

Clear The Dredgers

Faster Today and
Build them Tomorrow

How India Can Save ₹4,000 Crore
in Logistics Costs and Create a ₹20,000 Crore
Maritime Manufacturing Opportunity







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Ports

The Foundation of
India's Trade Ambitions



1.1 | India's Maritime Economy

India's maritime sector is a critical pillar of the national economy, handling approximately 95% of the country's trade by volume and 70% by value through sea routes. A connecting East Asia with Europe, Africa, and the Americas, India occupies a significant position in global maritime trade. The country is the 16th largest maritime nation and currently operates 12 major ports and approximately 217 non-major ports, forming the backbone of its maritime logistics network.

India's maritime sector has transformed substantially over the past decade. The total cargo handling capacity of the ports nearly doubled from 1,400 MMTPA in 2013–14 to 2,762 MMTPA in 2024–25, while cargo volume increased from 972 MMT to 1,594 MMT during the same period. Major ports handled approximately 855 MMT of cargo in FY 2024–25, reflecting continued growth in maritime trade. Operational efficiency has also improved significantly.

The average Turnaround Time (TAT) at major ports has reduced from 94 hours to 48.06 hours. Container vessel TAT improving to 30 hours (median: 26 hours). Average ship berth-day output has also been increasing by 52% since 2014–15. These advancements have led to India's rise in the World Bank Logistics Performance Index from 44th (2014) to 38th (2023). Total 10 Indian ports featured among the Top 100 ports globally in the 2023 Container Port Performance Index (CPPI), including two ports in the global Top 30.

The broader maritime ecosystem has expanded alongside port infrastructure. The number of Indian-flagged vessels increased from 1,205 to 1,549, while gross tonnage grew from 10 MGT to 13.52 MGT. India's seafarer workforce expanded by 174%, from 1.17 lakh to 3.20 lakh, making the country one of the world's top three suppliers of trained seafarers. India accounts for approximately 12% of the global seafaring workforce.

Coastal shipping traffic increased by 118%, reaching around 250 MMTPA. Cargo movement through inland waterways recorded a 710% increase, from 18 MMT to 146 MMT, supported by the expansion of operational national waterways from 3 to 29. Simultaneously, sea cruise passenger traffic increased by 480%, and projects such as the National Maritime Heritage Complex (Lothal) continue to strengthen India's maritime ecosystem.



The sector has also demonstrated strong financial performance. Between FY 2014–15 and FY 2024–25, the total income of major ports more than doubled from ₹11,760 crore to ₹24,203 crore, while the operating ratio improved from 73% to 43% and the annual net surplus increased from ₹1,026 crore to ₹9,352 crore. These improvements have been supported by sustained government investment in port modernisation, mechanisation, dredging, connectivity infrastructure, and capacity expansion, complemented by 100% Foreign Direct Investment (FDI) under the automatic route and greater private sector participation through Public–Private Partnership (PPP) models.

Looking ahead, the Maritime Amrit Kaal Vision 2047 (MAKV 2047) outlines an ambitious roadmap for India's maritime transformation, envisaging investments of approximately ₹80 lakh crore across ports, shipping, inland waterways, shipbuilding, maritime logistics, and green shipping. The vision targets an expansion of India's port capacity from 2,762 MMTPA to nearly 10,000 MMTPA by 2047, positioning the country as a leading global maritime and logistics hub.

1.2 | Port-Led Development Strategy

The Sagarmala Programme, approved by the Union Cabinet on 25 March 2015, is the Government of India's flagship initiative for promoting port-led development. The programme's National Perspective Plan (NPP) was launched on 14 April 2016 at the Maritime India Summit with the objective of reducing logistics costs and improving the efficiency of India's maritime supply chain through better integration of ports, connectivity infrastructure, industrial development, coastal shipping, and community development. The programme is structured around five pillars:



As of April 2026, the programme comprised 845 projects with an estimated investment of ₹6.06 lakh crore, of which 315 projects worth ₹1.57 lakh crore had been completed. Under the Port Modernisation and New Port Development component alone, 120 projects have been completed, adding more than 400 MTPA of port handling capacity.

The Port Connectivity Enhancement component has completed 94 projects valued at ₹58,073 crore, creating approximately 8,400 km of road and rail connectivity to improve cargo evacuation and multimodal logistics. Supporting this objective, the Indian Port Rail & Ropeway Corporation Limited (IPRCL), established in 2015, has been responsible for developing rail and multimodal connectivity infrastructure linking ports with their hinterland.

Under Port-led Industrialisation, the programme promotes Coastal Economic Zones (CEZs), Coastal Economic Units (CEUs), Port-linked Industrial and Maritime Clusters, and Smart Industrial Port Cities to encourage manufacturing and logistics activities in proximity to ports.

The Coastal Community Development component focuses on improving livelihoods through fisheries, maritime tourism, cruise tourism, and skill development. Major initiatives include the Cruise Bharat Mission, development of sea and river cruise terminals, lighthouse tourism, and maritime skill-development programmes for coastal communities.

The Coastal Shipping and Inland Water Transport component complements these initiatives by strengthening alternative freight corridors through multimodal terminals, community jetties, floating terminals, and cleaner vessel technologies.

Institutional support has also been strengthened through the transformation of the Sagarmala Development Company Limited (SDCL) into the Sagarmala Finance Corporation Limited (SMFCL) in 2025, India's first maritime-sector Non-Banking Financial Company (NBFC), established to provide dedicated financing for maritime infrastructure and associated industries.



1.3 | Why Port Efficiency Matters

Port efficiency depends not only on infrastructure capacity but also on how effectively that capacity is utilised. Efficient ports minimise vessel waiting time, optimise infrastructure utilisation, accommodate larger vessels, and ensure seamless movement of cargo through coordinated operational planning. These outcomes are determined by four interrelated operational dimensions.



Turnaround Time Optimisation: Reducing the time that vessels spend in the port directly improves the use of the berths and the amount of cargo that can be handled without needing additional infrastructure. Operational efficiency is reflected through lower turnaround time, reduced pre-berthing detention, and higher berth productivity. This helps ports manage vessels using the same equipment and also lowers the costs, for the shipping companies.



Capacity Optimisation: Efficient capacity planning means making sure that the infrastructure expands with the projected cargo demand. Maintaining additional port capacity reduces vessel congestion and TAT while also ensuring optimum use of assets. Strategic augmentation of port capacity and timely debottlenecking of port infrastructure can enhance the future trade growth without compromising operational efficiency.



Navigational Depth and Dredging: One of the most critical determinants of port efficiency is the availability of adequate navigational depth. Larger vessels require deeper approach channels, turning basins, and berths, making capital and maintenance dredging fundamental to modern port operations. Ports capable of maintaining navigational depths of **18 metres or more** can accommodate mega vessels exceeding **200,000 DWT**, substantially increasing cargo throughput, berth productivity, and long-term infrastructure utilisation. Consequently, dredging is not merely a maintenance activity but a strategic investment that determines the operational capability and competitiveness of a port.



Berth Allocation and Operational Planning: Efficient berth allocation makes sure that the vessels are allocated appropriate berths in time. This is done as per the vessel size, thus minimising movement time and maximising berth productivity. Increasingly, modern digital technologies support this process through methods like advance cargo information, predictive berth scheduling, real-time monitoring, and early identification of operational bottlenecks. Integrated planning across ports including hinterland connectivity, and alternative transport modes further strengthens operational resilience and enables continuous cargo movement.

Collectively, these four dimensions—turnaround time optimisation, capacity planning, navigational depth, and operational planning—form the foundation of efficient port operations. Among them, maintaining adequate navigational depth through timely capital and maintenance dredging assumes particular importance, as it directly determines the class of vessels a port can accommodate and, consequently, its cargo handling capability, operational efficiency, and overall competitiveness.

1.1 | Diving deep into Vessel Draft, Turnaround Time, and Cargo Capacity

1.4.1 | Vessel Draft

A vessel's draft is the vertical distance between the waterline and the lowest point of the hull (keel), representing the minimum water depth required for safe navigation. As global shipping increasingly relies on larger vessels to achieve economies of scale, ports must maintain adequate navigational depths to accommodate ships with deeper drafts. Consequently, the operational capability of a port is determined not only by its berth infrastructure but also by the depth of its approach channels, turning basins, and harbour basins, all of which require periodic capital and maintenance dredging.

Safe navigation requires that channel depth exceed the vessel's operational draft by an additional margin known as Under Keel Clearance (UKC), which provides clearance between the keel and the seabed to account for squat, wave action, tidal variations, and navigational safety. International guidance issued by PIANC (World Association for Waterborne Transport Infrastructure) generally recommends maintaining a UKC of approximately 10–15% of the vessel's draft, depending on vessel characteristics and local operating conditions. Accordingly, a container vessel with a 15 m draft typically requires a navigational depth of approximately 16.5–17 m for safe transit.

navigational depth is insufficient, vessels are often compelled to operate under light-loading, carrying less cargo than their design capacity to reduce draft. Although cargo volume decreases, most voyage costs—including crew, insurance, capital costs, and a substantial proportion of fuel consumption—remain largely unchanged. This increases the transportation cost per tonne of cargo and reduces the economic efficiency of maritime transport. Research on shipping cost elasticities further indicates that larger vessels achieve lower unit transport costs through economies of scale; consequently, draft restrictions diminish one of the principal economic advantages of modern shipping. For a typical Capesize bulk carrier, every 1 cm reduction in permissible draft may reduce cargo capacity by approximately 100–150 tonnes, while a 1 m draft restriction can result in a loss of 10,000–15,000 tonnes of revenue-generating cargo.

Due to inadequate dredging, operational challenges extend beyond individual vessels to overall port performance. According to The Comptroller and Auditor General of India (Performance Audit Report No. 3 of 2009), insufficient dredging at the major ports, creates inconsistencies between the depths of access channels and berths. Thus restricting vessel berthing options and increasing TAT. The audit estimated that such delays has imposed annual losses that is exceeding ₹1,400 crore on maritime trade.

Maintaining adequate navigational depth is therefore a fundamental requirement for efficient port operations. Capital dredging establishes the design depth required during port development, while maintenance dredging preserves these depths throughout the operational life of the port by removing sediment accumulation. Together, these activities enable ports to safely accommodate larger vessels, maximise cargo carrying capacity, minimise operational delays, and sustain competitiveness in international maritime trade. As vessel sizes continue to increase, the ability to maintain appropriate navigational depth has become one of the defining determinants of port capability and long-term infrastructure performance.

Vessel Type	Primary Cargo Composition	Typical Capacity Metrics	Maximum Permissible Draft (m)	Current Avg. TAT at JNPA (Hours)	Global Best Practice / Singapore Baseline (Hours)
Container Ship	Fully cellular containerised import/export & transshipment	1,000 to 15,000+ TEU (Regularly hosts mega-vessels up to 24,000 TEU class)	15.0m – 16.0m	~22 – 24 hrs (World Bank LPI / Sagarmala benchmark)	< 12 hrs
Crude Oil / Liquid Tanker	Crude oil, Petroleum, Oil & Lubricants (POL), and chemicals	Up to 120,000 DWT (Suezmax max constraint)	13.5m – 15.0m	~36 – 48 hrs	12 – 24 hrs
Product / Chemical Tanker	Refined petroleum products, edible oils, and liquid chemicals	10,000 to 50,000 DWT	12.0m – 13.5m	~24 – 36 hrs	12 – 24 hrs
Bulk Carrier	Dry bulk commodities (fertilisers, cement, iron ore, and grains)	20,000 to 80,000 DWT (Typically restricted to Panamax size max)	12.0m – 14.0m	~72 – 120 hrs (3–5 days)	24 – 48 hrs
General Cargo Ship	Break-bulk, heavy-lift machinery, and steel project cargo	5,000 to 30,000 DWT	9.0m – 11.5m	~48 – 96 hrs (2–4 days)	< 24 hrs
Coastal Cargo Vessel	Domestic short-sea containers, bulk, and fly ash	500 to 15,000 DWT	3.0m – 9.0m	~12 – 24 hrs	< 12 hrs



1.4.2 | Turnaround Time (TAT)

The total time a vessel spends within the port i.e., from arrival to departure, is known as Turnaround Time (TAT). This includes the time in waiting, berth allocation, cargo operations, and sailing. TAT is a key indicator and is widely accepted as a benchmark for port efficiency. Lower TAT means better berth utilisation, higher productivity, and lower logistics costs.

TAT depends on both infrastructure and operational efficiency. Adequate dredging and navigational depth may enable vessel access but port management components like berth availability, cargo handling systems, digital operations, hinterland connectivity, customs processes, and traffic management largely determine the speed of cargo operations and vessel departure.

India's major ports have significantly improved turnaround times over the past decade. However, due to differences in cargo mix, geographic location, and operational constraints, considerable variation remains. Jawaharlal Nehru Port record relatively low TAT through mechanisation and Direct Port Delivery (DPD), whereas Syama Prasad Mookerjee Port continues to face challenges arising from riverine navigation and siltation. Similarly, international ports such as Port of Singapore, Port of Busan and King Abdullah Port achieve vessel turnaround times of 10–16 hours, demonstrating the benefits of deep channels, automation, and integrated port operations.

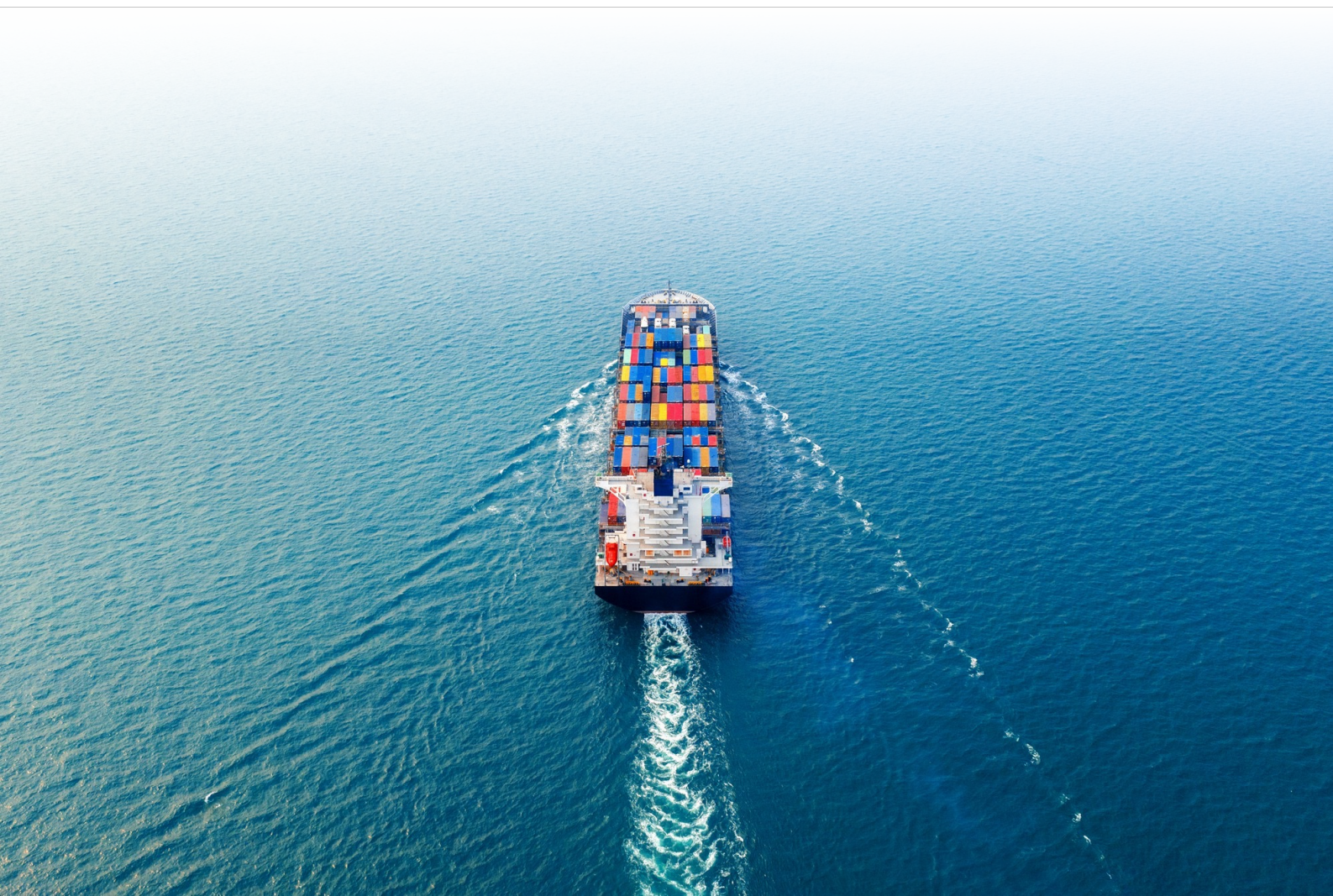
Reducing turnaround time improves berth utilisation, lowers vessel operating costs, enhances schedule reliability, and increases port capacity without requiring proportional infrastructure expansion, making it a critical determinant of port competitiveness.

1.4.2 | Cargo capacity

Cargo carrying capacity refers to the volume of cargo that a vessel can safely transport and is typically measured in Deadweight Tonnage (DWT) for bulk and tanker vessels and Twenty-foot Equivalent Units (TEUs) for container ships. Larger vessels benefit from economies of scale by transporting higher cargo volumes at lower unit costs.

A port's ability to accommodate high-capacity vessels depends primarily on its navigational depth and berth infrastructure. Deeper channels enable fully loaded container ships, bulk carriers, and tankers to call directly at the port, while shallow channels often require vessels to reduce cargo loads, increasing transportation costs and reducing operational efficiency. Consequently, capital and maintenance dredging play a critical role in enhancing port cargo capacity by facilitating the movement of larger vessels.

Higher cargo carrying capacity improves cargo throughput, berth productivity, infrastructure utilisation, and supply chain efficiency, strengthening the competitiveness of both ports and shipping services. Together with vessel draft and turnaround time, cargo capacity represents a key dimension of port performance, highlighting the strategic importance of dredging in enabling efficient, high-capacity maritime operations.



The Invisible Engine of Port Development

Dredging



2.1 | Role of dredging in maritime infrastructure

Dredging is one of the most essential activity for modern port infrastructure development. The process forms and maintains navigational depths required for safe and efficient transit of vessels. This involves underwater material excavation, removal of the sediments, transportation of sediments and sustainable disposal of excavated material. Such materials include silt, sand, clay, gravel, and rock, thus modifying the underwater topography (bathymetry) in accordance with project requirements. Through capital dredging, new navigation channels, harbour basins, and berths are created or deepened. Whereas maintenance dredging periodically removes accumulated sediments in order to preserve the designed navigational depth throughout the operational life of a port. Together, these activities ensure uninterrupted vessel accessibility, berthing capacity, and sustained port productivity.



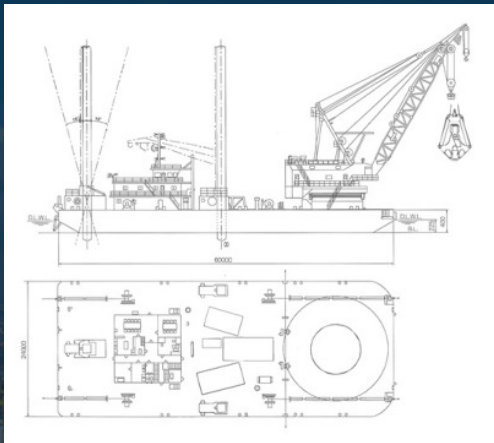
Capital vs Maintenance Dredging

Parameter	Capital Dredging	Maintenance Dredging
Purpose	Create depth	Maintain depth
Frequency	One-time	Periodic
Volume	Very large	Moderate
Cost	High	Lower
Example	Deepening channel from 12 m to 18 m	Removing annual siltation

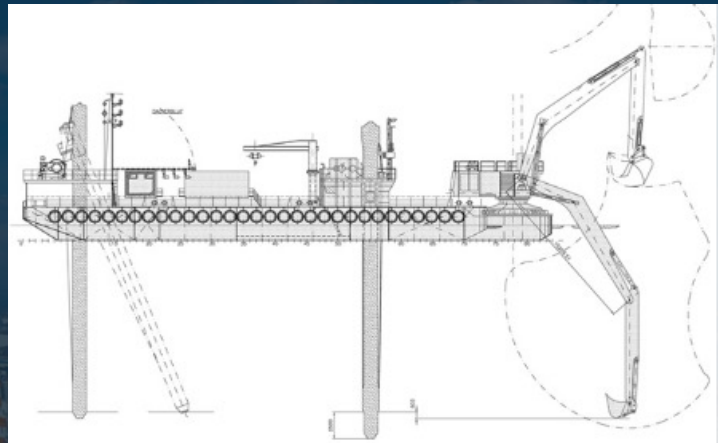
Modern dredging is a multidisciplinary engineering process that extends beyond underwater excavation. It begins with **hydrographic surveys** using technologies such as multibeam echo sounders, side-scan sonar, DGPS, and LiDAR to map the seabed, followed by **geotechnical investigations** (boreholes, CPT, vibro-coring, and sediment sampling) to assess sediment characteristics and excavation complexity. These assessments guide the selection of the optimal dredging methodology based on factors such as water depth, sediment type, dredging volume, disposal distance, environmental constraints, and project timelines.

Stage	Activity	Description	Typical Duration
1	Preliminary Hydrographic Survey	Bathymetric mapping using multibeam/single-beam sonar	1–4 weeks
2	Geotechnical Investigation	Boreholes, sediment sampling, CPT testing	2–8 weeks
3	Environmental Impact Assessment (EIA)	Assessment of ecological and environmental impacts	2–6 months
4	Dredging Design & Planning	Volume estimation, methodology selection, disposal planning	1–3 months
5	Regulatory Approvals & Clearances	Environmental, coastal, port, and navigation approvals	3–12 months
6	Tendering & Contract Award	Procurement and contractor selection	2–6 months
7	Mobilisation of Equipment	Transport and deployment of dredgers and support vessels	1–4 weeks
8	Positioning & Calibration	GPS calibration, survey validation, equipment setup	1–7 days
9	Capital Dredging Operations	Initial channel/berth excavation	3 months–3 years
10	Maintenance Dredging Operations	Removal of accumulated sediment	2 weeks–6 months
11	Material Transportation	Transport of dredged material to disposal/reclamation sites	Continuous during dredging
12	Disposal/Reclamation Activities	Offshore dumping, land reclamation, beach nourishment	Concurrent with dredging
13	Environmental Monitoring	Turbidity, water quality, sediment plume monitoring	Continuous
14	Progress Surveys	Verification of dredged depths and quantities	Weekly to monthly
15	Post-Dredging Hydrographic Survey	Confirmation of design depth achievement	1–4 weeks
16	Project Close-Out & Certification	Final measurements, documentation, handover	2–8 weeks

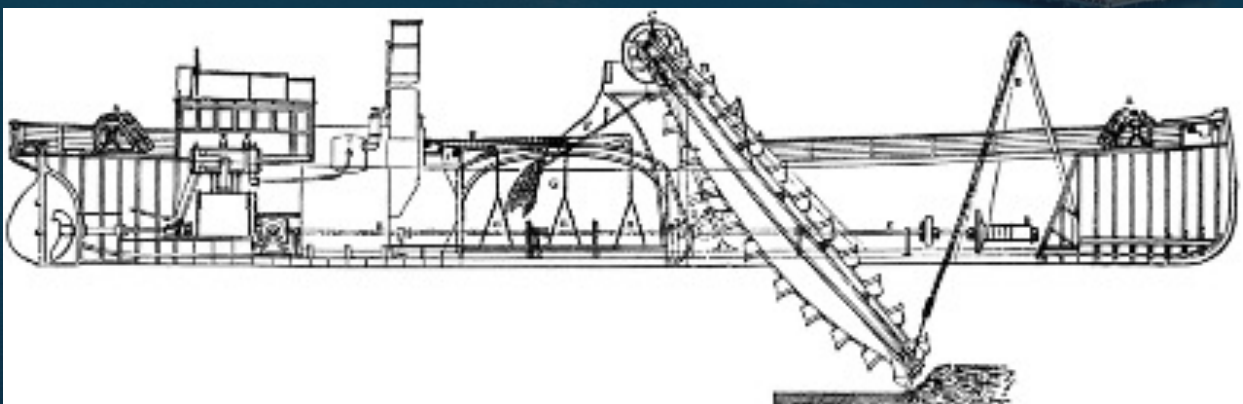
Dredging operations are broadly undertaken using mechanical or hydraulic dredgers. Mechanical dredgers—including Grab Dredgers, Backhoe Dredgers, and Bucket Ladder Dredgers—excavate material through direct mechanical force and are generally deployed in confined areas or where hard soils and rock formations require high breakout force. Hydraulic dredgers remove material as a slurry using powerful suction pumps and dominate large-scale port construction projects. The two principal hydraulic dredgers are the Trailing Suction Hopper Dredger (TSHD), which collects loose sediments into an onboard hopper while sailing, and the Cutter Suction Dredger (CSD), which utilises a rotating cutter head to fragment compact material before pumping it through discharge pipelines to reclamation or disposal sites. Selection of dredger type depends primarily on seabed conditions, production requirements, disposal logistics, and project objectives.



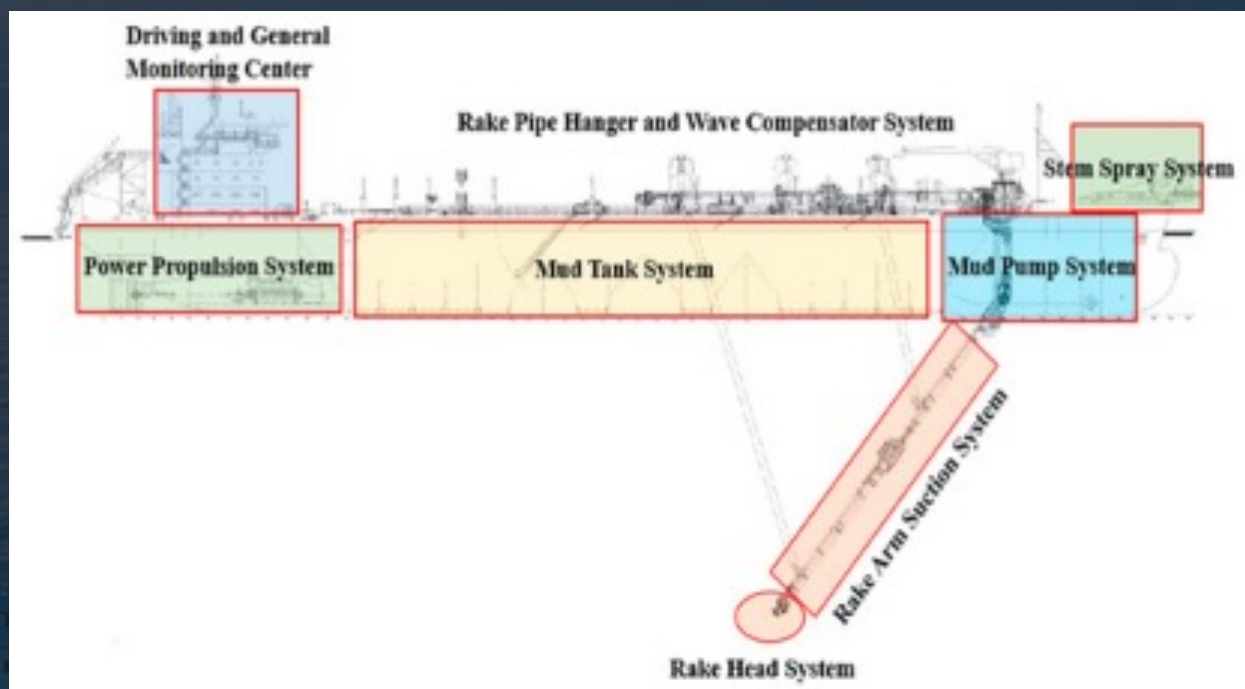
Grab Dredger



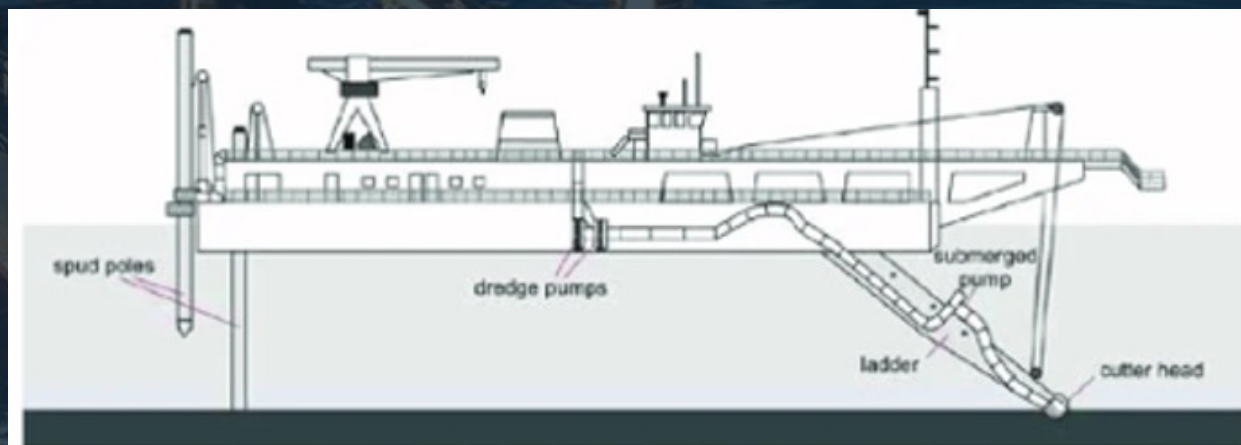
Backhoe Dredgers



Bucket Ladder Dredger



Trailing Suction Hopper Dredger (TSHD)



Cutter Suction Dredger

The global fleet of TSHDs is categorized strictly by its internal hopper volume to match varying project scales:

Vessel Class	Hopper Capacity
Small	500–5,000 m³
Medium	5,000–15,000 m³
Large	15,000–25,000 m³
Ultra-large	30,000–45,000 m³

Leading Dredgers and Countries Dominating Their Operation

Dredger	Type	Hopper Capacity / Capability	Operator	Country
Spartacus	Cutter Suction Dredger (CSD)	44,180 kW cutter power (world's most powerful CSD)	DEME Group	Belgium
Bonny River	Trailing Suction Hopper Dredger (TSHD)	46,000 m³ hopper	Jan De Nul Group	Belgium
Cristóbal Colón	TSHD	46,000 m³ hopper	Jan De Nul Group	Belgium
Vox Maxima	TSHD	31,000+ m³ hopper	Van Oord	Netherlands
Gateway	TSHD	33,000+ m³ hopper	Royal Boskalis Westminster	Netherlands
Queen of the Netherlands	TSHD	35,500 m³ hopper	Van Oord	Netherlands
Willem van Oranje	TSHD	35,500 m³ hopper	Van Oord	Netherlands
Athena	TSHD	17,000 m³ hopper	DEME Group	Belgium
Congo River	TSHD	30,000+ m³ hopper	Jan De Nul Group	Belgium
Galileo Galilei	Rock Cutter Dredger	Specialized hard-rock dredging	Jan De Nul Group	Belgium

Efficient dredging depends on understanding excavated material behaviour, including the **swell factor** and slurry transport characteristics. Maintaining adequate slurry velocity and optimising pipeline design, pump capacity, and booster stations are essential for efficient and reliable sediment transport, particularly in long-distance reclamation projects.

After the excavating process is done, the dredged material is either **sustainably disposed or is reused**, depending on nature of sediment as well as project requirements. Some of the common reuse applications include land reclamation, beach nourishment, wetland restoration and coastal protection, etc. Thus, making beneficial reuse a key component of sustainable dredging.

Dredging is not an isolated construction activity but a well-structured engineering process that consists of surveys, investigations, equipment selection, excavation, material transportation and disposal, environmental monitoring, and post-dredging verification. **Hence, project completion depends not only on specialised dredging equipment and skilled personnel but also on the strategic planning, regulatory compliance, and coordinated project management.** These engineering and operational requirements underpin the mobilisation of specialised dredging assets examined in the subsequent case study.



2.2 | Why Foreign Specialized Vessels Are Sometimes Indispensable

Large-scale capital dredging is among the most specialised activities in maritime engineering, requiring advanced equipment, highly skilled operators, and significant financial investment. Although India possesses domestic dredging capabilities, certain infrastructure projects continue to require specialised foreign dredging vessels where the scale, technical complexity, or urgency of the work exceeds the immediately available indigenous capacity. This reflects the highly concentrated nature of the global dredging industry, where a limited number of international operators possess the specialised fleets and technical expertise required for complex port development projects.

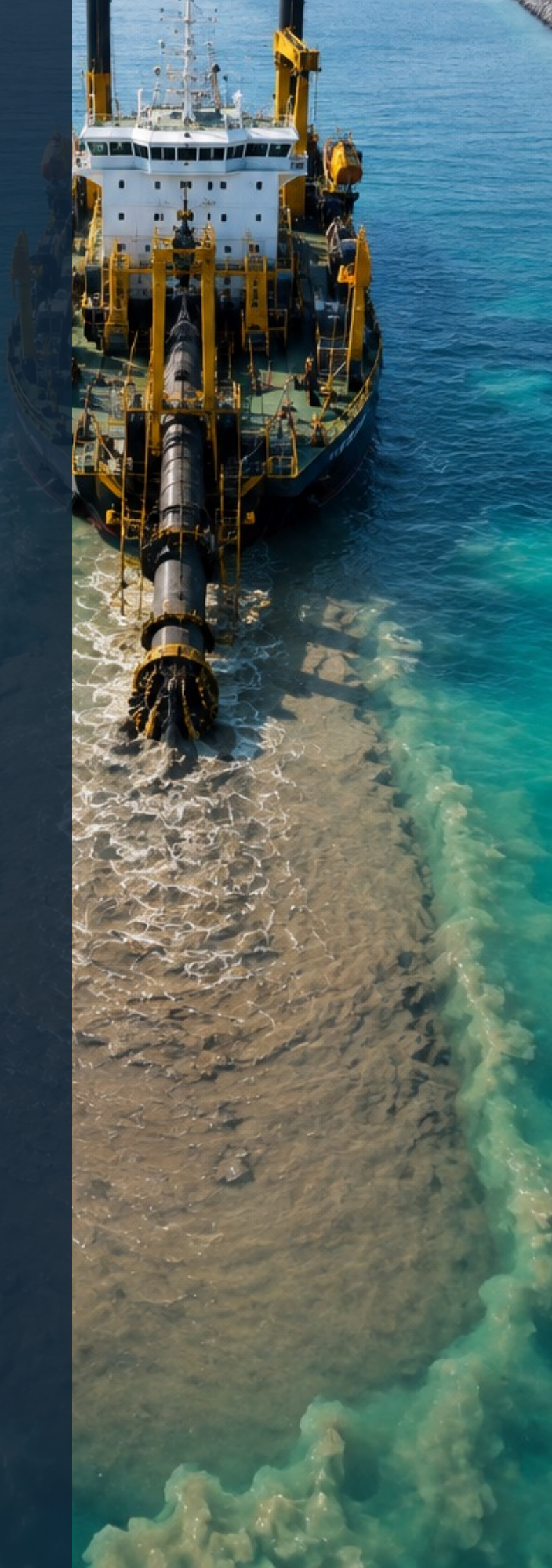
Modern dredging vessels are purpose-built engineering assets designed for specific seabed conditions and project requirements. Trailing Suction Hopper Dredgers (TSHDs) are generally deployed for large-scale maintenance dredging, and reclamation works involving loose sediments, whereas Cutter Suction Dredgers (CSDs) are preferred for capital dredging requiring excavation of compact soils, clay, gravel, or rock. These vessels incorporate sophisticated cutter systems, high-capacity dredge pumps, positioning systems, and specialised discharge pipelines, while their safe and efficient operation depends upon experienced marine engineers, dredging specialists, surveyors, and technical crew. The design, construction, and operation of such vessels are governed by specialised classification rules and international safety standards owing to their unique engineering characteristics.

The Ministry of Ports, Shipping and Waterways has acknowledged the need to strengthen India's indigenous dredging capacity through fleet modernisation and expansion of the Dredging Corporation of India (DCI). Planned investments include the acquisition of new Trailing Suction Hopper Dredgers (TSHDs), Cutter Suction Dredgers (CSDs), water injection dredgers, and inland waterway dredgers. However, developing a modern dredging fleet requires substantial capital investment, specialised shipbuilding capability, and sustained operational experience. Consequently, until sufficient domestic capacity becomes available, chartering specialised foreign dredging vessels remains an important mechanism for executing time-sensitive maritime infrastructure projects without delaying implementation.



The economics of dredging further reinforce this approach. Dredgers are among the most capital-intensive assets in the maritime sector, with acquisition costs varying according to vessel type and capacity. Medium-sized TSHDs may cost between ₹500 crore and ₹1,200 crore, while larger hopper dredgers and high-capacity CSDs can require investments exceeding ₹1,500 crore. Ownership also entails recurring expenditure on fuel, specialised crew, insurance, dry docking, spare parts, classification surveys, environmental compliance, and periodic modernisation, with annual operating and maintenance costs typically amounting to 5–10% of the vessel's capital value. Since dredgers generate value only when actively deployed, intermittent dredging demand may result in prolonged periods of idle capacity while ownership costs continue to accrue.

For this reason, most ports procure dredging services through specialised contractors rather than maintaining dedicated dredging fleets. Under a contract-based model, ports obtain access to modern equipment and specialised expertise without incurring substantial capital expenditure, while responsibility for vessel ownership, maintenance, mobilisation, crewing, and technological upgrades remains with the contractor. The maintenance dredging contract awarded by Paradip Port during 2022–23, valued at approximately ₹182.41 crore for dredging around 12 million cubic metres of material, illustrates the financial advantages of project-based procurement over ownership for ports with periodic dredging requirements.





Illustrative comparison, to consider a Trailing Suction Hopper Dredger (TSHDS)

Parameter	Owning a Dredger	Hiring on Project Basis
Initial Investment	~ ₹330Cr - ₹660Cr (2,000-5,000 Cu Meters)	₹182.41 crore (for 7000 or more Cu Meters capacity)
	~ ₹990Cr - ₹1540Cr (10,000 – 15,000 Cu Meters)	
	~ ₹1,980Cr - ₹2,750Cr + (30,000 + Cu Meters)	

The issue, therefore, is not whether India should depend permanently on foreign dredging capacity. India must continue building domestic dredging capability through fleet expansion, indigenous shipbuilding, and strengthened institutional capacity. However, during the transition period, foreign specialised dredging vessels remain essential for executing complex, time-sensitive port projects. The policy question is whether India's clearance framework enables the timely mobilisation of these specialised assets or creates avoidable delays that weaken port efficiency, increase logistics costs, and slow infrastructure delivery.

Also highlighted by senior official at APMB, India has limited Domestic Dredging Capability, lacks sufficient dredgers capable of handling hard rock and hard-strata dredging. For complex port construction projects, foreign dredgers are often unavoidable.

Understanding the Clearance Framework

Design vs Delivery



3.1 | Why the Framework Exists

The current framework for the approval of dredging projects, particularly with respect to permitting foreign vessels and crew members, is characterized by multiple regulatory clearances involving various government agencies, including maritime boards and port authorities, Ministry of Ports, Shipping and Waterways (MoPSW), Home Affairs (MHA), Ministry of Defence (MoD), and Ministry of External Affairs (MEA) and customs. This multi-agency comprehensive national framework helps to define roles and responsibilities of stakeholders, strengthen security and regulatory oversight.

To regulate the deployment of foreign-flagged vessels while balancing national security, cabotage principles, employment of Indian seafarers, and fair competition for the domestic shipping industry, the Directorate General of Shipping (DGS) requires charterers to obtain prior approval before engaging foreign vessels for specified operations. The licensing requirement is prescribed under Sections 406 and 407 of the Merchant Shipping Act, 1958.



Reasons for a National Framework for Approval of Foreign Dredging Vessels



Ensure National Security and Strategic Oversight

Ensure that foreign dredging vessels, crew, and contractors are comprehensively vetted to protect sensitive maritime infrastructure and prevent activities that may compromise national security.



Establish a Transparent Approval Process

Define clear eligibility criteria, documentation requirements, approval timelines, and institutional responsibilities to enable predictable and efficient regulatory approvals.



Protect Domestic Dredging Industry

Permit foreign dredging assets only where domestic capacity is unavailable or technically inadequate, while encouraging the growth of indigenous dredging capabilities.



Standardise Regulatory Requirements

Harmonise approvals across maritime, environmental, customs, immigration, defence, and port authorities through a uniform regulatory framework.



Safeguard Economic Interests

Promote fair competition, value-for-money procurement, and effective monitoring of foreign exchange outflows associated with foreign dredging contracts.



Ensure Compliance with Cabotage and Maritime Laws

Provide clarity on exemptions and operating conditions for foreign dredgers while ensuring compliance with applicable shipping, coastal trade, and maritime laws.



Create a Centralised Monitoring Mechanism

Establish a unified system to monitor foreign vessel deployment, project progress, compliance, and operational performance throughout the project lifecycle.

3.2 | What the Regulations Prescribe

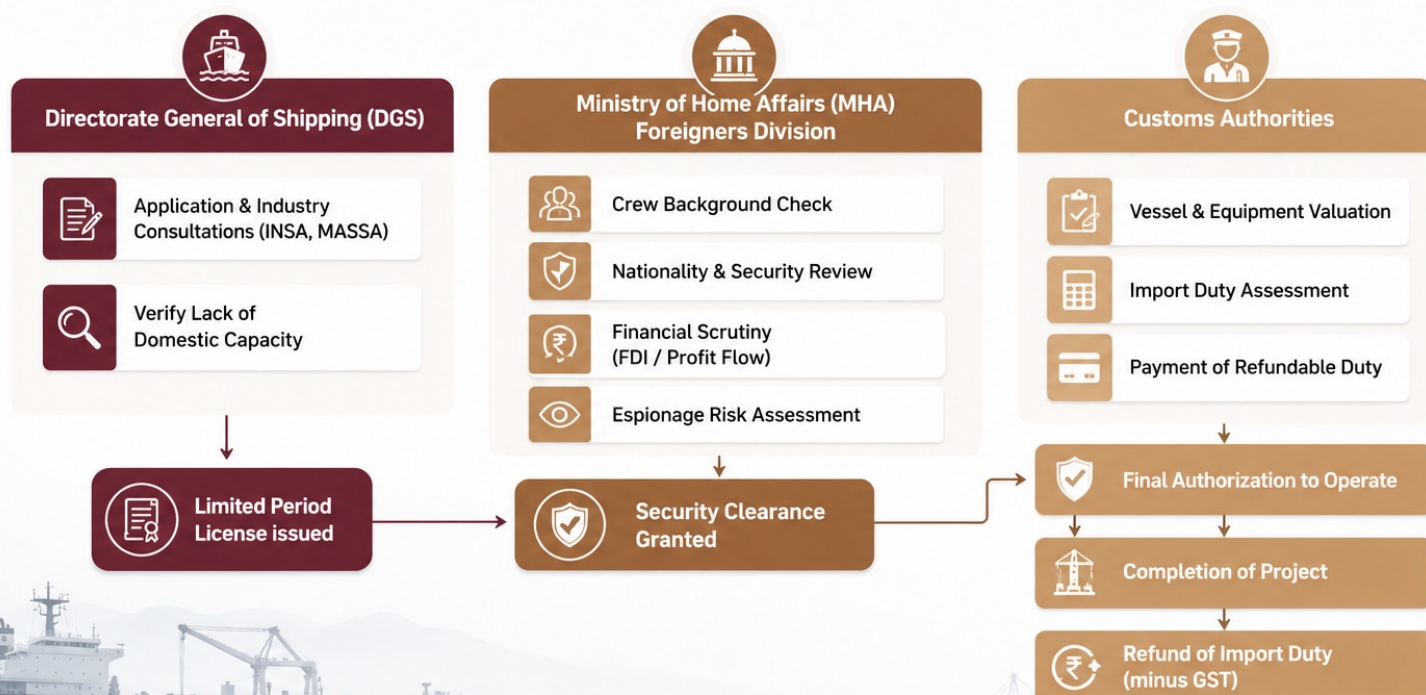
For the mobilisation of foreign specialised dredging assets, the regulatory framework prescribes a security and compliance clearance mechanism covering foreign dredging companies, vessels, equipment, and personnel proposed to operate in Indian waters at major ports, PPP ports, and, through the concerned State Governments and Maritime Boards, non-major and private ports.

Prior to engagement, the Ministry of Ports, Shipping and Waterways (MoPSW) is required to obtain security inputs from the Ministry of Home Affairs (MHA), Ministry of Defence (MoD), and Ministry of External Affairs (MEA), with security agencies expected to provide their recommendations within 12 weeks.

Security clearance, once granted, remains valid for five years, subject to continued compliance. Any change in management control requires fresh security clearance, while changes exceeding 10% shareholding, deployment of additional dredging vessels or equipment, or engagement of foreign personnel require reporting or separate security approvals, as applicable.

Current Multi-Agency Clearance Process *for*

Foreign Specialized Vessels in India



Details of all foreign vessels and crew must also be shared with the MHA, MEA, and MoD to facilitate security oversight.

In PPP port projects, comprehensive details of the bidder are to be submitted to the security agencies before opening of financial bids, and valid security clearances may be sought for subsequent port projects during the validity period. The framework also provides for inter-ministerial review process where security and intelligence inputs are shared, ensuring continuity in the approval process while maintaining national security oversight.

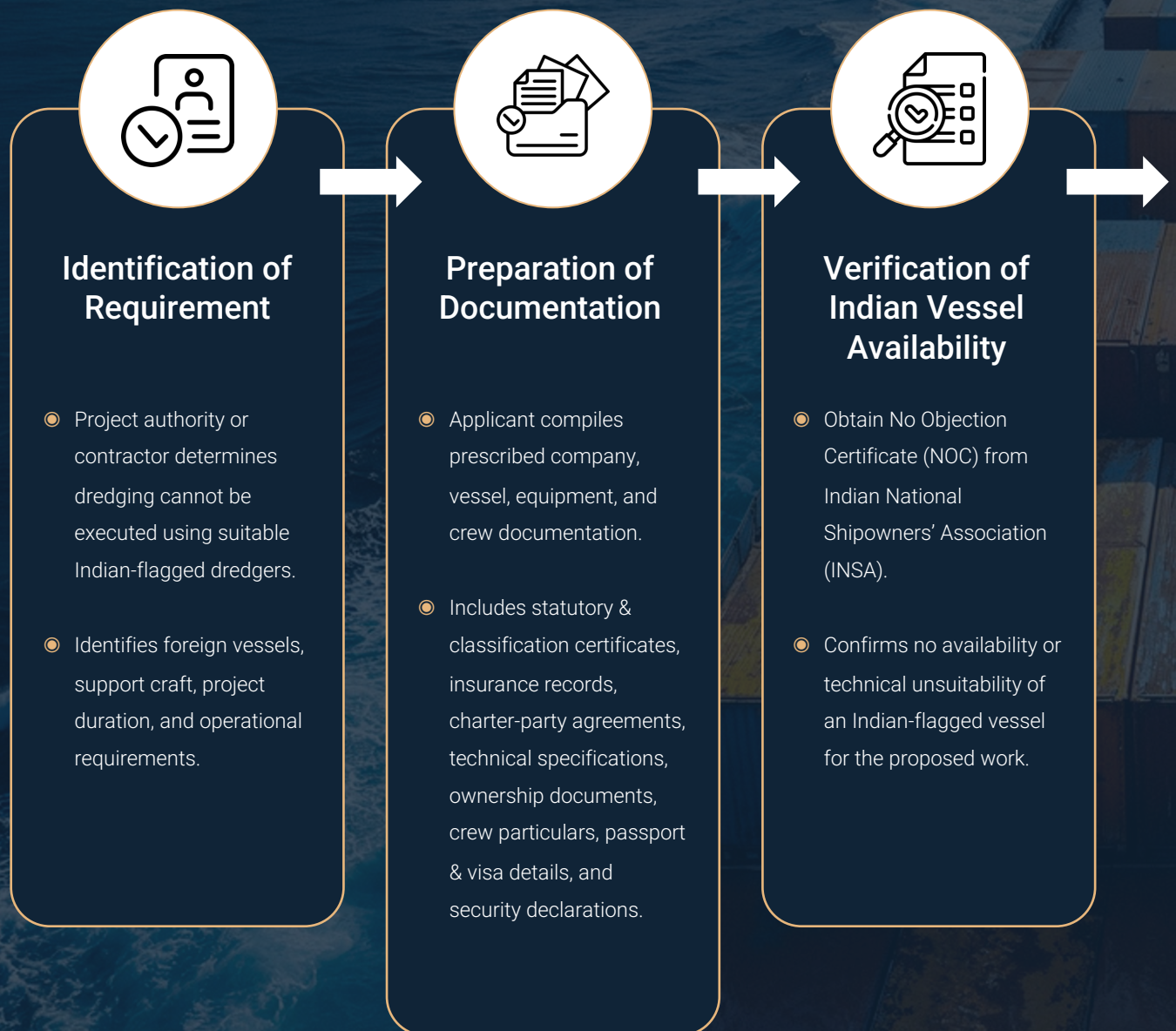
Additionally, the Directorate General of Shipping (DGS) mandates a comprehensive documentation before approving chartering permission to foreign-flagged dredging vessels. Applicants are required to submit statutory and classification certificates, insurance documents, crew details, charter party agreements, INSA No Objection Certificates (NOCs), proof of fee payment, and any additional documentation prescribed based on the vessel's type, age, and operational category.



3.3 | How the Process Works in Practice

In practice, obtaining chartering permission involves a sequence of interdependent activities beginning with identification of the dredging requirement and culminating in the mobilisation of foreign vessels and crew after all statutory and security approvals have been obtained.

FOREIGN DREDGER CLEARANCE PROCESS – FLOW





Time-bound
processing



Digital submission
and tracking



Multi-agency
security review



Safe and efficient
project execution



Submission through the DG Shipping Portal

- Application, supporting documents, and prescribed fee submitted through DG Shipping online chartering portal.
- Facilitates digital submission, document verification, deficiency communication, status tracking, and processing of chartering requests.



Security Clearance

- Proposal examined by Ministry of Home Affairs (MHA) in consultation with Ministry of Defence (MoD), Ministry of External Affairs (MEA), Customs, and other concerned agencies.
- Review includes company, vessel, foreign crew, operating locations, project duration, and associated security considerations.



Final Approval and Mobilisation

- Upon completion of all statutory and security clearances, Specific Period Licence (SPL) and other required approvals are issued.
- Enables mobilisation of foreign dredging fleet, supporting equipment, and expatriate personnel for project execution.

3.4 Case Study: Ramayapatnam Greenfield Port – Mobilising Foreign Dredging Assets for Capital Dredging

The Ramayapatnam Greenfield Port Project in Andhra Pradesh provides an illustrative example of the administrative and regulatory processes associated with mobilising specialised foreign dredging assets for strategic maritime infrastructure projects in India. Developed by the Andhra Pradesh Maritime Board (APMB) under the landlord port model, the project received Administrative Sanction for Phase-I on 16 February 2024 with an estimated project cost of ₹4,929.39 crore, while the Engineering, Procurement and Construction (EPC) contract had been awarded earlier on 30 July 2021.

The project comprises:



Breakwaters



Berthing structures



Reclamation works



Navigation aids



Onshore facilities



External connectivity
infrastructure

Among these, capital dredging constituted one of the largest engineering activities, involving the excavation of approximately 14.96 million cubic metres of material to develop the approach channel, turning basin, and harbour area.

Following a competitive bidding process, M/s Navayuga Engineering Company Limited (NECL) was appointed as the EPC contractor and proposed engaging M/s International Seaport Dredging Private Limited (ISDPL) to execute the capital dredging works using specialised foreign-flagged dredging vessels and expatriate personnel. The proposed marine spread consisted of three Cutter Suction Dredgers (CSDs)—AMBIORIX, AMAZONE, and D'ARTAGNAN—supported by ASL BULAN, a 2,000 BHP Indonesian-flagged multi-purpose tug/workboat. Together, these assets were intended to undertake capital dredging, towing, anchor handling, marine logistics, and operational support throughout the project.

Vessel	Type	Primary Function	Flag State	Key Capability
AMBIORIX	Cutter Suction Dredger (CSD)	Capital dredging	Foreign flagged (DEME Group vessel)	Maximum dredging depth of 35 m with heavy-duty cutter and dredge pump systems
AMAZONE	Cutter Suction Dredger (CSD)	Capital dredging	Foreign flagged (DEME Group vessel)	Specialised cutter suction dredger for deep-channel and harbour dredging
D'ARTAGNAN	Cutter Suction Dredger (CSD)	Capital dredging	Foreign flagged (DEME Group vessel)	Maximum dredging depth of 30 m with 850 mm suction and discharge pipelines
ASL BULAN	2,000 BHP Multi-purpose Tug/Workboat	Marine support	Indonesia	Anchor handling, towing, dredger assistance, supply operations, and marine logistics

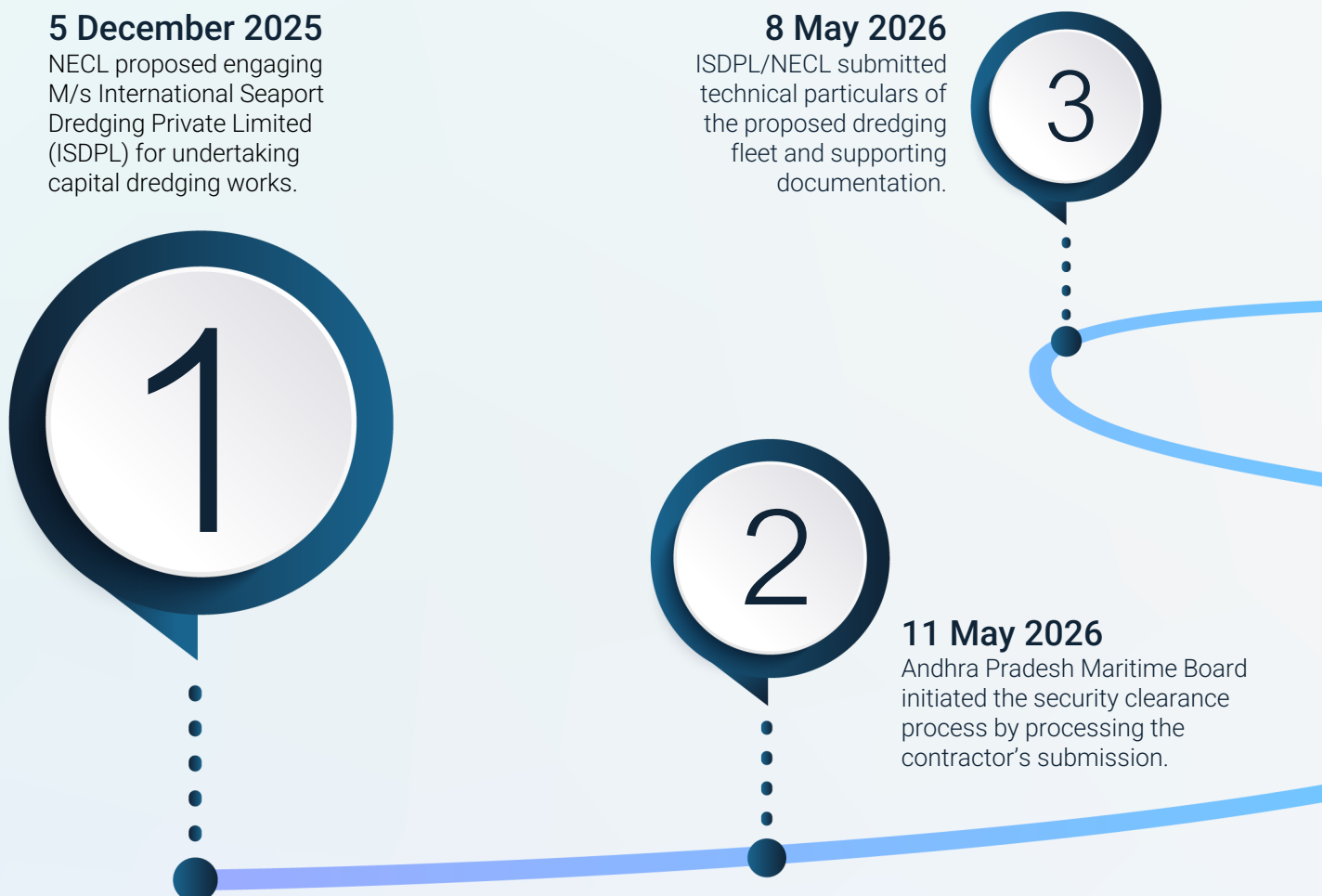
Table 1: Proposed Foreign Marine Spread for Capital Dredging Operations

The proposed deployment marked the transition from project planning to implementation. However, mobilisation involved considerably more than transporting vessels to the project site. Before deployment could commence,

the project was required to comply with India's administrative and regulatory framework governing the entry and operation of foreign vessels, expatriate personnel, and overseas contractors.

The key milestones in the mobilisation process are summarised below. Reference to [Annexure A](#).

Mobilisation required the preparation of company credentials, vessel particulars, technical specifications, ownership records, Advance Information Sheets for vessels and crew, passport and visa details, crew records, and other prescribed documentation before security clearance could be initiated. Acting as the nodal agency, the Andhra Pradesh Maritime Board coordinated with NECL, ISDPL, and the relevant government authorities to facilitate the submission of applications through the e-Sahaj Sewa Security Clearance Portal (SCP). The portal served as the primary platform for document submission, verification, and inter-departmental processing, while applications progressed through the Ministry of Home Affairs, Ministry of Defence and Ministry of External Affairs and Department of Customs for regulatory scrutiny.



Rather than a single approval, the documentary record reveals that mobilisation progressed through a sequence of interconnected administrative activities involving documentation, digital processing, regulatory verification, and institutional coordination. Multiple stakeholders—including the project owner, EPC contractor, specialised dredging contractor, vessel operators, and central government authorities—performed complementary functions throughout the process. Separate submissions were prepared for the company, individual vessels, and expatriate personnel, collectively forming a comprehensive administrative dossier supporting security and regulatory assessment.

2 June 2026

NECL furnished additional documents supporting the deployment proposal.

4

8 June 2026

APMB submitted the consolidated application to the Ministry of Home Affairs seeking security clearance for four foreign vessels and 258 expatriate personnel.

5

1 July 2026 – 30 June 2027

Proposed operational deployment period of the foreign marine spread.

6

Viewed in its entirety, the case demonstrates that mobilisation of foreign dredging assets extends beyond engineering execution to become an integrated project governance exercise. Engineering readiness, regulatory compliance, security verification, and institutional coordination progressed in parallel before specialised assets could be deployed. The timeline further indicates that a significant proportion of the mobilisation period was devoted to administrative preparation, documentation, and regulatory processing rather than physical deployment of vessels.

The Ramayapatnam Greenfield Port Project therefore provides a practical illustration of how strategic maritime infrastructure projects involving foreign assets are operationalised within India's existing regulatory framework. Beyond highlighting the technical requirements of capital dredging, the case underscores the importance of administrative preparedness, institutional coordination, and efficient regulatory processes in determining project mobilisation timelines. It offers a factual account of the governance mechanisms that precede execution and establishes a foundation for examining opportunities to improve the efficiency of administrative processes while maintaining the necessary standards of security and regulatory oversight.

For a project of this scale, even a six-month delay in achieving dredging readiness can create substantial carrying costs. Applying an 8% annual cost of capital to the Phase-I project cost of ₹4,929.39 crore indicates that a six-month delay could represent an illustrative opportunity cost of approximately ₹197 crore. This figure is not attributed solely to vessel clearances; rather, it demonstrates the scale of financial exposure when mobilisation, dredging readiness, or project execution is delayed.

A 1 metre draft restriction can reduce cargo carrying capacity by approximately 10,000–15,000 tonnes per vessel call. If dredging meant to increase port/channel draft is delayed, the port continues operating with lower draft for the delay period. This means larger vessels may either:



The Cost of Delay

From Draft Restriction to Logistics Inefficiency



The impact of delayed mobilisation of specialised dredging vessels is not limited to the dredging contractor or the specific port project where the vessel is deployed. Dredging is a foundational activity that determines navigational depth, vessel accessibility, cargo carrying capacity, berth productivity, and vessel turnaround time. As a result, when dredging is delayed, the cost travels through the maritime logistics chain.

A delay in deploying a dredger can postpone channel deepening, berth readiness, maintenance dredging, or capital dredging activity. This, in turn, can restrict the draft available at the port, compel vessels to operate under light-loading conditions, reduce cargo moved per vessel call, increase the number of vessel trips required for the same cargo volume, and ultimately raise the cost of maritime logistics.

The cost of delay can therefore be understood at four levels:



4.1 | Direct Cost to Dredging Contractors

Specialised dredging vessels are high-value maritime assets. Once mobilised for a project, they continue to incur costs even when they are unable to begin operations due to pending clearances or administrative delays. These costs may include vessel charter charges, crew wages, fuel and power consumption, insurance, maintenance, support vessels, equipment standby, and opportunity cost of non-deployment elsewhere.

Large dredgers and associated marine spreads can impose substantial daily costs on contractors. Even where such costs are not separately visible to the port authority, contractors typically account for expected delays while bidding for dredging contracts. As a result, the cost of administrative uncertainty may be built into

tender quotations, increasing the overall cost of dredging services. As a result, clearance delays do not merely inconvenience contractors; they may increase the cost of project execution for port authorities and government agencies. A predictable, faster, and transparent clearance system can reduce uncertainty premiums in dredging contracts and improve competitiveness in future tenders.

In discussion with senior official at APMB, Poor Hydrographic and Soil Data Can Create Project Risks, Comprehensive offshore and onshore borehole investigations are necessary before port development. Inadequate geological data can lead to cost escalations, design changes, and project delays.

Indicative Contractor-Level Cost of a Six-Month Mobilisation Delay

In addition to wider logistics inefficiencies, mobilisation delays can create direct standby costs for dredging contractors. These costs may not always be visible as a separate line item in project accounts, but they are typically factored into bid pricing, mobilisation planning, and contractor risk premiums.

An indicative six-month delay cost may be estimated across three heads: crew expenses, idle fuel consumption, and maintenance/standby provisioning.

Cost Head	Assumption	Six-Month Estimate
Crew expense	Captain: USD 26,000/month; junior officers: USD 21,000/month; dredging engineers: USD 15,000/month; other crew: USD 10,000/month	USD 432,000
Crew expense in INR	USD 432,000 × ₹85/USD	~₹3.67 crore
Idle fuel consumption	200 litres/hour × 24 hours = 4,800 litres/day	8.64 lakh litres over 180 days
Idle fuel cost	8.64 lakh litres × ₹100/litre	~₹8.64 crore
Maintenance / standby provision	2% of representative new-port dredging quantum of ~15 million cubic metres × ₹300/cubic metre	~₹9.00 crore

Calculation logic: Crew monthly cost:

USD 26,000 + USD 21,000 + USD 15,000 + USD 10,000 = **USD 72,000/month**

Six-month crew cost: USD 72,000 × 6 = **USD 432,000**, At ₹85/USD = **₹3.67 crore**

Fuel cost: 200 litres/hour × 24 = **4,800 litres/day**, 4,800 × 180 days = **8,64,000 litres**, 8,64,000 × ₹100/litre = **₹8.64 crore**

Maintenance / standby provision: 15,000,000 cubic metres × 2% = **300,000 cubic metres**, 300,000 × ₹300/cubic metre = **₹9.00 crore**

Final estimate: **₹21.31 crore for a six-month delay.**

4.2 | Cost to Port Infrastructure Projects

Dredging is often a critical path activity in port development. In greenfield port projects, capital dredging is required to create approach channels, turning basins, harbour areas, and berth pockets. In brownfield ports, maintenance and capital dredging are required to preserve or enhance navigational depths, support capacity expansion, and enable larger vessels to call at the port.

When dredging is delayed, several project-level consequences can arise:

1

Delay in achieving designed channel depth

2

Delay in commissioning berths or terminals

3

Delay in cargo handling capacity creation

4

Longer construction timelines

5

Higher project carrying costs

6

Increased contractor claims or mobilisation-related costs

7

Delay in revenue generation for the port authority or terminal operator

For large port projects, even a few months of delay can create significant financial exposure. For example, in a port project with a total cost of approximately ₹5,000 crore, a six-month delay at an assumed annual cost of capital of 8% would imply an illustrative carrying cost of approximately ₹200 crore. This should not be treated as a clearance-attributable loss in every case, but it demonstrates the scale of financial exposure when dredging readiness, mobilisation, or project execution is delayed.



4.2 | Cost to Port Operations

The most significant system-wide impact of dredging delay arises from restricted navigational depth. A port's ability to accommodate larger vessels depends not only on berth infrastructure but also on the available depth in the approach channel, turning circle, harbour basin, and berth pocket. Where adequate draft is unavailable, vessels may be required to operate under light-loading conditions. This means a vessel carries less cargo than its design capacity in order to reduce its draft and safely access the port. While the cargo load decreases, several voyage costs such as crew, insurance, capital cost, fuel, and port-related charges do not fall proportionately. This increases the logistics cost per tonne of cargo.

A draft restriction can affect port operations in the following ways:



A 1 metre restriction in permissible vessel draft can reduce cargo carrying capacity by approximately 10,000–15,000 tonnes per vessel call for certain large bulk vessel classes. As a result, when dredging intended to increase draft is delayed, the port may continue operating below its optimal cargo handling potential.

4.4 | Cost to India's Logistics Ecosystem

The wider logistics impact of delayed dredging arises because draft restrictions do not remain confined to the port. They influence vessel economics, cargo routing, shipping line choices, supply-chain reliability, inventory cycles, and freight cost per tonne. If a port cannot accommodate vessels at full load due to delayed dredging, shippers and shipping lines may respond in several ways:

1 Vessels may operate under light-loading conditions

2 Cargo may be diverted to alternative ports

3 Additional vessel trips may be required

4 Lighterage or transshipment may be used

5 Cargo evacuation and inventory cycles may be delayed

6 Freight cost per tonne may increase

These outcomes impose an economic cost on the logistics ecosystem. The cost may not appear as a single line item in any project account, but it is reflected in higher transportation cost, lower asset utilisation, longer cargo movement cycles, and reduced competitiveness of maritime trade.

As mentioned by senior officer APMB, Hard Strata Significantly Increases Project Costs, Geological conditions (measured through N-values) directly impact dredging costs.

Hard strata can increase dredging rates substantially, making accurate geotechnical surveys critical.

Poor Hydrographic and Soil Data Can Create Project Risks

- Comprehensive offshore and onshore borehole investigations are necessary before port development.
- Inadequate geological data can lead to cost escalations, design changes, and project delays.

4.5 Cost to Indicative Estimate: Annual Cost of Draft-Related Delay

The following estimate provides a directional assessment of the potential annual logistics cost associated with delayed draft improvement. It is based on the principle that a 1 metre draft restriction can reduce cargo carrying capacity by approximately 10,000–15,000 tonnes per affected vessel call.

The model estimates the annual cost using the following formula:

Annual Cost of Draft-Related Delay = Impacted deep-draft vessel calls per day × Cargo loss per vessel call × Incremental logistics cost per tonne × 365 days

This estimate uses three scenarios:

Scenario	Impacted Deep-Draft Calls per Day	Cargo Loss per Call	Incremental Logistics Cost per Tonne	Estimated Annual Cost
Conservative Case	3 calls/day	10,000 tonnes	₹500/tonne	~₹548 crore
Base Case	4 calls/day	12,500 tonnes	₹1,000/tonne	~₹1,825 crore
High Case	5 calls/day	15,000 tonnes	₹1,500/tonne	~₹4,106 crore

Under the conservative case, the annual cost of delayed draft improvement is estimated at approximately ₹548 crore. Under the base case, the impact increases to approximately ₹1,825 crore. Under the high-impact case, where more vessel calls are affected and the incremental logistics cost is higher, the annual cost could exceed ₹4,000 crore.

As a result, this report uses “up to ₹4,000 crore” as an indicative upper-bound estimate of the logistics efficiency opportunity that may be unlocked by faster mobilisation of specialised dredging assets and timely completion of draft-enhancement works.

4.6 | Methodology Note

The ₹4,000 crore estimate is an indicative logistics-efficiency estimate and not an audited loss figure. It is intended to estimate the potential annual economic impact of delayed draft improvement arising from delayed mobilisation of specialised dredging assets.

This estimate is based on the following assumptions:



A 1 metre restriction in permissible draft can reduce revenue-generating cargo capacity by approximately 10,000–15,000 tonnes per affected vessel call.



If dredging is delayed vessels might have to make additional voyages, rely on lighterage or transshipment. This incurs higher costs of logistics per tonne.



The report assumes that approximately 3–5 deep-draft vessel calls per day are affected across the relevant ports or at multiple locations where the dredging is delayed.



Incremental logistics costs are estimated at ₹500–₹1,500 per affected tonne. This includes costs for additional freight, cargo handling, transshipment, vessel waiting time, inventory carrying, and other operational inefficiencies.



The estimated incremental cost has been annualised to assess the potential impact of delayed draft enhancement over a one-year period.

The estimate does not include the cargo value, broader GDP multiplier effects, loss of port revenues, long-term changes in shipping line behaviour, or wider impacts on trade competitiveness. Accordingly, it should be interpreted as a conservative estimate of operational inefficiencies, rather than a comprehensive assessment of the overall economic impact.

4.7 | Why Faster Clearances Matter

The purpose of this estimate is not to argue that every delay is caused by vessel approvals alone. Dredging projects can be delayed by several factors, including environmental approvals, technical design, geotechnical uncertainty, contractor readiness, weather conditions, and project financing. That said, where specialised foreign dredgers are required and mobilisation is delayed due to sequential clearances, documentation uncertainty, security vetting, or customs procedures, the impact can cascade across the port and logistics ecosystem.

Faster and more predictable vessel clearances can therefore create benefits at multiple levels:

1

Reduced vessel idle time

5

Lower dredging mobilisation cost

2

Faster commencement of capital and maintenance dredging

6

Timely achievement of target navigational depth

3

Improved cargo carrying capacity per vessel call

7

Lower logistics cost per tonne

4

Better port competitiveness

8

Higher confidence among contractors and investors

The cost of delay is therefore not merely an administrative issue. It is a logistics efficiency issue. For India to realise its port-led development ambitions, the clearance framework for specialised dredging vessels must support timely project execution while maintaining the necessary safeguards for national security, customs compliance, and regulatory oversight.

Global Benchmarking

How Maritime Nations
Balance Security and
Speed



5.1 Singapore Integrated Vessel Clearance Practices

Overview

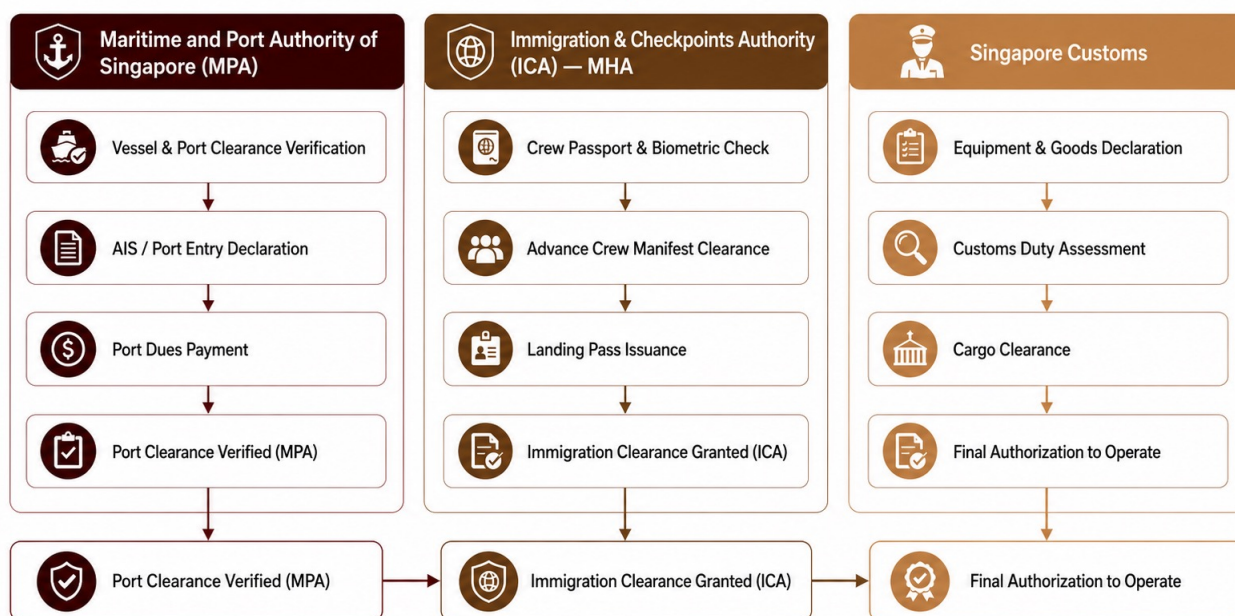
Singapore uses a structured, multi-agency approach to clear foreign specialized vessels for operation. The process runs in parallel across three primary pillars—maritime regulation, immigration, and customs—culminating in a final authorization to operate.

Key Authorities Involved

The clearance process requires coordinated efforts from three main entities:

- **Maritime and Port Authority of Singapore (MPA):** Manages vessel and port clearance verification, port entry declarations, and the collection of port dues.
- **Immigration & Checkpoints Authority (ICA) – MHA:** Oversees personnel-related clearances, including biometric checks, advance crew manifest clearance, and the issuance of landing passes.
- **Singapore Customs:** Handles the commercial and logistics side, including equipment declaration, duty assessment, and final cargo clearance.

Current Multi-Agency Clearance Process for Foreign Specialized Vessels in Singapore



Why is Singapore's Approval Process is Efficient?

The efficiency of the UAE model is driven by:



Consolidated Regulatory Pillars: The process effectively groups complex regulatory, immigration, and port-specific tasks into three logical workstreams, simplifying the submission path for applicants.



Clear Dependencies: The system uses a logical progression where vessel certification must be verified before moving to the central ICP clearance phase, ensuring that foundational requirements are met early.



Centralized Security/Customs Management: By housing immigration, customs, and port security under a single authority (ICP), the model reduces the need for redundant interactions with multiple separate departments.



5.2 | UAE Coordinated Vessel Clearance Practices

Overview

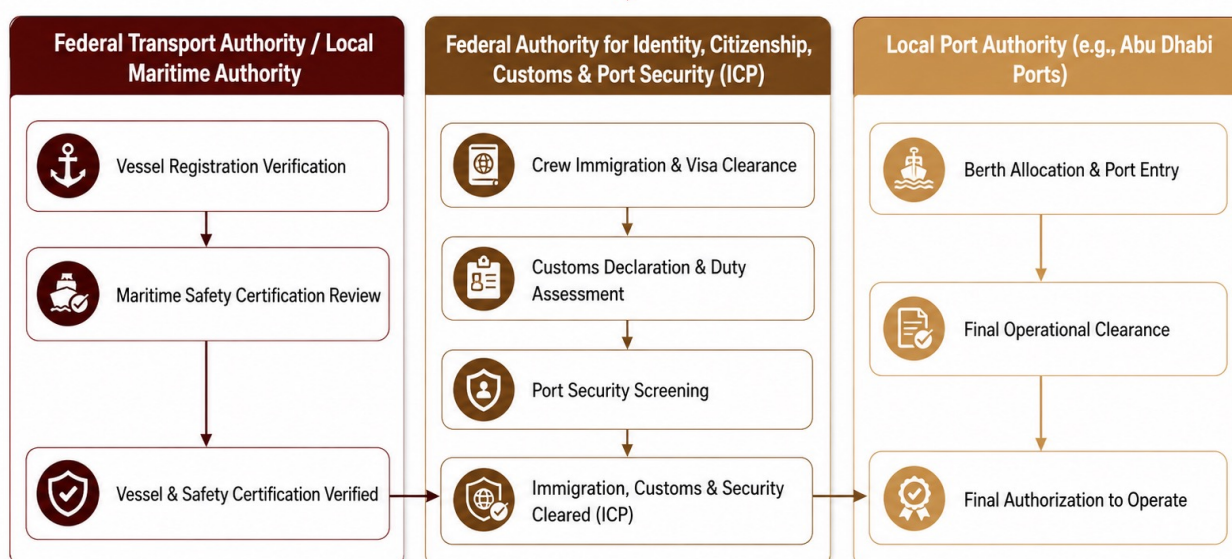
the UAE manages the clearance of foreign specialized vessels through a collaborative multi-agency framework. This process categorizes requirements into maritime safety, immigration/customs/security, and local port operations, concluding in a final authorization to operate.

Key Authorities Involved

The clearance process requires the engagement of three distinct authority groups:

- **Federal Transport Authority / Local Maritime Authority:** Responsible for verifying vessel registration and reviewing maritime safety certifications.
- **Federal Authority for Identity, Citizenship, Customs & Port Security (ICP):** Manages crew immigration and visa clearance, customs declarations, duty assessments, and port security screening.
- **Local Port Authority (e.g., Abu Dhabi Ports):** Oversees berth allocation, port entry, and provides the final operational clearance.

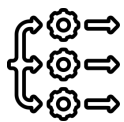
Current Multi-Agency Clearance Process for *Foreign Specialized Vessels in the UAE*





Why is UAE's Approval Process Efficient?

The efficiency of the Singapore model stems from several factors:



Parallel Processing: The system allows for simultaneous clearance activities across MPA, ICA, and Customs rather than sequential processing, which reduces overall wait times.



Clear Functional Segmentation: Each authority has a well-defined scope (vessel, crew, or cargo), which minimizes overlaps and clarifies responsibility for specific submission requirements.



Integrated Final Authorization: The workflow clearly delineates the dependencies leading to the "Final Authorization to Operate," ensuring all regulatory, personnel, and customs checkpoints are resolved systematically before operation commences.

5.3

Australia
Dredging Approval Process

Overview

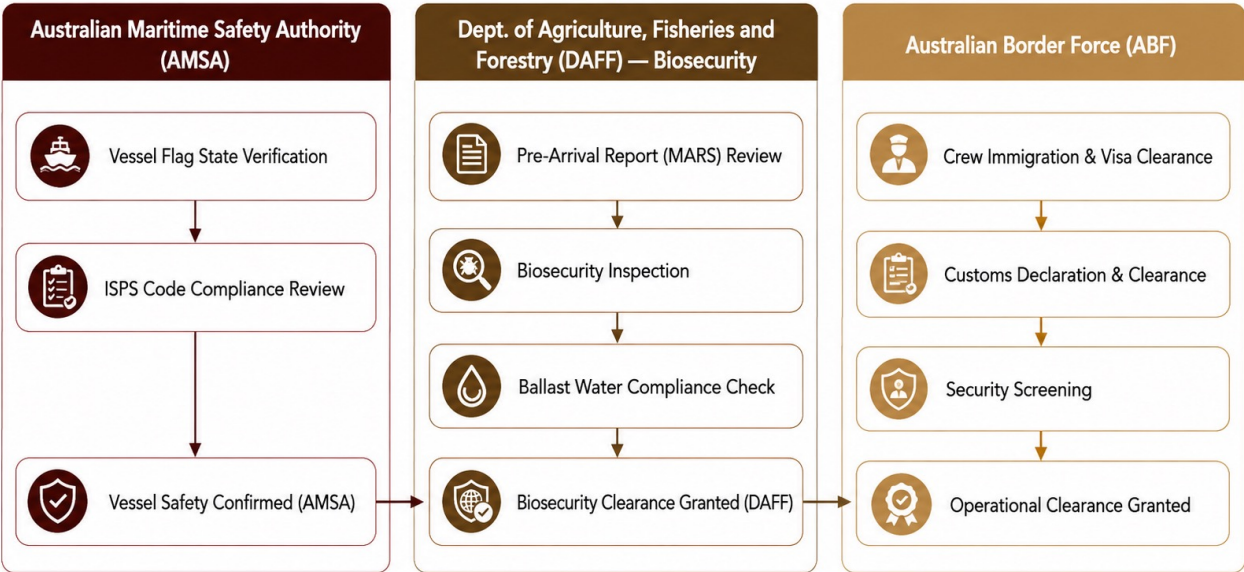
The Australian clearance framework for foreign specialized vessels uses a highly specialized, multi-agency approach. The process involves distinct verification pillars—maritime safety, biosecurity, and border protection—which sequentially grant clearance before the vessel receives final operational authorization.

Key Authorities Involved

The clearance process requires the cooperation of three primary federal agencies:

- **Australian Maritime Safety Authority (AMSA):** Focuses on maritime safety by conducting vessel flag state verification and reviewing compliance with the ISPS Code.
- **Department of Agriculture, Fisheries and Forestry (DAFF) – Biosecurity:** Manages critical biosecurity measures, including pre-arrival report reviews, physical biosecurity inspections, and ballast water compliance checks.
- **Australian Border Force (ABF):** Handles immigration, customs, and security by managing crew visas, customs declarations, and security screening.

Current Multi-Agency Clearance Process for
Foreign Specialized Vessels in Australia



Why is Australia's Approval Process is Efficient?

The efficiency of the Australian model is supported by:



Specialized Biosecurity Focus: By dedicating a specific pillar to biosecurity (DAFF), the process ensures that rigorous environmental and health safety standards—such as ballast water compliance—are addressed in a streamlined manner before entry.



Logical Dependency Flow: The framework establishes a clear path where safety confirmation (AMSA) is followed by biosecurity clearance (DAFF), ultimately leading to operational clearance (ABF), which ensures regulatory compliance is satisfied step-by-step.



Clear Agency Roles: Each authority has a non-overlapping mandate, which simplifies compliance for operators by clearly distinguishing between vessel safety, biological risks, and border security requirements.



5.4 Netherlands (Port Of Rotterdam) Dredging Approval Process

Overview

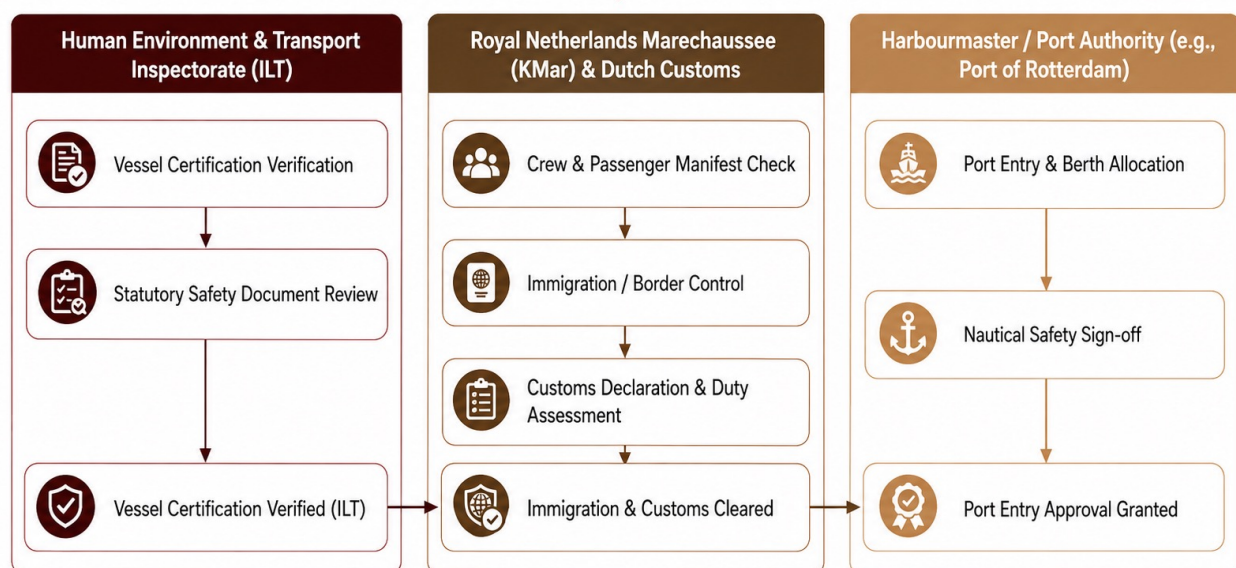
The Netherlands uses a coordinated multi-agency framework to manage the clearance of foreign specialized vessels. The process integrates vessel safety inspections, border/customs control, and local port entry management to ensure a structured path toward operational authorization.

Key Authorities Involved

The clearance process requires the cooperation of three primary federal agencies:

- **Human Environment & Transport Inspectorate (ILT):** Responsible for verifying vessel certifications and conducting reviews of statutory safety documents.
- **Royal Netherlands Marechaussee (KMar) & Dutch Customs:** Manage the movement of people and goods, including crew/passenger manifest checks, immigration/border control, and customs declarations/duty assessments.
- **Harbourmaster / Port Authority (e.g., Port of Rotterdam):** Manages local operational needs, including port entry, berth allocation, and final nautical safety sign-offs.

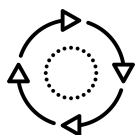
Current Multi-Agency Clearance Process for *Foreign Specialized Vessels in the Netherlands*





Why is Netherlands's Approval Process is Efficient?

The efficiency of the Dutch model is characterized by:



Sequential Logical Dependencies: The framework ensures that fundamental vessel certification (ILT) is completed before finalizing border/customs clearance, and finally moving to port-specific entry approval.



Consolidated Border/Customs Oversight: By grouping immigration and customs responsibilities under a joint oversight framework (KMar & Dutch Customs), the process streamlines the handling of both personnel and commercial declarations.



Clear Operational Finality: The workflow ends with the "Port Entry Approval," which integrates all prior regulatory and safety checks, providing a single clear point of authorization for the vessel to begin operations.

5.5 Opportunities for India to Further Align with Global Clearance Practices

The benchmark jurisdictions studied demonstrate that maritime security, customs compliance and operational efficiency can be pursued together through coordinated approval architecture. India's clearance framework already reflects important policy priorities, including national security, cabotage compliance, protection of domestic maritime capacity and customs oversight. The next opportunity lies in strengthening coordination across these layers and improving predictability for specialised vessel mobilisation.

5.5.1 | Comparative View of Clearance Practices

Authority	Role	Specific Challenge in India	International Practice
 State Maritime Board / Major Port Authority	 Reviews dredging plans, port layout, navigational safety, and issues work order	 Generally efficient but cannot issue work orders until all upstream environmental approvals are completed.	 Port authorities coordinate technical reviews in parallel with environmental agencies.
 Directorate General of Shipping (DGS)	 Verifies non-availability of domestic dredging capacity and licenses foreign-flagged dredgers	 Requires proof that no suitable Indian dredger is available before licensing foreign vessels, creating an additional policy-driven approval stage.	 Singapore, UAE, Australia, and the Netherlands do not require an equivalent domestic-capacity verification step.
 Ministry of Home Affairs (MHA) – Foreigners Division	 Provides security clearance for foreign crew	 Security vetting begins only after DGS licensing and cannot proceed in parallel, adding another sequential approval layer.	 No comparable standalone national security clearance exists for dredging vessel crews in the benchmark countries.
 Customs Authorities	 Conduct vessel/equipment valuation, import duty assessment, and duty refund processing	 Customs clearance is triggered after MHA approval and introduces an additional financial and administrative step before mobilization and during demobilization.	 Customs procedures are generally integrated with normal import formalities and do not gate operational authorization.

Before the foreign dredger clearance process commences, dredging projects are required to obtain statutory environmental and coastal regulatory approvals. While these approvals are applicable to many infrastructure projects (and are not specific to foreign dredgers), they often influence the overall project timeline due to sequential reviews and procedural requirements.

Authority	Role	Specific Challenge in India	International Practice
State Maritime Board / Major Port Authority	Reviews dredging plans, port layout, navigational safety, and issues work order	Generally efficient but cannot issue work orders until all upstream environmental approvals are completed.	Port authorities coordinate technical reviews in parallel with environmental agencies.
Directorate General of Shipping (DGS)	Verifies non-availability of domestic dredging capacity and licenses foreign-flagged dredgers	Requires proof that no suitable Indian dredger is available before licensing foreign vessels, creating an additional policy-driven approval stage.	Singapore, UAE, Australia, and the Netherlands do not require an equivalent domestic-capacity verification step.
Ministry of Home Affairs (MHA) – Foreigners Division	Provides security clearance for foreign crew	Security vetting begins only after DGS licensing and cannot proceed in parallel, adding another sequential approval layer.	No comparable standalone national security clearance exists for dredging vessel crews in the benchmark countries.
Customs Authorities	Conduct vessel/equipment valuation, import duty assessment, and duty refund processing	Customs clearance is triggered after MHA approval and introduces an additional financial and administrative step before mobilization and during demobilization.	Customs procedures are generally integrated with normal import formalities and do not gate operational authorization.

5.5.2 | Key Areas for Strengthening India's Clearance Framework

The international comparison suggests that India can retain its existing safeguards while strengthening coordination, predictability and digital integration. The following areas may be prioritised for process improvement:



Strengthening DGS–MHA–Customs Coordination

The DGS, MHA and Customs sequence represents an important part of India's foreign dredger mobilisation pathway. Each agency performs a distinct and legitimate function: DGS ensures maritime and domestic-capacity compliance, MHA/MoD provide security oversight, and Customs handles valuation, temporary import and duty-related requirements.

The opportunity lies in improving coordination across these stages so that applicants do not have to navigate disconnected processes. A more integrated digital workflow can allow these agencies to access the same documentation, process applications in parallel where feasible, and provide a consolidated view of clearance status.



Improving Predictability in Environmental and Project-Level Reviews

Environmental and coastal approvals are part of the broader project development framework and are not specific to foreign dredger mobilisation. However, they can influence when dredging works are able to commence. Greater use of digital tracking, defined review milestones and improved coordination between central, state and port-level authorities can support more predictable project execution.



Enhancing Parallel Processing Between State and Central Reviews

Where legally feasible, state-level coastal and port-related reviews may be better coordinated with central-level appraisal processes. This can help reduce sequential waiting time while preserving the substance of environmental and coastal scrutiny.



Standardising Public Consultation and Compliance Procedures

Public consultation and pollution-control procedures are important safeguards in infrastructure projects. Their implementation may be strengthened through standardised documentation, defined timelines, improved scheduling and clear escalation mechanisms, thereby improving both transparency and predictability.



Strengthening Port-Level Coordination

State Maritime Boards and Port Authorities are functionally comparable to global port-level institutions in their role as technical and operational coordinators. Their ability to support timely dredging execution can be further strengthened through clearer SOPs, nodal officers, digital tracking and better integration with upstream regulatory clearances

In discussion with a senior officer at APMB, the following practical issues were highlighted:

1

Foreign Dredgers Require Special Trading License (STL)

- Foreign-flag dredgers must obtain an STL from DGS before operating in India.
- DGS first checks whether similar Indian vessels are available through industry associations before granting permission.

2

Security Clearance is a Critical Approval Stage

- Following STL approval, operators must obtain security clearance involving multiple ministries.
- Security clearance is intended to ensure transparency regarding ownership, funding sources, vessel history, and crew background.

3

Multiple Agencies are Involved in Clearance

- The process involves:
 - Ministry of Home Affairs (MHA)
 - Ministry of External Affairs (MEA)
 - Ministry of Defence (MOD), where applicable
- Multiple levels of scrutiny increase the complexity of approvals.

4

Extensive Documentation Requirements

- Applicants must provide:
 - Crew details
 - Police Clearance Certificates (PCCs)
 - Vessel ownership details
 - Funding source information
 - Flag state information
 - Indian office registration details
 - Self-declarations and supporting documents

5

Digital Security Clearance Portal Has Improved Processes

- Security clearance applications are increasingly being processed through online portals.
- While digitisation has improved efficiency, documentation and verification requirements remain extensive.

6

Approval Delays Create Financial Losses

- Delays in vessel approvals can result in:
 - Vessel idle costs
 - Project delays
 - Increased capital expenditure
 - Delayed port capacity creation

7

Real-World Case Studies are Required

- Industry stakeholders can provide evidence of actual approval delays and associated financial impacts.
- Such case studies can strengthen policy recommendations and support reform proposals



Similarly Captain KCR Chandra also flagged similar issues

1

Specific Period License (SPL) is the Main Bottleneck

- The most critical approval for foreign dredging vessels is obtaining the **Specific Period License (SPL)** from the Directorate General of Shipping (DGS).
- Vessels must satisfy all regulatory requirements and circulars issued by DGS before SPL can be granted.
- Failure to meet even a single requirement can lead to significant delays or rejection.

2

DGS Approval Timeline vs Practical Reality

- Although DGS's online portal may process complete applications within 24 hours, preparing a compliant application is often time-consuming.
- Operators typically need to begin the approval process **45–60 days in advance** of vessel arrival.
- Therefore, the real delay lies in documentation preparation and compliance, not necessarily in DGS's digital approval system.

3

Compliance Requirements Drive Delays

- Many delays occur because vessels fail to comply with specific technical or operational requirements.
- Even minor deficiencies can prevent approval.
- Example cited: A vessel experienced delays because it lacked a required rescue boat for operations in Indian waters.

3

Need to Study DGS Circulars

- Understanding DGS circulars and eligibility criteria is essential before identifying bottlenecks.
- The research should focus on:
 - What requirements are imposed.
 - Why compliance is difficult.
 - Which requirements cause the greatest delays.

5

MoHA Clearance Can Cause Significant Delays

- **Ministry of Home Affairs (MoHA)** clearance is required for certain projects and locations.
- Approval can take approximately **45–60 days**.
- The process is largely outside the control of operators and can result in vessel idle time, increasing project costs.

6

MOD Clearance is Applicable Only in Specific Cases

- **Ministry of Defence (MOD)** clearance is generally required for:
 - Naval projects.
 - Offshore operations.
 - Restricted or sensitive areas.
- The process involves document submission, scrutiny, and vessel inspections, making it a potentially lengthy approval stage.

7

Documentation Quality Influences Approval Speed

- Proper preparation and submission of documents is critical.
- The expertise of the agency preparing documentation has a direct impact on approval timelines.
- Errors or incomplete submissions can significantly delay approvals.

8

Importance of Industry Case Studies

- Real-world examples of delayed approvals can help identify recurring issues.
- Case studies can be used as evidence in the research paper to demonstrate how regulatory bottlenecks affect project timelines and costs.

9

Potential Area for Reform

- The biggest opportunity for improvement is reducing the **pre-application preparation period** rather than focusing only on DGS processing time.
- Streamlining compliance requirements, improving guidance, and enhancing documentation processes could significantly reduce overall approval timelines.

10

Industry Stakeholder Consultations are Essential

- Discussions with dredging companies, vessel operators, shipping agents, and clearance experts will provide practical insights into operational challenges.
- Additional stakeholder interviews were suggested to better understand ground-level issues and identify actionable recommendations.



Strengthening India's Vessel Clearance Framework Recommendations



India's current clearance framework for foreign specialised dredging vessels is built around legitimate policy objectives: national security, strategic oversight, domestic capacity protection, customs compliance, and regulatory control. These safeguards are essential and should not be diluted. However, the findings of this report indicate that the most significant reform opportunity lies in modernising the way these safeguards are administered.

The Directorate General of Shipping (DGS) has already digitised important parts of the chartering approval process and can process complete applications within a short timeframe. The larger bottleneck appears to lie in the security-clearance layer involving the Ministry of Home Affairs (MHA), Ministry of Defence (MoD), Ministry of External Affairs (MEA), and other concerned agencies. This layer remains sequential, documentation-heavy, project-specific, and often difficult to track end-to-end.

The central policy challenge, therefore, is not whether India should conduct security vetting of foreign dredging vessels and crew. It must. The real question is whether every dredging project requires the same level of security scrutiny, whether clearances already granted to trusted operators should be repeated project after project, and whether MHA/MoD inputs can be processed through a faster, risk-based, digitally integrated system.

6.1 | Enabling Risk-Based MHA/MoD Security Clearance for Foreign Dredgers

The MHA/MoD security clearance layer plays a critical role in safeguarding India's maritime and strategic interests. Security vetting of foreign vessels, crew, contractors, ownership structures, funding sources and operating locations is necessary, particularly where foreign assets are deployed in Indian waters. However, there is an opportunity to make this process more differentiated and risk-based. Dredging undertaken within notified commercial port limits under port authority supervision may not require the same level of review as dredging near naval bases, defence installations, offshore strategic assets or other sensitive maritime zones. A proportionate approach can help security agencies focus more closely on higher-risk cases while enabling routine commercial dredging projects to move through a more predictable pathway.

Mr. Krishna Prasad (Director at Boskalis) mentioned the following points

Compliance Framework

For custom clearance of any dredger no priority given and clearance take 2-3 days for any foreign going vessel. The three days clearance time contractor build up in there price which in necessary increases the project cost. Dredgers are coming to do the dredging work for the ports so priority should be given.

Security Clearances



This should not be project specific, it should be country specific with relation to all ports. If any bidder is got the clearance for any project of ports then that should be valid for all the ports in India subject to no changes of director and share holdings of the company. Present time line of security clearances is 3-6 months and if this can be harmonised then will ease the paper works.

MOD / MOHA Clearance



This clearances is needed for any foreign dredger and crew operating in India. All ports are used for Merchant vessel where every day foreign crew and vessel goes and comes in. Dredger only operates in port limit they do not go outside of the port. So why MOD/MOHA clearances are insisted. If dredger is working in defence area, then MOD/MOHA clearance required. Present Moha clearance timeline takes 3 months too which delay the whole operation.

Clear guideline should be available, and process should be formed for minor port for dredging activities including clearance requirements and office to approach.



Recommendations

India may consider adopting a risk-based MHA/MoD clearance framework:



Low-risk cases: Dredging within notified commercial port limits by a previously cleared company with no material change in ownership, vessel profile, crew, flag state or funding source.



Moderate-risk cases: Projects involving new operators, new vessels, unfamiliar ownership structures, higher foreign crew involvement or incomplete prior clearance history.



High-risk cases: Dredging near naval bases, defence establishments, offshore strategic assets, critical energy infrastructure or notified sensitive maritime zones.

Low-risk cases may follow a simplified and time-bound pathway. Moderate-risk cases may undergo enhanced review. High-risk cases should continue to undergo full MHA/MoD scrutiny..

Key measures should include:

- Notifying defence-sensitive and strategic maritime zones.
- Prescribing timelines for MHA/MoD review by risk category.
- Creating a standard checklist for ownership, vessel, crew, and funding-source verification.
- Allowing parallel MHA/MoD review wherever possible.
- Digitally recording reasons for delays beyond prescribed timelines.
- Creating an inter-ministerial dashboard for pending security clearances.
- Publish a uniform clearance SOP for non-major and private ports, identifying the competent authorities, documentation requirements and escalation mechanism, while retaining enhanced scrutiny for security-sensitive locations.

Expected Impact: A risk-based framework would help align security scrutiny with the nature of the project and operating location. It would support faster mobilisation for routine commercial dredging while preserving detailed scrutiny for strategically sensitive cases.

6.2 | Promoting Company-Based Security Clearance for Trusted Operators

Security clearance is often treated as project-specific, requiring repeated vetting of the same dredging company across different port projects. This creates duplication for both applicants and government agencies.



Recommendation:

India should move towards company-based national security clearance for foreign dredging companies. Once a company is cleared, the approval should remain valid across Indian ports for three to five years, provided there is no material change in:

- Ownership or shareholding pattern.
- Ultimate beneficial ownership.
- Board of Directors.
- Vessel profile or flag state.
- Crew composition.
- Operating geography.
- Security-sensitive project conditions.

Fresh clearance should be required only where material changes occur or where the project is located in a defence-sensitive or strategically sensitive maritime zone.

Expected Impact: This would reduce repetitive documentation, shorten timelines for trusted operators, and reduce the administrative burden on MHA/MoD systems.

6.3 | Building on the Existing DGS Portal for Integrated Multi-Agency Clearance

A major opportunity for improving the current clearance framework lies in better integrating security and allied clearances with the existing vessel mobilisation process. The Directorate General of Shipping already operates an online chartering portal for submission of applications, document upload, fee payment and status tracking. This provides a strong digital base on which a wider multi-agency clearance architecture can be built. Instead of creating an entirely new platform, the existing DGS portal may be expanded into an integrated Foreign Dredger Clearance Window by adding dedicated modules for MHA, MoD, MEA, Customs, Immigration, Indian Coast Guard, Port Authorities and State Maritime Boards. This would allow all concerned agencies to review the same application, access verified documents, raise queries, record approvals and track pending actions on a common system. This approach would preserve DGS as the primary maritime entry point while enabling security, customs and allied clearances to be processed through a more integrated and transparent workflow.

This provides a useful digital base on which a wider integrated clearance system can be built. Instead of creating an entirely new platform, the existing DGS portal should be expanded into an integrated Foreign Dredger Clearance Window by adding dedicated modules for MHA, MoD, MEA, Customs, Immigration, Indian Coast Guard, Port Authorities and State Maritime Boards.

This would allow all concerned agencies to review the same application, access the same verified documents, raise queries, record approvals and track pending actions on a common system. This approach would preserve DGS as the primary maritime entry point while enabling MHA, MoD and MEA to conduct security review through a digitally integrated workflow rather than through separate, sequential and documentation-heavy processes. In discussion with a senior official at DGS/DGMA mentioned that DGS chartering portal serves as a single digital platform for submitting applications, uploading supporting documents, making fee payments, and tracking the status of chartering requests. **For applications with complete documentation only** and all prescribed compliances, approvals are generally processed within **24 hours**, demonstrating the efficiency of the digital approval mechanism. Where foreign vessels are engaged through a competitive bidding process, applications are submitted directly through the DGS portal. In cases where vessels are proposed outside a competitive bidding process, applicants are required to obtain a No Objection Certificate (NOC) from the Indian National Shipowners' Association (INSA) confirming the non-availability of suitable Indian-flagged vessels. INSA typically issues its response within 24 hours, after which the application proceeds for further regulatory processing.



Recommendation:

The existing DGS chartering portal should be upgraded into a multi-agency Foreign Dredger Clearance Window with dedicated clearance modules for:

- DGS chartering permission / SPL processing
- MHA security clearance
- MoD clearance, where applicable
- MEA inputs, where required
- Customs temporary import and duty assessment
- Immigration and crew verification
- Indian Coast Guard and port-level operational inputs
- State Maritime Board / Major Port Authority coordination

The upgraded portal should include:

- Single application submission for company, vessel, equipment, ownership, crew and project details.
- Common document repository accessible to all authorised agencies.
- Separate agency-wise modules for MHA, MoD, MEA, Customs and Immigration.
- Risk-category tagging for security review.
- Real-time status tracking for applicants and government agencies.
- Digital query and deficiency management.
- Automated reminders and escalation for pending clearances.
- Digital record of previous clearances for repeat companies and vessels.
- Final consolidated clearance status before mobilisation.

Expected Impact: Extending the existing DGS portal would be faster and more practical than building a new clearance system from the ground up. It would reduce duplication, improve inter-agency coordination, give applicants visibility on pending actions, and allow MHA/MoD/MEA security scrutiny to be conducted in a more structured and trackable manner. This reform would also reinforce the report's central finding: DGS is not the main bottleneck; the larger opportunity lies in integrating the MHA/MoD/MEA and Customs clearance layers into the existing maritime approval architecture.

6.4 | Improving Approval Predictability through Parallel Processing

The current clearance process involves multiple agencies performing important statutory and security functions. However, several stages are presently processed in sequence. As a result, the overall mobilisation timeline may extend even when individual agencies act within reasonable timeframes.



Recommendation:

Once complete documentation is submitted, MHA, MoD, MEA, Customs, Immigration, DGS and the concerned Port Authority may begin their respective reviews in parallel wherever legal and security dependencies permit.

Indicative timelines may include:

- DGS review of complete applications (including INSA/MASSA consultation, where applicable): 1–3 working days.
- MHA/MoD review: defined timeline based on risk category.
- Customs pre-arrival assessment: before vessel arrival.
- Project-readiness assurance: Port authorities should provide bidders with standardised bathymetric and geotechnical data, clearly defined dredging and disposal/reclamation scope, and applicable environmental operating conditions before tendering. Material post-award scope changes should follow a transparent variation mechanism.

Expected Impact: Parallel processing would improve mobilisation predictability without removing any approval requirement. It would also allow security, customs and port-level clearances to progress in a more coordinated manner.

6.5 | Streamlining Customs Clearance for Approved Dredging Projects

Customs clearance is an important final-stage requirement in the mobilisation chain. Since it often occurs when the dredger, crew and support equipment are already positioned for deployment, further streamlining this stage can improve project commencement certainty and reduce standby costs.



Recommendation:

Foreign dredgers deployed for government-approved or port-authority-approved projects should receive fast-track customs processing after security approval.

Key measures should include:

- Pre-arrival submission of customs documents.
- Advance valuation of vessel and equipment.
- Pre-defined treatment of refundable duty and temporary import requirements.
- Dedicated customs desk for approved dredgers.
- Coordination between Customs, DGS, Immigration, and Port Authority.
- Target customs clearance within 24 hours where documents are complete.
- Introduce time-bound post-project customs closure, including reconciliation of temporary imports, equipment re-export and duty-related formalities, through the proposed integrated clearance window.

Expected Impact: Fast-track customs clearance would reduce final-stage delays, lower standby cost, reduce bid premiums, and improve project commencement certainty.

6.6 | Government Schemes for Shipbuilding

India's immediate requirement is to make the clearance of foreign specialised dredging vessels faster, more predictable and more transparent. However, the long-term policy response cannot stop at improving the import-clearance pathway. The very fact that India must repeatedly import specialised dredgers for strategic port projects indicates a deeper capability gap. **India should therefore use the present clearance situation as a trigger to build domestic capacity for the same class of dredgers that are currently being brought into the country through the foreign-vessel approval process.** The Government of India already has a strong maritime financing and shipbuilding policy architecture that can support such a transition. Government of India has mainly three comprehensive schemes functioning to support maritime infrastructure in India:

- The Shipbuilding Financial Assistance Scheme (SBFAS) with ₹24,736 crore funding, aims to provide financial support to construction of specialized/eligible vehicles. "Self-Propelled Dredgers" are mentioned as specialized vessels under Schedule-II, Category 3 - Specialised Service & Support.
- The Shipbuilding Development Scheme (SbDS) with funding of ₹19,989 crore, aims to strengthen India's shipbuilding capacity through greenfield shipbuilding clusters, brownfield capacity expansion, infrastructure development, risk coverage and capability enhancement.
- The Maritime Development Fund (MDF), with an allocation of ₹25,000 crore, provides long-term financing support to the maritime and shipbuilding sector, including investment through the Maritime Investment Fund and interest incentivization.

Taken together, these three schemes provide an existing policy framework covering vessel-level financial assistance, shipbuilding capacity creation and long-term financing. This framework can therefore be leveraged to support the proposed development of domestic dredger-manufacturing capability in India. Within this architecture, MoPSW may consider creating a dedicated **₹20,000 crore Strategic Dredger Manufacturing Window** by earmarking a defined share from the three existing schemes rather than creating an entirely new funding programme.

The manufacturing window should also support specialised dry-docking and repair facilities, dredging-equipment integration, technology partnerships with global OEMs, and training of dredger operators and marine engineers. This would create an end-to-end domestic ecosystem for building, maintaining and operating advanced dredging vessels.



6.6.1 | Earmarking Funds for Building Dredgers in India

Based on the existing Government framework, it is proposed that ₹20,000 crore be earmarked within the existing maritime schemes for the domestic construction of specialised self-propelled dredgers in India. The proposed allocation is intended to create a dedicated, large-scale manufacturing programme capable of supporting multiple dredger builds and establishing sustained domestic shipbuilding capability, rather than providing fragmented project-level support. The proposed allocation should primarily leverage SBFAS for vessel-level financial assistance, with SbDS supporting the required shipyard capacity and infrastructure, and MDF providing complementary long-term financing.

MoPSW may therefore consider an indicative allocation of ₹10,000 crore from SBFAS, ₹4,000 crore from SbDS, and ₹6,000 crore from MDF. This structure ensures that the largest share of support is directed towards actual dredger construction, while parallel support is available for shipyard readiness, common infrastructure, component localisation, technology partnerships and affordable long-term capital.

Under this framework:

- SBFAS would provide construction-linked financial assistance for dredgers built in Indian shipyards. It would provide main vessel-level financial assistance for construction of self-propelled dredgers, Cutter Suction Dredgers, Trailing Suction Hopper Dredgers and specialised dredger support vessels
- SbDS would support the shipyard and ancillary infrastructure required to manufacture such vessels, including heavy fabrication capacity, waterfront infrastructure, outfitting facilities, dredge-pump and cutter-system integration, testing facilities, common maritime assets, Shipyard readiness, brownfield capacity expansion, greenfield cluster support, heavy fabrication infrastructure, and ancillary ecosystem creation
- MDF would provide patient capital, equity support, interest incentivisation and risk-reduction financing to improve project viability and crowd in private investment. It will complement long-term financing, equity support, interest incentivisation, blended finance and risk reduction for shipyards/operators building dredgers.

Taken together, these three schemes provide an existing policy framework covering vessel-level financial assistance, shipbuilding capacity creation and long-term financing. This framework can therefore be leveraged to support the proposed development of domestic dredger-manufacturing capability in India. Within this architecture, MoPSW may consider creating a dedicated **₹20,000 crore Strategic Dredger Manufacturing Window** by earmarking a defined share from the three existing schemes rather than creating an entirely new funding programme.

Scheme	Total scheme outlay	Proposed dredger earmarking	Approx. share of scheme
 Shipbuilding Financial Assistance Scheme (SBFAS)	₹24,736 crore	₹10,000 crore	 ~40%
 Shipbuilding Development Scheme (SbDS)	₹19,989 crore	₹4,000 crore	 ~20%
 Maritime Development Fund (MDF)	₹25,000 crore	₹6,000 crore	 ~24%
 Total	₹69,725 crore	₹20,000 crore	 ~29% blended allocation

This approach avoids the need to create a completely new standalone scheme. Instead, it aligns three existing maritime policy instruments around one clearly identified strategic capability gap: **the dredgers India imports today should be built in India within the next seven years.**

Beyond domestic capability creation, the proposed dredger manufacturing window can also position India as an alternative global manufacturing base for specialised maritime equipment. India's business environment has undergone significant improvement over the past decade: **the World Bank's Doing Business 2020 assessment placed India at 63rd globally, compared with 142nd in 2014, reflecting substantial progress in the regulatory and business environment before the index was discontinued.** This improving investment ecosystem, combined with India's expanding shipbuilding capacity, skilled engineering base, large domestic maritime market and emerging supply-chain advantages, creates an opportunity to attract global dredging companies and specialised marine-equipment manufacturers to establish manufacturing, design and technology operations in India.

The experience of the Production Linked Incentive programme further demonstrates the potential of targeted manufacturing incentives to attract investment: across 14 sectors, PLI schemes had attracted more than ₹2.16 lakh crore of investment by December 2025, while manufacturing FDI reached US\$19.04 billion in FY2024–25, growing 18% year-on-year. **A targeted dredger manufacturing programme could therefore go beyond import substitution to create a global dredging equipment manufacturing hub in India, supporting technology transfer, high-value employment, domestic supply-chain development and exports. This would directly reinforce the Government's Make in India and Make for the World vision articulated by Prime Minister Shri Narendra Modi.**

6.6.2 | Types of Dredgers to be built

To build self-reliance in dredger manufacturing, India should prioritise the domestic construction of the **same categories of dredgers for which foreign vessels are currently being sought through the vessel-clearance process**. The proposed Strategic Dredger Manufacturing Window should not support generic vessel construction. Its objective should be sharply linked to India's present import dependence that drains our forex reserves. This ensures that the proposed manufacturing programme is aligned with an existing demonstrated requirement, rather than being based on an assumed or generic market specification.

The Ramayapatnam Greenfield Port case provides a useful starting point. For capital dredging works, the project proposed deployment of three foreign-flagged Cutter Suction Dredgers – **AMBIORIX, AMAZONE and D'ARTAGNAN** – along with **ASL BULAN**, a 2,000 BHP multi-purpose tug/workboat for towing, anchor handling, dredger assistance, supply operations and marine logistics. These vessels represent the technical reference configurations for the proposed domestic dredger-manufacturing programme, which is as follows:

Technical Parameter	AMAZONE	AMBIORIX/ D'ARTAGNAN	SPARTACUS
 Vessel Type	Medium-to-large Cutter Suction Dredger (CSD)	High-capacity Cutter Suction Dredger (CSD)	Next-generation super CSD
 Length Overall	101.57 m	123.80 m	164 m
 Breadth Overall	21.00 m	25.20 m	34 m
 Minimum Dredging Depth	4.1 m	6.0 m	6.0 m
 Maximum Dredging Depth	30 m	35 m	45 m
 Suction Diameter	850 mm	1,000 mm	1,200 mm
 Discharge Pipe Diameter	850 mm	1,000 mm	1,200 mm
 Total Installed Power	12,854 kW	26,069 kW	44,180 kW
 Relevance	Suitable for harbour dredging, channel deepening and medium-to-large capital dredging works where India currently relies on specialised foreign contractors.	Required for deep-channel, harbour-basin and hard-strata dredging in major greenfield and brownfield port expansion projects.	A 7–10 year strategic capability target for mega port projects, deep-draft channels, hard-rock dredging and future export potential.

This specification-led approach would ensure that the proposed funding window does not become a broad, diluted shipbuilding incentive. Instead, it would focus public support on vessels that directly address India's present dredging capability gap. The first priority should be Cutter Suction Dredgers, since the Ramayapatnam case demonstrates India's dependence on foreign CSDs for capital dredging. The second priority should be large and ultra-large Trailing Suction Hopper Dredgers, given their relevance for maintenance dredging, reclamation and large-volume port development works.

The third priority should be marine support vessels such as tug/workboats, without which dredging fleets cannot be deployed efficiently. The manufacturing programme may be phased. In the first phase, India may support medium-to-large CSDs and support vessels that can be built through technology partnerships and shipyard upgradation. In the second phase, Indian shipyards may move towards high-capacity CSDs and large TSHDs with higher domestic content. In the third phase, India may target super-class dredgers capable of deep-draft, hard-strata and mega port works. The aim should not be symbolic indigenisation. The aim should be operational substitution: within five to seven years, India should be able to manufacture the same class of dredgers that it currently imports for strategic port projects. That is where the clearance story becomes a capability story.

Facilitate global fleet deployment: Establish a simplified, time-bound temporary export, re-import and customs process for Indian-flagged dredgers undertaking overseas assignments, enabling India-built vessels to compete internationally and return efficiently for domestic deployment.



Conclusion





India's maritime ambitions depend not only on expanding port capacity, but also on ensuring that critical maritime projects are implemented in a timely, coordinated and capability-driven manner. Dredging is central to this objective because it determines navigational depth, cargo carrying capacity, vessel turnaround time, port commissioning timelines and overall port competitiveness. As India moves towards larger ports, deeper drafts and higher cargo volumes, dredging can no longer be treated as a routine maintenance activity. It must be viewed as a strategic enabler of port-led development.

Specialised foreign dredging vessels will continue to remain important in the immediate term, particularly where domestic dredging capacity is unavailable for complex capital dredging, deep-channel works, reclamation, hard-strata dredging and time-sensitive port development projects. The policy objective, therefore, is not to dilute scrutiny of such vessels. National security, customs compliance, cabotage considerations and regulatory oversight must remain intact. The real objective is to ensure that the clearance process is secure, predictable, transparent and supportive of timely mobilisation.

The findings of this report indicate that DGS has already made important progress through digital chartering approvals. The next phase of reform should focus on integrating security, customs, immigration and port-level clearances into a more coordinated digital workflow. In particular, the MHA/MoD-led security clearance layer can be strengthened through risk-based assessment, company-based clearance for trusted operators, parallel processing, standardised documentation and improved end-to-end visibility. India does not need to choose between maritime security and port efficiency. It can build a clearance system where security oversight is better targeted, better coordinated and digitally supported.

The cost of delayed dredger mobilisation is not limited to contractors or individual port projects. It can delay draft enhancement, restrict vessel loading, increase vessel calls, raise turnaround time, defer port capacity creation and increase logistics cost per tonne. As estimated in this report, delayed draft improvement could create logistics inefficiencies of up to **₹4,000 crore annually**. A faster and more predictable clearance ecosystem is therefore not merely an administrative reform. It is a logistics-efficiency reform and a competitiveness reform.

However, the long-term answer cannot stop at clearing foreign dredgers faster. Repeated reliance on imported specialised dredging vessels reveals a deeper strategic gap in India's maritime manufacturing capability. The dredgers that India is importing today through the foreign-vessel clearance process should become the very dredgers India builds domestically over the next five to seven years. This requires a deliberate, specification-led manufacturing push for high-capacity Cutter Suction Dredgers, Trailing Suction Hopper Dredgers, hard-strata dredging vessels and marine support vessels.

MoPSW may therefore consider creating a **₹20,000 crore Strategic Dredger Manufacturing Window** by converging existing maritime schemes. The proposed allocation may primarily leverage **₹10,000 crore from SBFAS** for vessel-level financial assistance, **₹4,000 crore from SbDS** for shipyard capacity, infrastructure and ecosystem development, and **₹6,000 crore from MDF** for complementary long-term financing, equity support and interest incentivisation. This would avoid the need for a completely new scheme architecture while aligning existing policy instruments around one clear strategic capability gap.

Implementation should cover the entire dredging project lifecycle: reliable bathymetric and geotechnical data and clearly defined project scope before tendering; predictable vessel mobilisation; and time-bound customs closure after project completion. Domestic manufacturing should be complemented by specialised repair infrastructure, skilled personnel, technology partnerships and streamlined overseas deployment of Indian-flagged dredgers.

The way forward is therefore twofold. In the short term, India should make the clearance of foreign specialised dredgers faster, safer and more predictable. In the long term, India should build the same class of specialised dredgers in Indian shipyards. The larger policy principle is simple: **secure the coast, speed up the file, and build the fleet at home**. This conclusion is aligned with the TL's existing finding that foreign dredgers remain necessary until domestic capacity improves, the ₹4,000 crore logistics-efficiency estimate, and the scheme architecture under SBFAS, SbDS and MDF.



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