening clarity on the legal framework under the ***Coastal Shipping Act***, particularly provisions enabling inland vessels to operate in coastal waters; DG Shipping to share a one-page note on legal and regulatory provisions for seamless movement of coastal and inland vessels.
- Stakeholders noted that the transition from earlier ***cabotage-based and exemption-driven*** regimes to the Coastal Shipping Act framework has regulatory implications that need to be clearly understood; DG Shipping to include transition-related clarifications in the legal note.
- Stakeholders observed that ***availability of Indian-flag vessels*** does not necessarily ensure their deployment in coastal trade, as vessel owners may prioritise EXIM cargo based on commercial considerations. Concerns were raised that abrupt withdrawal of cabotage relaxations or foreign vessel conversion mechanisms could increase freight rates and adversely impact coastal cargo volumes. A phased and time-bound transition approach, with periodic review milestones, was suggested as a balanced method to support fleet development while ensuring continuity of coastal services.
- Stakeholders highlighted that ***delays in conversion of EXIM vessels*** to coastal run significantly increase demurrage costs and undermine the commercial viability of coastal shipping. It was noted that the conversion timelines have already been reduced from an average of 5 days to 2 days, however, even 2 days is a long duration for a foreign vessel to wait which leads to additional cost.
- It was emphasised the need to ***assess vessel requirements*** for handling current coastal cargo volumes and projected growth up to 2030; DG Shipping and the Consultant to examine and share inputs on vessel availability and future requirements.
- Stakeholders noted that domestic shipbuilding capacity and production timelines will influence long-term vessel availability for coastal shipping; DG Shipping to share inputs on shipbuilding capacity and timelines.
- ***Regarding co-loading of EXIM and Coastal Ro-Ro cargo*** on same vessel, Mumbai Port informed that they have received Customs clearance for the same on a special cases basis. Further, it was discussed to issue a uniform clarification applicable across all ports by CBIC for consistent regulatory provisions and to improve Ro-Ro movement through coastal shipping.
- ***Green coastal corridor initiatives*** between DPA and VOCPA were cited as examples; DPA and VOCPA to share a short note on green coastal corridors, including challenges and further measures.

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12. Annexure-3: Coastal Route Matrix Based on Port Clusters (171 Routes)

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
1	CR-GJ1-GJ2	Kutch & Gulf of Kutch	GJ1	Central Saurashtra	GJ2
2	CR-GJ1-GJ3	Kutch & Gulf of Kutch	GJ1	South Gujarat / Gulf of Khambhat	GJ3
3	CR-GJ1-MH1	Kutch & Gulf of Kutch	GJ1	Mumbai–JNPA	MH1
4	CR-GJ1-MH2	Kutch & Gulf of Kutch	GJ1	Central Konkan	MH2
5	CR-GJ1-MH3	Kutch & Gulf of Kutch	GJ1	Southern Konkan–Goa Interface	MH3
6	CR-GJ1-KA1	Kutch & Gulf of Kutch	GJ1	Karnataka	KA1
7	CR-GJ1-KL1	Kutch & Gulf of Kutch	GJ1	North Kerala	KL1
8	CR-GJ1-KL2	Kutch & Gulf of Kutch	GJ1	Central & South Kerala	KL2
9	CR-GJ1-TN1	Kutch & Gulf of Kutch	GJ1	Chennai Metropolitan	TN1
10	CR-GJ1-TN2	Kutch & Gulf of Kutch	GJ1	Central Tamil Nadu	TN2
11	CR-GJ1-TN3	Kutch & Gulf of Kutch	GJ1	South Tamil Nadu	TN3
12	CR-GJ1-AP1	Kutch & Gulf of Kutch	GJ1	North Andhra (Vizag–Kakinada)	AP1
13	CR-GJ1-AP2	Kutch & Gulf of Kutch	GJ1	South Andhra (Nellore)	AP2
14	CR-GJ1-OD1	Kutch & Gulf of Kutch	GJ1	Odisha	OD1
15	CR-GJ1-WB1	Kutch & Gulf of Kutch	GJ1	Haldia–Kolkata	WB1
16	CR-GJ1-PY1	Kutch & Gulf of Kutch	GJ1	Karaikal	PY1
17	CR-GJ1-ANI1	Kutch & Gulf of Kutch	GJ1	Andaman & Nicobar Islands	ANI1
18	CR-GJ1-LD1	Kutch & Gulf of Kutch	GJ1	Lakshadweep	LD1
19	CR-GJ2-GJ3	Central Gujarat	GJ2	South Gujarat / Gulf of Khambhat	GJ3
20	CR-GJ2-MH1	Central Gujarat	GJ2	Mumbai–JNPA	MH1
21	CR-GJ2-MH2	Central Gujarat	GJ2	Central Konkan	MH2
22	CR-GJ2-MH3	Central Gujarat	GJ2	Southern Konkan–Goa Interface	MH3
23	CR-GJ2-KA1	Central Gujarat	GJ2	Karnataka	KA1
24	CR-GJ2-KL1	Central Gujarat	GJ2	North Kerala	KL1
25	CR-GJ2-KL2	Central Gujarat	GJ2	Central & South Kerala	KL2

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
26	CR-GJ2-TN1	Central Gujarat	GJ2	Chennai Metropolitan	TN1
27	CR-GJ2-TN2	Central Gujarat	GJ2	Central Tamil Nadu	TN2
28	CR-GJ2-TN3	Central Gujarat	GJ2	South Tamil Nadu	TN3
29	CR-GJ2-AP1	Central Gujarat	GJ2	North Andhra (Vizag–Kakinada)	AP1
30	CR-GJ2-AP2	Central Gujarat	GJ2	South Andhra (Nellore)	AP2
31	CR-GJ2-OD1	Central Gujarat	GJ2	Odisha	OD1
32	CR-GJ2-WB1	Central Gujarat	GJ2	Haldia–Kolkata	WB1
33	CR-GJ2-PY1	Central Gujarat	GJ2	Karaikal	PY1
34	CR-GJ2-ANI1	Central Gujarat	GJ2	Andaman & Nicobar Islands	ANI1
35	CR-GJ2-LD1	Central Gujarat	GJ2	Lakshadweep	LD1
36	CR-GJ3-MH1	South Gujarat / Gulf of Khambhat	GJ3	Mumbai–JNPA	MH1
37	CR-GJ3-MH2	South Gujarat / Gulf of Khambhat	GJ3	Central Konkan	MH2
38	CR-GJ3-MH3	South Gujarat / Gulf of Khambhat	GJ3	Southern Konkan–Goa Interface	MH3
39	CR-GJ3-KA1	South Gujarat / Gulf of Khambhat	GJ3	Karnataka	KA1
40	CR-GJ3-KL1	South Gujarat / Gulf of Khambhat	GJ3	North Kerala	KL1
41	CR-GJ3-KL2	South Gujarat / Gulf of Khambhat	GJ3	Central & South Kerala	KL2
42	CR-GJ3-TN1	South Gujarat / Gulf of Khambhat	GJ3	Chennai Metropolitan	TN1
43	CR-GJ3-TN2	South Gujarat / Gulf of Khambhat	GJ3	Central Tamil Nadu	TN2
44	CR-GJ3-TN3	South Gujarat / Gulf of Khambhat	GJ3	South Tamil Nadu	TN3
45	CR-GJ3-AP1	South Gujarat / Gulf of Khambhat	GJ3	North Andhra (Vizag–Kakinada)	AP1
46	CR-GJ3-AP2	South Gujarat / Gulf of Khambhat	GJ3	South Andhra (Nellore)	AP2
47	CR-GJ3-OD1	South Gujarat / Gulf of Khambhat	GJ3	Odisha	OD1
48	CR-GJ3-WB1	South Gujarat / Gulf of Khambhat	GJ3	Haldia–Kolkata	WB1
49	CR-GJ3-PY1	South Gujarat / Gulf of Khambhat	GJ3	Karaikal	PY1
50	CR-GJ3-ANI1	South Gujarat / Gulf of Khambhat	GJ3	Andaman & Nicobar Islands	ANI1
51	CR-GJ3-LD1	South Gujarat / Gulf of Khambhat	GJ3	Lakshadweep	LD1
52	CR-MH1-MH2	Mumbai–JNPA	MH1	Central Konkan	MH2

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
53	CR-MH1-MH3	Mumbai–JNPA	MH1	Southern Konkan–Goa Interface	MH3
54	CR-MH1-KA1	Mumbai–JNPA	MH1	Karnataka	KA1
55	CR-MH1-KL1	Mumbai–JNPA	MH1	North Kerala	KL1
56	CR-MH1-KL2	Mumbai–JNPA	MH1	Central & South Kerala	KL2
57	CR-MH1-TN1	Mumbai–JNPA	MH1	Chennai Metropolitan	TN1
58	CR-MH1-TN2	Mumbai–JNPA	MH1	Central Tamil Nadu	TN2
59	CR-MH1-TN3	Mumbai–JNPA	MH1	South Tamil Nadu	TN3
60	CR-MH1-AP1	Mumbai–JNPA	MH1	North Andhra (Vizag–Kakinada)	AP1
61	CR-MH1-AP2	Mumbai–JNPA	MH1	South Andhra (Nellore)	AP2
62	CR-MH1-OD1	Mumbai–JNPA	MH1	Odisha	OD1
63	CR-MH1-WB1	Mumbai–JNPA	MH1	Haldia–Kolkata	WB1
64	CR-MH1-PY1	Mumbai–JNPA	MH1	Karaikal	PY1
65	CR-MH1-ANI1	Mumbai–JNPA	MH1	Andaman & Nicobar Islands	ANI1
66	CR-MH1-LD1	Mumbai–JNPA	MH1	Lakshadweep	LD1
67	CR-MH2-MH3	Central Konkan	MH2	Southern Konkan–Goa Interface	MH3
68	CR-MH2-KA1	Central Konkan	MH2	Karnataka	KA1
69	CR-MH2-KL1	Central Konkan	MH2	North Kerala	KL1
70	CR-MH2-KL2	Central Konkan	MH2	Central & South Kerala	KL2
71	CR-MH2-TN1	Central Konkan	MH2	Chennai Metropolitan	TN1
72	CR-MH2-TN2	Central Konkan	MH2	Central Tamil Nadu	TN2
73	CR-MH2-TN3	Central Konkan	MH2	South Tamil Nadu	TN3
74	CR-MH2-AP1	Central Konkan	MH2	North Andhra (Vizag–Kakinada)	AP1
75	CR-MH2-AP2	Central Konkan	MH2	South Andhra (Nellore)	AP2
76	CR-MH2-OD1	Central Konkan	MH2	Odisha	OD1
77	CR-MH2-WB1	Central Konkan	MH2	Haldia–Kolkata	WB1
78	CR-MH2-PY1	Central Konkan	MH2	Karaikal	PY1
79	CR-MH2-ANI1	Central Konkan	MH2	Andaman & Nicobar Islands	ANI1

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
80	CR-MH2-LD1	Central Konkan	MH2	Lakshadweep	LD1
81	CR-MH3-KA1	Southern Konkan–Goa Interface	MH3	Karnataka	KA1
82	CR-MH3-KL1	Southern Konkan–Goa Interface	MH3	North Kerala	KL1
83	CR-MH3-KL2	Southern Konkan–Goa Interface	MH3	Central & South Kerala	KL2
84	CR-MH3-TN1	Southern Konkan–Goa Interface	MH3	Chennai Metropolitan	TN1
85	CR-MH3-TN2	Southern Konkan–Goa Interface	MH3	Central Tamil Nadu	TN2
86	CR-MH3-TN3	Southern Konkan–Goa Interface	MH3	South Tamil Nadu	TN3
87	CR-MH3-AP1	Southern Konkan–Goa Interface	MH3	North Andhra (Vizag–Kakinada)	AP1
88	CR-MH3-AP2	Southern Konkan–Goa Interface	MH3	South Andhra (Nellore)	AP2
89	CR-MH3-OD1	Southern Konkan–Goa Interface	MH3	Odisha	OD1
90	CR-MH3-WB1	Southern Konkan–Goa Interface	MH3	Haldia–Kolkata	WB1
91	CR-MH3-PY1	Southern Konkan–Goa Interface	MH3	Karaikal	PY1
92	CR-MH3-ANI1	Southern Konkan–Goa Interface	MH3	Andaman & Nicobar Islands	ANI1
93	CR-MH3-LD1	Southern Konkan–Goa Interface	MH3	Lakshadweep	LD1
94	CR-KA1-KL1	Karnataka	KA1	North Kerala	KL1
95	CR-KA1-KL2	Karnataka	KA1	Central & South Kerala	KL2
96	CR-KA1-TN1	Karnataka	KA1	Chennai Metropolitan	TN1
97	CR-KA1-TN2	Karnataka	KA1	Central Tamil Nadu	TN2
98	CR-KA1-TN3	Karnataka	KA1	South Tamil Nadu	TN3
99	CR-KA1-AP1	Karnataka	KA1	North Andhra (Vizag–Kakinada)	AP1
100	CR-KA1-AP2	Karnataka	KA1	South Andhra (Nellore)	AP2
101	CR-KA1-OD1	Karnataka	KA1	Odisha	OD1
102	CR-KA1-WB1	Karnataka	KA1	Haldia–Kolkata	WB1
103	CR-KA1-PY1	Karnataka	KA1	Karaikal	PY1
104	CR-KA1-ANI1	Karnataka	KA1	Andaman & Nicobar Islands	ANI1
105	CR-KA1-LD1	Karnataka	KA1	Lakshadweep	LD1
106	CR-KL1-KL2	North Kerala	KL1	Central & South Kerala	KL2
107	CR-KL1-TN1	North Kerala	KL1	Chennai Metropolitan	TN1

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
108	CR-KL1-TN2	North Kerala	KL1	Central Tamil Nadu	TN2
109	CR-KL1-TN3	North Kerala	KL1	South Tamil Nadu	TN3
110	CR-KL1-AP1	North Kerala	KL1	North Andhra (Vizag–Kakinada)	AP1
111	CR-KL1-AP2	North Kerala	KL1	South Andhra (Nellore)	AP2
112	CR-KL1-OD1	North Kerala	KL1	Odisha	OD1
113	CR-KL1-WB1	North Kerala	KL1	Haldia–Kolkata	WB1
114	CR-KL1-PY1	North Kerala	KL1	Karaikal	PY1
115	CR-KL1-ANI1	North Kerala	KL1	Andaman & Nicobar Islands	ANI1
116	CR-KL1-LD1	North Kerala	KL1	Lakshadweep	LD1
117	CR-KL2-TN1	Central & South Kerala	KL2	Chennai Metropolitan	TN1
118	CR-KL2-TN2	Central & South Kerala	KL2	Central Tamil Nadu	TN2
119	CR-KL2-TN3	Central & South Kerala	KL2	South Tamil Nadu	TN3
120	CR-KL2-AP1	Central & South Kerala	KL2	North Andhra (Vizag–Kakinada)	AP1
121	CR-KL2-AP2	Central & South Kerala	KL2	South Andhra (Nellore)	AP2
122	CR-KL2-OD1	Central & South Kerala	KL2	Odisha	OD1
123	CR-KL2-WB1	Central & South Kerala	KL2	Haldia–Kolkata	WB1
124	CR-KL2-PY1	Central & South Kerala	KL2	Karaikal	PY1
125	CR-KL2-ANI1	Central & South Kerala	KL2	Andaman & Nicobar Islands	ANI1
126	CR-KL2-LD1	Central & South Kerala	KL2	Lakshadweep	LD1
127	CR-TN1-TN2	Chennai Metropolitan	TN1	Central Tamil Nadu	TN2
128	CR-TN1-TN3	Chennai Metropolitan	TN1	South Tamil Nadu	TN3
129	CR-TN1-AP1	Chennai Metropolitan	TN1	North Andhra (Vizag–Kakinada)	AP1
130	CR-TN1-AP2	Chennai Metropolitan	TN1	South Andhra (Nellore)	AP2
131	CR-TN1-OD1	Chennai Metropolitan	TN1	Odisha	OD1
132	CR-TN1-WB1	Chennai Metropolitan	TN1	Haldia–Kolkata	WB1
133	CR-TN1-PY1	Chennai Metropolitan	TN1	Karaikal	PY1
134	CR-TN1-ANI1	Chennai Metropolitan	TN1	Andaman & Nicobar Islands	ANI1
135	CR-TN1-LD1	Chennai Metropolitan	TN1	Lakshadweep	LD1
136	CR-TN2-TN3	Central Tamil Nadu	TN2	South Tamil Nadu	TN3

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
137	CR-TN2-AP1	Central Tamil Nadu	TN2	North Andhra (Vizag–Kakinada)	AP1
138	CR-TN2-AP2	Central Tamil Nadu	TN2	South Andhra (Nellore)	AP2
139	CR-TN2-OD1	Central Tamil Nadu	TN2	Odisha	OD1
140	CR-TN2-WB1	Central Tamil Nadu	TN2	Haldia–Kolkata	WB1
141	CR-TN2-PY1	Central Tamil Nadu	TN2	Karaikal	PY1
142	CR-TN2-ANI1	Central Tamil Nadu	TN2	Andaman & Nicobar Islands	ANI1
143	CR-TN2-LD1	Central Tamil Nadu	TN2	Lakshadweep	LD1
144	CR-TN3-AP1	South Tamil Nadu	TN3	North Andhra (Vizag–Kakinada)	AP1
145	CR-TN3-AP2	South Tamil Nadu	TN3	South Andhra (Nellore)	AP2
146	CR-TN3-OD1	South Tamil Nadu	TN3	Odisha	OD1
147	CR-TN3-WB1	South Tamil Nadu	TN3	Haldia–Kolkata	WB1
148	CR-TN3-PY1	South Tamil Nadu	TN3	Karaikal	PY1
149	CR-TN3-ANI1	South Tamil Nadu	TN3	Andaman & Nicobar Islands	ANI1
150	CR-TN3-LD1	South Tamil Nadu	TN3	Lakshadweep	LD1
151	CR-AP1-AP2	North Andhra (Vizag–Kakinada)	AP1	South Andhra (Nellore)	AP2
152	CR-AP1-OD1	North Andhra (Vizag–Kakinada)	AP1	Odisha	OD1
153	CR-AP1-WB1	North Andhra (Vizag–Kakinada)	AP1	Haldia–Kolkata	WB1
154	CR-AP1-PY1	North Andhra (Vizag–Kakinada)	AP1	Karaikal	PY1
155	CR-AP1-ANI1	North Andhra (Vizag–Kakinada)	AP1	Andaman & Nicobar Islands	ANI1
156	CR-AP1-LD1	North Andhra (Vizag–Kakinada)	AP1	Lakshadweep	LD1
157	CR-AP2-OD1	South Andhra (Nellore)	AP2	Odisha	OD1
158	CR-AP2-WB1	South Andhra (Nellore)	AP2	Haldia–Kolkata	WB1
159	CR-AP2-PY1	South Andhra (Nellore)	AP2	Karaikal	PY1
160	CR-AP2-ANI1	South Andhra (Nellore)	AP2	Andaman & Nicobar Islands	ANI1
161	CR-AP2-LD1	South Andhra (Nellore)	AP2	Lakshadweep	LD1
162	CR-OD1-WB1	Odisha	OD1	Haldia–Kolkata	WB1
163	CR-OD1-PY1	Odisha	OD1	Karaikal	PY1
164	CR-OD1-ANI1	Odisha	OD1	Andaman & Nicobar Islands	ANI1

S. No.	Coastal Route Code	Originating Cluster Name	Originating Cluster Code	Destination Cluster Name	Destination Cluster Code
165	CR-OD1-LD1	Odisha	OD1	Lakshadweep	LD1
166	CR-WB1-PY1	Haldia–Kolkata	WB1	Karaikal	PY1
167	CR-WB1-ANI1	Haldia–Kolkata	WB1	Andaman & Nicobar Islands	ANI1
168	CR-WB1-LD1	Haldia–Kolkata	WB1	Lakshadweep	LD1
169	CR-PY1-ANI1	Karaikal	PY1	Andaman & Nicobar Islands	ANI1
170	CR-PY1-LD1	Karaikal	PY1	Lakshadweep	LD1
171	CR-ANI1-LD1	Andaman & Nicobar Islands	ANI1	Lakshadweep	LD1