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INTERVIEW

SUSANTA KUMAR PUROHIT

CHAIRPERSON, V.O. CHIDAMBARANAR PORT AUTHORITY

Beyond cranes and cargo: Inside the intelligent port revolution

From predictive analytics to autonomous cranes, AI, IoT, and 5G are transforming traditional ports into smart, sustainable, and seamless logistics hubs.

SMART PORT 5.0
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INSPIRING NETWORKS

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- Remote Crane Management System, RCMS
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- IT Infrastructure and Data Centre
- Design and Implementation
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- Bespoke Solutions
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- Terminal Automation System
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- Rail OCR,
- Crane OCR
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- YMS
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A strategic reset in India-Bangladesh trade ties

The recent chill in India-Bangladesh relations marks a significant moment in South Asia's evolving geopolitical landscape. Long seen as a partnership rooted in shared history, connectivity, and economic synergy, the bilateral relationship is now being tested by a combination of political rhetoric and shifting alignments.

Bangladesh's interim leader Muhammad Yunus' provocative reference to India's Northeast as "landlocked" during a visit to China—and his invitation for Chinese access via Bangladeshi territory—crossed a diplomatic red line. It is no surprise, then, that India responded by recalibrating its trade posture. The withdrawal of the transshipment facility for Bangladeshi exports and the restriction of land-port imports are not acts of hostility but signals of strategic discomfort.

Critics may call these moves protectionist, but they reflect a deeper concern: that economic cooperation must be grounded in mutual respect and trust. India's decision to fast-track the Kaladan Multi-Modal Transit Transport Project—linking Kolkata to Mizoram via Myanmar—demonstrates foresight. It reduces India's logistical dependence on Bangladesh while reinforcing self-reliance in the sensitive Northeast region.

Yet, India has acted with restraint. There is no blanket trade ban, no inflammatory rhetoric. Instead, there's a clear message—diplomatic missteps will carry economic consequences, but New Delhi remains open to cooperation grounded in sovereignty and stability.

The business fallout is real. Bangladesh's exporters now face higher costs and delays. Indian cotton yarn exports are affected too. But India's diversified trade base and growing logistics capacity provide a cushion. The same cannot be said for Dhaka.

As Bangladesh heads toward elections, New Delhi would do well to engage with a broader political spectrum while keeping its strategic priorities intact. The path forward lies not in escalation, but in maturity. Rebuilding trust is possible—but it begins with respect, not provocation.

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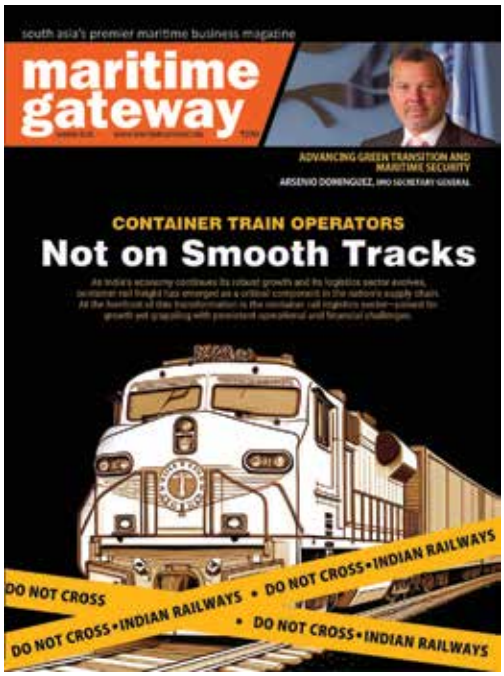

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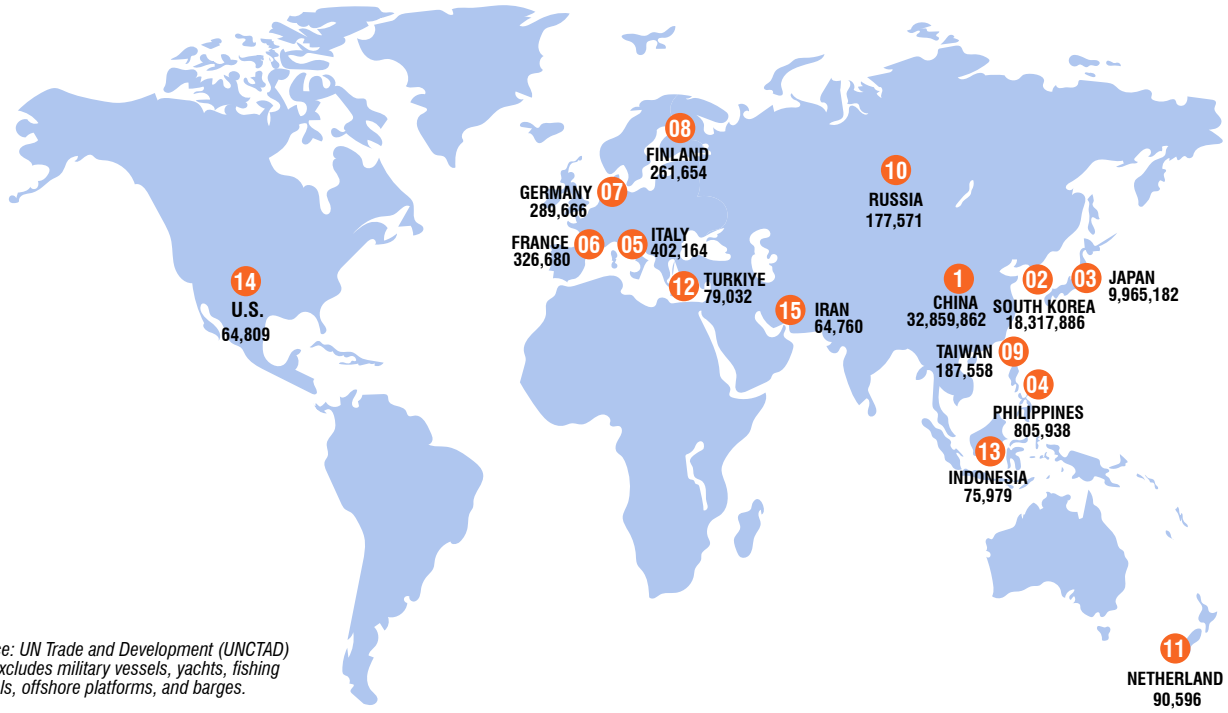
THE COUNTRIES THAT DOMINATE GLOBAL SHIPBUILDING

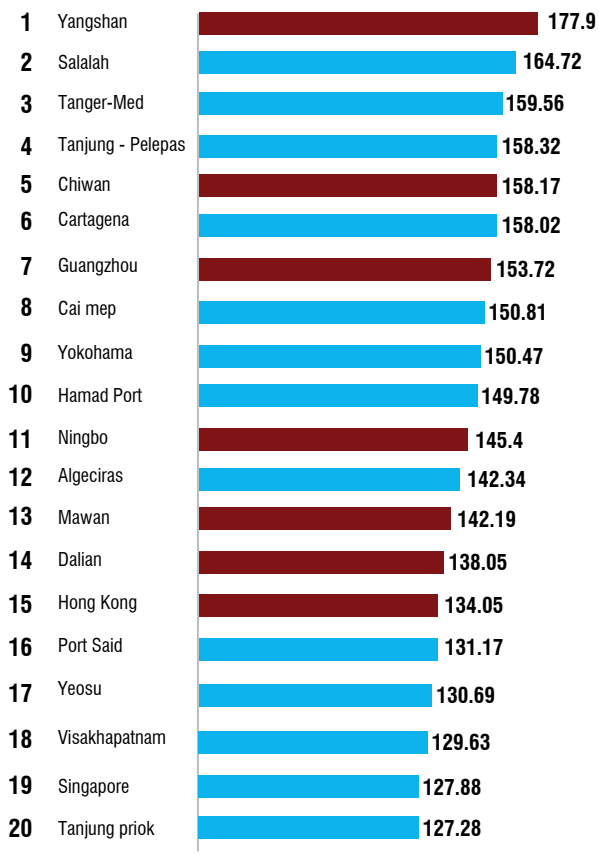


Source: UN Trade and Development (UNCTAD) and excludes military vessels, yachts, fishing vessels, offshore platforms, and barges.

TOP DRY BULK SHIPOWNER COMPANIES

RANK	COMPANY	COUNTRY	FLEET SIZE	DWT
1	COSCO SHIPPING	CHINA	>400+	40M+
2	oldendorff	GER4MANY	>700	45M
3	Pacific Basin	HONG KONG	>280	14M
4	STAR BULK	GREECE	>120	13M
5	GOLDEN OCEAN	BERMUDA	>90	12M
6	DIANA SHIPPING INC	GREECE	>40	5M
7	GENCO SHIPPING & TRADING	USA	>40	4.7M
8	Bahri Dry Bulk	SAUDI ARABIA	>30	4M
9	POLSTEAM	POLAND	>60	2.5M
10	Eastern Bulk	SINGAPORE	>30	2M

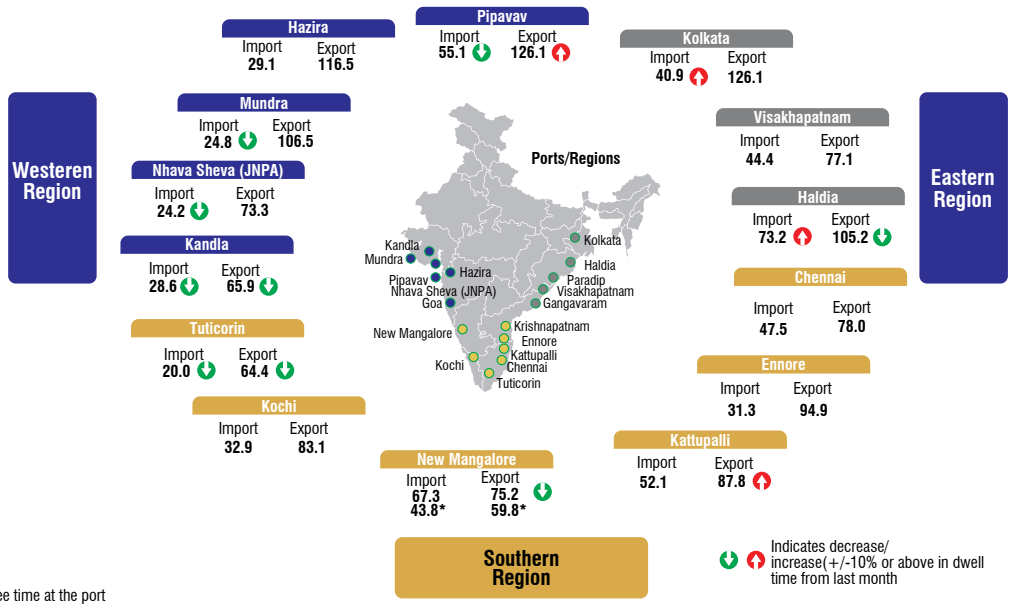
TOP 20 WORLD'S MOST EFFICIENT PORTS



CONTAINER DWELL TIME PERFORMANCE (APRIL 2025): PAN INDIA

Major Ports on Western and Southern Coast witnessed improvement in Dwell Time in Apr 2025 from March 2025 (JNPA, NMPA, DPA, VoCPA, CoPA)

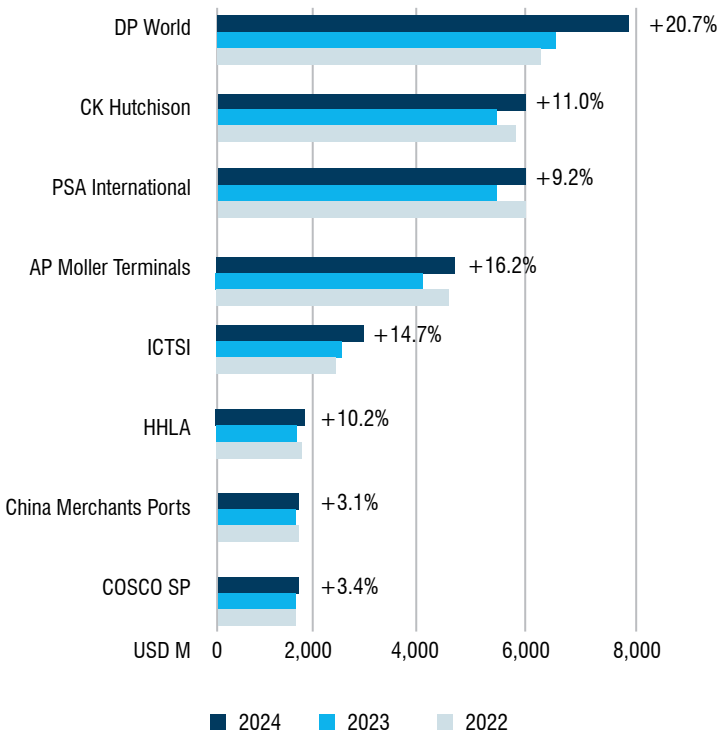
Major Ports on East Coast either witnessed increase or no improvement in Dwell Time in Apr 2025 from March 2025 (SMPA, VPA, ChPA, KPL)



Note:

- Dwell time includes free time
- *Marked Dwell time does not include the free time at the port
- All values are in hours

MAJOR GLOBAL GROUPS: REVENUE RANKING 2024 V 2023



Figures based on: DP World's Ports & Terminals division; CK Hutchison Ports and related services (80% interest in the Hutchison Ports group of companies and 30.07% interest in the HPH Trust AP Moller Terminals figures; HHLA's Port Logistics division; China Merchants Ports Holding US dollar conversions for PSA, Hutchison, CMES, HHLA made using average rate for year.

A COLOUR FULL GUIDE TO SHIPPING CONTAINERS

PM Modi inaugurates key development projects at Deendayal Port

Prime Minister Narendra Modi virtually inaugurated and laid the foundation stone for several transformational projects of Deendayal Port Authority (DPA), Kandla, worth over ₹1,100 crores, during a grand event held at Bhuj, Kutch. Recognised as one of the three Major Ports designated as a "Green Hydrogen Hub" under the National Green Hydrogen Mission, DPA is swiftly emerging as a beacon of clean energy adoption, infrastructure modernisation and regional economic growth, aligning with the vision of Viksit Bharat @2047. Projects worth ₹532 Crore inaugurated included Oil Jetty No. 8 at Old Kandla: With a capacity of 3.5 MMT per annum, the newly inaugurated jetty is equipped with telescopic gangways, indigenously developed quick-release mooring systems, and an automated firefighting system, enabling safe handling of large liquid cargo vessels up to 1 lakh DWT, and connectivity to Container Terminal at Tuna-Tekra: Boosting container traffic efficiency. It also includes expansion of Port Area for EXIM Cargo Storage: Supporting faster cargo evacuation, & other development initiatives to strengthen port operations, enhance community infrastructure, and generate employment opportunities.

Kandla Port handles record 51,450 tonnes of gypsum in 24 hours

Deendayal Port in Gujarat's Kandla handled a record-breaking 51,450 tonnes of gypsum in 24 hours. Deendayal Port Authority said the MV Valiant Ship made the record-breaking gypsum discharges. Shree Ashapura Stevedores, Ocean Harmony Shipping and Marine Services, Shri Balaji Infraport Pvt Ltd, and Global Fuel Resources LLP (Morbi) are the service providers behind this stellar achievement. Team behind this stellar achievement: Shree Ashapura Stevedores (A unit of Ashapura Shipping Group) Ocean Harmony Shipping & Marine Services Shri Balaji Infraport Pvt Ltd (A unit of Ashapura Shipping Group) Global Fuel Resources LLP (Morbi) The port authority appreciates these entities for their valuable services. Kandla is a seaport in India situated in the Kachchh District of Gujarat. Kandla Port is the gateway port for states like Punjab, Haryana, Jammu, and Kashmir, as well as the rich industrial belt of West and North India. Kandla Port, located on the Gulf of Kutch on the northwestern coast of India, was constructed in the 1950s after India's independence as the chief seaport serving western India.

Gujarat Pipavav port posts 16% gain in FY25 profit

Gujarat Pipavav Port Ltd (APM Terminals Pipavav) posted a consolidated net profit of ₹3,969 million, a growth of 16 per cent for the financial year 2025 aided by rising liquid and RO-RO cargo volumes. Higher volumes from original equipment manufacturers (OEMs) saw the number of Ro-Ro units rise by a phenomenal 71 per cent to 164,977 units during FY 25. Similarly, higher LPG volumes boosted the liquid cargo handling at the port to 1,469,504 metric tonnes, a growth of 14 per cent. Despite this growth, the revenues of the company — ₹9,876 million — remained at par compared to the previous fiscal. The lower transshipment and exim volumes weighed heavily on the revenues of the company during the year. The quantum of containers handled by the port saw a 14.1 per cent decline in FY 2025. Compared to 808,000 TEUs in FY 2024, the port handled only 694,000 TEUs. The number of container trains handled by the port also declined by a similar percentage with the port handling 1,961 trains during the year, compared to 2,281 trains during FY 24. Similarly, lower fertilizer and coal volumes adversely impacted the dry bulk cargo handled by the port. The dry bulk cargo handled by the port stood at 2.21 million tonnes, witnessing a decline of 18.45 per cent. The board of Directors of the company also recommended a final dividend of ₹4.2 per share on the equity share capital.

Tailwind extends its service within Asia

In order to improve its intra-Asia maritime freight offering, Tailwind Shipping Lines has announced the extension of its Tiger Express Service (TEX). The TEX route will connect four important Asian nations with the addition of a new stop in Vietnam and two in Malaysia starting on June 17, 2025. Every two weeks, the revised TEX service will leave Chattogram, Bangladesh, with a stop at Port Kelang, Malaysia, as its first stop. Prior to making its way back to Chattogram via Port Kelang and Colombo, Sri Lanka, it will next travel to Ho Chi Minh City, Vietnam. This route will be served by two container ships: the 1,900 TEU ASL Peony and the 1,700 TEU Nordtiger. Customers should benefit from increased planning security and better links between Southeast Asia and Europe as a result of the development. The largest seaport in Malaysia, Port Kelang, will be crucial to this new structure. Tailwind's Panda Express Service (PAX), which currently lists Port Kelang as its final Asian port of call, will use it as a transshipment hub for containers headed for Europe. From Qingdao, Ningbo, and Dachan Bay in China, the updated PAX route will travel via Port Kelang to Barcelona and Koper in Europe before heading back. The TEX service will run in the interim between Chattogram and Port Kelang, as well as between Chattogram and Ho Chi Minh City, Port Kelang, and Colombo. All other ports on the PAX route remain intact, with Port Kelang taking the role of the former transshipment stop at Colombo.

Adani Ports to invest ₹13,000 crore to expand capacity at Vizhinjam port

Adani Ports & SEZ Ltd (APSEZ), the ports and logistics company of the Adani Group, will invest about ₹13,000 crore to further expand the capacity of the Vizhinjam International Deepwater Seaport at Thiruvananthapuram, which was dedicated to the nation by Prime Minister Narendra Modi on May 2. While the first phase of the project, has been operational since last year, the additional investment will be made in the second phase of expansion which is scheduled to complete in 2028. The Public Private Partnership (PPP) project has come up with an investment of ₹7,000 crore, in which APSEZ's contribution is ₹4,300 crore, Karan Adani, Managing Director, APSEZ said. The company has approval for the second phase of expansion and the port's capacity would be increased to 5 million TEUs from 1 million TEUs currently. For the second phase the breakwater will be expanded by another 900 meters and the size of the berth will increase by 12 meters. The current length is the breakwater, which has been constructed in water depths of 18 to 20 meters. The overall height of the breakwater is 28 meters (which is equivalent to a 9-storey building). This is the deepest breakwater constructed in the country at a cost of ₹1,387 crore, which is fully funded by Government of Kerala.

Centre approves 4-Lane corridor to Krishnapatnam Port

The Cabinet Committee on Economic Affairs, chaired by Prime Minister Narendra Modi, approved the construction of a 108.134 km long, 4-lane Badvel–Nellore Corridor. The cost of the project is estimated to be around ₹3,653.10 crore. This project will improve accessibility to key nodes in the three Industrial Corridors of Andhra Pradesh: the Kopparthy Node on the Visakhapatnam–Chennai Industrial Corridor (VCIC), the Orvakal Node on the Hyderabad–Bengaluru Industrial Corridor (HBIC), and the Krishnapatnam Node on the Chennai–Bengaluru Industrial Corridor (CBIC). Adding further, it is expected to positively impact the Logistics Performance Index (LPI) of the country. The Badvel–Nellore Corridor will start from Gopavaram Village on the existing National Highway NH-67 in the YSR Kadapa District and terminate at the Krishnapatnam Port Junction on NH-16 (Chennai–Kolkata) in the SPSR Nellore District of Andhra Pradesh. It will also provide strategic connectivity to Krishnapatnam Port, which has been identified as a priority node under the Chennai–Bengaluru Industrial Corridor (CBIC), the Cabinet Committee said in a release. This project will reduce the travel distance to Krishnapatnam Port by 33.9 km—from 142 km to 108.13 km—compared to the existing Badvel–Nellore Road, and will reduce travel time by approximately one hour.

Karnataka issues a tender for a logistics park near Bengaluru airport

Using the public-private partnership (PPP) model, the Karnataka government has launched a tender for the construction of a logistics park in Balepura, close to Kempegowda International Airport in Bengaluru. The project has been beset by delays. The logistics facility and associated infrastructure are being offered for sale by Karnataka State Industrial & Infrastructure Development Corporation Limited (KSIIDC) using the design, finance, construct, operate, and transfer (DFBOT) approach. The chosen developer must start operations within 36 months of obtaining the letter of award (LoA) and will construct an integrated logistics facility on the 10-acre property, which may include a logistics park, standalone warehouses, cold storage, or manufacturing units. According to the approved FAR (Floor Area Ratio), a built-up area of at least 1.8 lakh sq ft is the minimum development requirement. The park has been delayed for a number of reasons, despite being included in the Karnataka State Logistics Plan-2022.

JNPA celebrates its 36th Foundation Day

Jawaharlal Nehru Port Authority (JNPA) redefined its stature in India's port landscape as India's Largest Container Port as it celebrated its 36th Foundation Day on May 26, 2025. The commemorative event was held in the august presence of Sarbananda Sonowal, Union Cabinet Minister for Ports, Shipping and Waterways, Government of India. The occasion brought together key dignitaries, including the Guest of Honour, Shantanu Thakur, Union Minister of State, Ports, Shipping and Waterways, T K Ramachandran, IAS, Secretary, Ministry of Ports, Shipping, and Waterways, Shyam Jagganathan, IAS, Director General of Shipping, Vimal Kumar Srivastava, IRS, Chief Commissioner of Customs, Mumbai, Vijay Kumar, IAS, Chairman, IWAI, Shashi Kiran Shetty, Chairman, Allcargo Group, Dhruv Kotak, MD, JM Baxi Group, industry professionals, and JNPA employees to celebrate the port's journey of becoming India's Largest Container Port and continued commitment to India's maritime growth.


VINCENT CLERC
MAERSK CEO
SØREN TOFT
MSC CEO
RODOLPHE SAADÉ
CMA CGM CEO

THE NEW GAME OF HULLS

STRATEGIC DOCKING: SHIPPING GIANTS READY TO DEEPEN SHIPBUILDING INVESTMENTS IN INDIA

In a scene reminiscent of the strategic jostling seen in Game of Thrones, the world's top shipping giants—Maersk, MSC, and CMA CGM—have set their sights on India's shores, not for conquest, but for shipbuilding dominance.

The trigger? The Indian government's ambitious launch of the Maritime Development Fund, a ₹25,000 crore war chest aimed at transforming India into a global shipbuilding powerhouse.

For decades, India's shipbuilding sector has remained largely underdeveloped, with limited global footprint. But the tide is turning. The announcement of dedicated financial support, concessional credit, and policy push for local shipbuilding has sent ripples through boardrooms across Copenhagen, Geneva, and Marseille. And now, like rival houses vying for the Iron Throne, the top three global container shipping lines are maneuvering to become India's favored maritime allies.

Maersk: The stoic strategist

Much like the calculated House Stark, Maersk is entering this new battlefield with a long-term vision. With deep roots in India's logistics landscape and growing inland infrastructure, Maersk sees value not just in building ships, but in integrating them into a broader logistics ecosystem that spans ocean, rail, and road. Company insiders say Maersk is already exploring collaborations with Indian shipyards and evaluating the potential to register a portion of its fleet under the Indian flag— a move that would not only align with the government's Make-in-India pitch but also earn Maersk an early lead in policy goodwill.

MSC: The powerhouse contender

If Maersk plays the long game, MSC brings brute strength—reminiscent of House Lannister. As the world's largest container carrier by capacity, MSC isn't shy about flexing its financial muscle. Industry observers note MSC is scouting for local partners and eyeing greenfield investments in coastal shipyards, particularly along the east coast. The buzz is that MSC is also keen to use India as a strategic base for constructing dual-fuel vessels, aligning with its decarbonisation goals. It has reportedly begun discussions to register a fleet of feeder and regional ships in India, demonstrating its intent to not just do business, but to embed itself in India's maritime narrative.

CMA CGM: The agile disruptor

Meanwhile, CMA CGM, the agile French major, is playing the role of House Targaryen—daring, dynamic, and capable of unexpected plays. Already operating terminals in India and actively pushing forward digital transformation across its operations, CMA CGM is positioning itself as a technological partner in India's shipbuilding renaissance. Sources suggest the company is considering innovation hubs in India focused on smart ship design, sustainability solutions, and AI-enabled operations. CMA CGM's recent participation in policy consultations around the Maritime Development Fund suggests it is determined to craft a long-term role as a builder and operator within Indian waters.

A maritime throne awaits

The government's incentives—ranging from capital subsidies and local financing to faster clearances—have transformed India into a new battleground for global shipping royalty. Registering ships in India is emerging as the symbolic sword in this battle. It signals allegiance, a commitment to the Indian cause, and the willingness to not just serve the Indian market, but to build within it.

As the lines blur between logistics providers and industrial investors, the current momentum could redefine India's position in the global shipbuilding order. One thing is certain—this Game of Hulls has just begun, and the winner may well shape the next chapter of maritime power in Asia.

BEYOND CRANES AND CARGO: INSIDE THE INTELLIGENT PORT REVOLUTION

From predictive analytics to autonomous cranes, AI, IoT, and 5G are transforming traditional ports into smart, sustainable, and seamless logistics hubs.

The global maritime industry is undergoing a paradigm shift, driven by the infusion of cutting-edge technologies such as Artificial Intelligence (AI), Blockchain, Internet of Things (IoT), and 5G connectivity. At the forefront of this transformation is the concept of Smart Ports—digitalised, automated, and interconnected port ecosystems designed to optimise operational efficiency, enhance cargo visibility, and reduce environmental impact. From predictive analytics that streamline vessel berthing and cargo handling, to blockchain systems that ensure secure, paperless trade documentation, ports worldwide are evolving into intelligent hubs of trade.

Ports in Europe, East Asia, and the Middle East have already demonstrated how embracing smart technologies leads to faster turnaround times, reduced congestion, enhanced safety, and better resource allocation. AI-driven scheduling systems, IoT-enabled sensors monitoring container movements, and 5G networks enabling real-time data exchange are no longer futuristic dreams—they are the present-day enablers of next-generation port performance.

However, India's major government-owned ports—despite accounting for a significant share of cargo throughput—are yet to fully embrace this digital revolution. While initiatives like the Port Community System (PCS), ULIP, and PM Gati Shakti are commendable beginnings, the scale and pace of smart port adoption remain uneven. With rising global trade demands, sustainability pressures, and heightened competition from private ports and global peers, India's public ports must urgently pivot to smarter infrastructure.

This cover story delves into how digital transformation is redefining port logistics across the world and outlines the strategic imperative for Indian ports to evolve. By adopting smart technologies, India can not only elevate its logistics competitiveness but also position itself as a resilient and future-ready maritime power in the global supply chain. The smart port revolution isn't a luxury—it is a necessity.

When ports think: AI, Data, and the new age of maritime logistics

As global trade intensifies and the maritime industry grapples with complex challenges like congestion, environmental regulations, and rising cargo volumes, ports are being compelled to modernise.

Among the suite of emerging technologies, Artificial Intelligence (AI) stands out as a transformative force capable of revolutionising port operations. From automating container handling to predictive maintenance, intelligent surveillance, and real-time decision-making, AI is reshaping port ecosystems across the globe.

This article explores how AI is being adopted at leading ports worldwide, the technologies enabling it, and its potential to boost efficiency, reduce costs, and build smarter, safer, and more sustainable ports.

The case for AI in ports

Traditionally, ports have operated with a heavy reliance on manual labour, siloed systems, and legacy equipment. As trade volumes have grown, this model has proven inadequate, leading to congestion, inefficiencies, and safety risks. AI offers ports the capability to automate, anticipate, and adapt — making operations smarter and significantly more responsive.

AI systems, when integrated with 5G networks, Internet of Things (IoT) sensors, and cloud platforms, create a digital nervous system for ports — allowing them to analyse data in real time, make informed decisions, and orchestrate complex logistical processes with precision.

Automating cargo handling and equipment operations

One of the most visible applications

of AI in ports is in the automation of container and cargo handling.

At Qingdao Port in China, the world's first fully automated container terminal, AI works alongside Automated Guided Vehicles (AGVs), Automated Stacking Cranes (ASCs), and Terminal Operating Systems (TOS) to carry out unmanned operations. The AI-enabled TOS processes thousands of data points to optimise crane scheduling, stack positioning, and route planning for AGVs, drastically cutting turnaround time and enhancing throughput.

Shanghai Yangshan Port has deployed AI systems to optimise the control and operation of intelligent cranes, IGVs (Intelligent Guided Vehicles), and yard logistics. Operators manage remote-controlled cranes through a central control room, receiving multiple 4K camera feeds via a private 5G network. AI-powered path optimisation and collision avoidance systems help ensure seamless, safe operations in one of the world's busiest ports.

In Australia, the Port of Brisbane and Port of Melbourne have launched Smart Port programs focused on AI and automation. These include intelligent cargo handling systems, smart scheduling, and the deployment of autonomous vehicles for internal transport. These ports aim to reduce human error, improve safety, and scale operations cost-effectively.

At Qingdao Port in China, the world's first fully automated container terminal, AI works alongside Automated Guided Vehicles (AGVs), Automated Stacking Cranes (ASCs), and Terminal Operating Systems (TOS) to carry out unmanned operations.

Predictive maintenance and asset health monitoring

Maintenance of critical port infrastructure is crucial to ensuring operational continuity. Traditional maintenance approaches — either reactive or time-based — are both costly and inefficient. AI-powered predictive maintenance offers a smarter solution.

At Beibuwan Port in China, AI-enabled IoT systems continuously monitor the performance of heavy machinery, including cranes, forklifts, and rubber-tired gantries. By analysing data patterns, the system can predict potential breakdowns before they occur, allowing timely maintenance and reducing unplanned downtime.

Ningbo-Zhoushan Port has gone a step further by creating digital twins — virtual replicas of physical port assets that simulate operations in real time. These models help identify performance bottlenecks, predict maintenance needs, and optimise resource deployment across the terminal.

Such predictive capabilities reduce operating costs, extend equipment life, and help ports maintain high levels of reliability, especially during peak traffic periods.

AI-driven surveillance and safety monitoring

Ensuring safety and security in sprawling port environments — often comprising several square kilometres — is a significant challenge. AI-powered video analytics is transforming port security by enabling real-time surveillance, anomaly detection, and rapid response capabilities.

At Piraeus Port in Greece, AI and 5G-enabled video surveillance systems are deployed on quay cranes and along high-traffic zones. These systems use deep learning algorithms to detect unauthorised human presence in restricted areas and alert security teams instantly.

The Port of Koper in Slovenia uses AI to monitor 4K video feeds from drone-mounted and body-worn cameras. The system identifies suspicious behaviour, tracks movements of people and vehicles, and supports law enforcement in responding to incidents with greater speed and accuracy.

In Spain, the Ports of Malaga and Bilbao have implemented similar AI systems to monitor key areas such as truck entry points and railways. Bilbao's deep learning-based automated vehicle recognition system has helped save over 8,000 labour hours annually at gate checkpoints while improving safety and reducing

Ports Using AI Tech for Better Operations

At Beibuwan Port in China, AI-enabled IoT systems continuously monitor the performance of heavy machinery, including cranes, forklifts, and rubber-tired gantries

Ningbo-Zhoushan Port has gone a step further by creating digital twins — virtual replicas of physical port assets that simulate operations in real time

Qingdao Port in China leads the way as the world's first fully automated container terminal, using AI-driven Terminal Operating Systems (TOS), Automated Guided Vehicles (AGVs), and stacking cranes to optimize logistics with minimal human intervention.

Shanghai Yangshan Port takes this further with remote-controlled cranes linked to a private 5G network, ensuring smooth, safe operations via AI-powered path optimisation.

Australia's Port of Brisbane and Port of Melbourne leverage AI for intelligent cargo handling, autonomous vehicle deployment, and improved scheduling to boost efficiency and reduce human errors

emissions.

Gate management and smart scheduling

Port congestion is a major source of inefficiency. AI systems are now being deployed to manage vehicle flow, reduce dwell times, and optimise scheduling at port entry and exit points.

The Port of Los Angeles has introduced the Port Optimiser™, a cloud-based AI-powered platform developed in partnership with Wabtec. It provides real-time visibility into cargo movement, vessel arrival predictions, and truck appointment scheduling. Integrated with the Truck Appointment System (TAS), the platform dynamically allocates gate slots to reduce traffic bottlenecks and idle time.

This system uses historical and real-time data to help trucking companies plan arrivals better and ensures that cranes and container stacks are ready when trucks arrive — creating a more synchronised supply chain.

Smarter intermodal logistics

AI also enables ports to extend intelligence into the hinterland — connecting maritime gateways with road, rail, and inland waterways. Ports like Brisbane and Melbourne are building intermodal terminals integrated with AI-based cargo tracking, autonomous vehicle handling systems, and real-time coordination between different modes of transport.

China's Tianjin Port, dubbed the world's first zero-emission smart port, has developed a smart logistics platform connecting the Beijing-Tianjin-Hebei region. AI is central to this digital ecosystem, supporting e-commerce, customs documentation, and paperless trade processing — all linked to solar-powered, AI-run AGVs and cranes.

AI for strategic planning and operations optimisation

Beyond real-time automation, ports are beginning to use AI for long-term planning and strategic decision-making.

At Shanghai Yangshan Port, AI models use historical data to forecast cargo volumes, simulate alternative scheduling models, and assess the impact of disruptions like extreme weather or labour shortages. This enables port authorities to build resilient and responsive systems that adapt proactively rather than reactively.

AI is also being integrated into Digital Twin platforms — enabling ports to visualise and simulate entire operational workflows. These simulations assist in designing better infrastructure, optimising space utilisation, and enhancing safety procedures.

Environmental and sustainability gains

AI's ability to optimise operations not only improves efficiency but also helps reduce emissions and energy usage — key priorities for modern ports under global climate goals.

By reducing idle times, automating crane operations, and optimising vehicle movements, ports like Bilbao and Tianjin are cutting their carbon footprint. Predictive analytics also help optimise energy consumption of lighting, cooling, and machinery, contributing to the port's sustainability agenda.

Conclusion: Charting the future with AI at the core

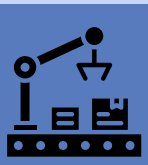
The maritime industry is undergoing a digital renaissance, and ports are at the heart of this transformation. Artificial Intelligence is the driving engine that enables this evolution — turning traditional ports into intelligent logistics ecosystems.

Whether it's automating crane operations, improving security with real-time surveillance, or enhancing customer visibility through digital dashboards, AI is helping ports operate faster, safer, and more sustainably. For ports in India and other developing maritime nations, embracing AI now offers the chance to leapfrog traditional infrastructure challenges and integrate seamlessly into the digital global trade network.

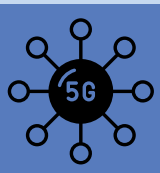
In an era defined by data, ports that harness AI will be the ones to lead — not follow — the next wave of maritime progress.

TRANSFORMING PORTS FOR CUTTING INEFFICIENCIES

76%
of global port operators now cite yard and terminal optimisation as their top priority



22%
believe that real-time data and automation-driven asset monitoring can help alleviate economic, business pressures



As congested yards lead to inefficiencies and environmental challenges, 5G-driven automation is becoming the indispensable solution

By reducing idle times, automating crane operations, and optimising vehicle movements, ports like Bilbao and Tianjin are cutting their carbon footprint. Predictive analytics also help optimise energy consumption of lighting, cooling, and machinery, contributing to the port's sustainability agenda.

The 5G effect: Redefining ports as smart, seamless trade engines

As global shipping volumes rise and vessel sizes increase, ports are under immense pressure to optimise limited yard space and boost operational efficiency. Traditional connectivity solutions like Wi-Fi, Bluetooth, and wired networks are proving inadequate in meeting the growing demands for speed, reliability, and scale. Enter 5G — the game-changing technology enabling the smart ports of the future.

As global shipping volumes rise and vessel sizes increase, ports are under immense pressure to optimize limited yard space and boost operational efficiency. Traditional connectivity solutions like Wi-Fi, Bluetooth, and wired networks are proving inadequate in meeting the growing demands for speed, reliability, and scale. Enter 5G — the game-changing technology enabling the smart ports of the future.

Around 76 per cent of global port operators now cite yard and terminal optimization as their top priority, according to Port Technology. At the same time, 22 per cent believe that enhanced asset monitoring — made possible by real-time data and automation — can help mitigate economic and business pressures. With congested yards creating inefficiencies and environmental challenges, automation driven by 5G is emerging as the essential solution.

5G networks offer ultra-low latency, high bandwidth, and massive device connectivity, making them ideal for mission-critical industrial applications. Ports around the world are leveraging 5G for a range of use cases: remote-controlled ship-to-shore cranes, automated guided vehicles (AGVs), rubber-tired gantry cranes, predictive condition monitoring, and drone-based surveillance and deliveries.

These smart systems allow operators to improve safety by reducing human exposure to hazardous environments, enhance equipment uptime through real-time diagnostics, and achieve greater productivity and cost-efficiency. A 5G private network also consolidates all communication into a single, secure backhaul, eliminating the need for multiple fragmented systems.

With its ability to support high connection density and seamless communication, 5G is laying the foundation for industrial IoT in ports. As more global terminals adopt this technology, the benefits — from reduced congestion to lower emissions and faster cargo movement — are rapidly becoming undeniable. The digital port revolution has arrived, and 5G is at its helm.

India's vast coastline and strategic location offer immense potential to become a global maritime powerhouse. With over 12 major ports and more than 200 non-major ports handling millions of tonnes of cargo annually, Indian ports are vital nodes in global trade. However, to compete with world-class ports such as Singapore, Rotterdam, or Shanghai, Indian ports must make a critical technological leap — by embracing 5G communication networks to power the next generation of smart port operations.

The current landscape: Lagging in connectivity and smart infrastructure

Indian ports have made strides in automation and digitalisation, but progress remains uneven. Ports like Jawaharlal Nehru Port Authority (JNPA) and Mundra have implemented partial automation, especially in container handling. However, many others still rely heavily on manual operations, leading to inefficiencies, slow turnaround times, and higher operational costs.

Outdated port infrastructure and poor connectivity with hinterland logistics create bottlenecks that hamper cargo flow. Compounding these challenges is the lack of high-speed internet connectivity. Most ports still operate on legacy networks, limiting their ability to integrate Internet of Things (IoT) devices, artificial intelligence (AI), and real-time analytics — the very technologies that underpin global smart port ecosystems.

The rollout of 5G networks offers Indian ports a transformative opportunity. Unlike previous generations of mobile communication, 5G offers ultra-low latency, high-speed data transfer, massive device connectivity, and real-time responsiveness — essential features for automating complex port functions.

Moreover, regulatory fragmentation and the absence of structured incentives discourage private investments in advanced technologies like 5G and AI-driven systems. Without targeted reform, Indian ports risk falling further behind in a rapidly digitising global maritime sector.

Why 5G is the game-changer for port operations

The rollout of 5G networks offers Indian ports a transformative opportunity. Unlike previous generations of mobile communication, 5G offers ultra-low latency, high-speed data transfer, massive device connectivity, and real-time responsiveness — essential features for automating complex port functions.

With 5G, ports can:

- Enable real-time cargo tracking and predictive analytics.
- Deploy autonomous vehicles and equipment safely and efficiently.
- Enhance cybersecurity and remote monitoring capabilities.
- Coordinate seamlessly with logistics providers, customs, and shipping lines.

5G will also improve worker safety, reduce human error, and significantly cut operational costs by driving data-driven decision-making.

Building the 5G-ready Indian port: Strategic steps forward

To bring Indian ports to global standards in 5G-enabled smart operations, a comprehensive, multi-stakeholder approach is necessary. Here are the key steps:

Infrastructure overhaul and network deployment

Indian ports must partner with telecom providers like Reliance Jio, Airtel, and Vodafone Idea to build dedicated 5G infrastructure. This includes:

- Installation of 5G small cells and towers across port zones.
- Deployment of edge computing systems for real-time data processing.
- Upgradation of existing optical fibre networks and cloud data centres.

Ports located in remote or less developed regions should receive priority funding to bridge the connectivity gap and ensure uniform access to high-speed networks.

Robust policy and regulatory support

A clear national policy for 5G deployment in ports is crucial. The government must:

- Simplify licensing and spectrum allocation processes.
- Introduce financial incentives, tax breaks, and capital subsidies for ports investing in 5G infrastructure.
- Promote uniform adoption by establishing national standards for 5G-enabled port operations, ensuring seamless integration with global supply chains.

Challenges hindering Indian major ports in leveraging smart technology

Partial Automation: Some ports, like Jawaharlal Nehru Port Authority (JNPA) and Mundra, have adopted automation in container handling, but many still rely on manual operations, causing inefficiencies and higher costs.

Infrastructure Bottlenecks: Outdated port facilities and poor hinterland connectivity slow cargo movement, increasing turnaround times.

Lack of High-Speed Internet: Most ports use legacy networks, restricting integration of AI, IoT, and real-time analytics, which are essential for modern smart port ecosystems.

Regulatory Hurdles: Fragmented regulations and limited incentives discourage private investment in 5G, AI, and automation.

Risk of Falling Behind: Without targeted reforms, Indian ports may struggle to compete in a digitising global maritime sector.

Collaboration between the Ministry of Ports, Shipping and Waterways, Department of Telecommunications, and private sector stakeholders will be essential to coordinate efforts.

Integration of IoT, AI, and automation

The 5G ecosystem should enable ports to become intelligent operational zones by integrating:

- **IoT devices:** For real-time tracking of cargo, equipment condition monitoring, and environmental sensors.
- **Autonomous systems:** Including cranes, trucks, and vessels for reduced reliance on manual labour and enhanced operational safety.
- **AI and predictive analytics:** For berth scheduling, yard planning, inventory management, and proactive maintenance.

Such technologies, when synchronised over a 5G network, dramatically boost efficiency, reduce delays, and lower emissions.

Capacity building and workforce reskilling

Technology is only as effective as the people who use it. Indian ports must prioritise:

- Training programs to upskill workers in 5G operations, data analytics, and automation technologies.
- Collaborations with tech companies, startups, and academic institutions to develop customised skilling initiatives in AI, machine learning, and digital port operations.

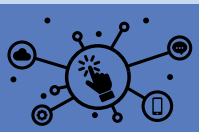
A digitally fluent workforce will accelerate adoption and ensure sustained performance improvements.

Public-Private Partnerships (PPPs) as catalysts

The capital-intensive nature of 5G deployment makes PPPs critical. Indian ports should:

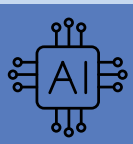
- Form joint ventures with telecom operators to co-develop infrastructure.
- Leverage government schemes like Sagarmala for financial backing of smart port projects.
- Seek international collaboration with ports that have successfully implemented 5G, such as PSA Singapore and Port of Antwerp, to adapt global best practices to the Indian context.

ENABLING SMART PORT TECHNOLOGIES:



INTERNET OF THINGS (IOT)

5G supports the deployment of a wide range of IoT devices, enabling data collection from various sources and facilitating real-time monitoring and control.



ARTIFICIAL INTELLIGENCE (AI)

5G provides the necessary connectivity and speed for AI-powered applications to be deployed in ports, such as predictive maintenance, traffic flow optimisation, and automated decision-making.

EDGE COMPUTING

5G facilitates the deployment of edge computing infrastructure within ports, enabling real-time data processing and analysis closer to the source, which is crucial for responsiveness and efficiency.

5G networks offer ultra-low latency, high bandwidth, and massive device connectivity, making them ideal for mission-critical industrial applications. Ports around the world are leveraging 5G for a range of use cases: remote-controlled ship-to-shore cranes, AGVs, and rubber-tired gantry cranes.

Navigating Challenges: Cost, cybersecurity, and interoperability

The transition to 5G is not without hurdles. Key challenges include:

- **High capital investment:** Smaller ports may struggle with the cost burden of upgrading systems and deploying infrastructure. A phased rollout supported by subsidies and private investment can help mitigate this.
- **Cybersecurity risks:** A 5G-connected port becomes a cyber target. Implementing global security standards, real-time threat detection, and continuous monitoring will be critical.
- **System integration issues:** Many Indian ports operate on legacy IT systems, making interoperability with new 5G technologies a concern. Ports must conduct compatibility audits and adopt modular solutions that ensure seamless transition.

A vision for the future: Global-standard Indian ports

India has a golden opportunity to reimagine its port ecosystem. By adopting a phased and strategic approach to 5G implementation — starting with pilot programs in flagship ports and expanding nationally — Indian ports can elevate their global competitiveness.

5G-driven smart ports will:

- Reduce congestion and turnaround times.
- Improve visibility and coordination across the supply chain.
- Boost investor confidence in port-led industrial development.
- Contribute significantly to India's $5 trillion economy vision.

Conclusion

The road to transforming Indian ports into global-class smart ports powered by 5G is both challenging and rewarding. With strategic vision, stakeholder collaboration, and technology-led reform, India can position its ports at the forefront of the digital maritime economy.

IMC: Unifying India's maritime industry for global leadership

Devki Nandan, MD, JSW Overseas FZE, and JSW Middle East Terminal, UAE is a seasoned leader in the maritime and infrastructure sector, heads Strategy, Investments, and Marketing at JSW Infrastructure. With global experience at Maersk and a strong academic background, he also serves as President of IPPTA and Chairman of the Indian Maritime Centre about which he talks in this interview.

What are the objectives and role of the Indian Maritime Centre (IMC) in the development of India's maritime sector?

Government has drawn up a broad vision and framework under Maritime India Vision:2030 and Maritime Amrit Kal Vision:2047 to propel India into the forefront of Global Maritime Sector in the next few decades. This requires concerted efforts by all stake holders.

IMC will play a catalytic role in achieving this vision by bringing together all maritime interests, projecting their needs to the Government and jointly working towards achieving a developed maritime sector in India. Helping in developing new policy frameworks to enhance growth of maritime sector and representing Indian in National and International bodies such as IMO will be one of the key objectives of IMC.

Our mission is to provide a structured framework for collaboration, connecting policymakers, industry leaders, and academic institutions to drive bilateral/multilateral innovation.

Together, we aim to create opportunities that enable equal partnerships, foster sustainable development, and shape the future of the global economy

What is the organisation structure and functions?

IMC will have a General Body and a Board of Directors. General Body gives general policy directions, while the Board of Directors implements them. The Board will be assisted by a Chief Executive Officer. The CEO will in turn be assisted by a Head (Operations) and Head (Administration) and functionaries from Finance and Administration and social media/PR side. In addition, we will have task forces on various subjects like ship building, coastal shipping, ports etc consisting of representatives of the Members representing relevant interests.

These task forces will be assisted by national and international experts.

Why do we need IMC when there are several associations of sub-sectors in maritime working for the interests and promotion of trade?

Presently, associations work in standalone for their own objectives, and there is no single body to take up the common issues. There are many issues of common interest among different associations. For example, taxation issues or setting up of a Maritime Development Fund. IMC can represent these issues from a single platform which can carry a larger weight than when

individual Associations take up with the Government. The unique feature of IMC is that it will have not only the representatives of the trade, but also representatives of central government, state governments, institutions, and regulatory bodies as its members. This will give an opportunity to the Trade to interact directly with the Government Bodies and resolve issues. IMC will thus provide a single window interface.

How do you intend to coordinate with these associations and build consensus towards common goals?

Our aim is to establish common platforms on specific subjects where the relevant associations meet regularly and discuss the issues. We will strive to achieve consensus through continuous deliberation and brainstorming.

What has been done so far?

As IMC is a newly established Company, we had to start from the scratch and focus on fulfilling all regulatory formalities first, which we have completed. Simultaneously, we had to make efforts to attract more membership. We have reached out to other maritime associations, trade bodies, institutions and state maritime boards. I am glad that we started with seven members, and we now have a strength of 34 members. We also had interactions at Government level on how to take IMC forward to meet the objectives in a most coherent basis. We are planning to sign MOUs with Niti Ayog and German Maritime Centre to explore collaborative efforts. We are pro-actively working with the Government providing inputs and recommendations relating to maritime policy, maritime development, legislative reforms etc. Recently, we participated in the Singapore Maritime Week along with Government representatives and participated in various panel discussions.

" We have identified port related issues relate to regulatory matters, green energy, induction of latest IT tools, inter and intra-port competition, capacity augmentation, operational efficiency improvement, availability of long-term liberalised funds, and creating safe and sustainable world class ports to address growing trade volume needs while reducing the logistics cost through better evacuation and cost-effective processes. Which need to be addressed immediately."

Have you identified and listed any priority issues to be taken up?

Yes, we have identified the following issues at present that need to be addressed immediately:

Shipping related issues relate to infrastructure status to Indian flagged vessels, review of regulatory overreach on age of vessels, availability of long-term liberalised funds, implementation of the initiatives identified to grow Indian flagged fleet, increase in the number of Indian seafarers through quality maritime education as well as supporting growth of nascent sectors like cruise tourism in the country.

Issues relating to ship building relating to constraints of funds, liberalised financing, skill enhancements, insurance, encouraging private sector participation, land acquisition, investment in R&D etc.

Port related issues relate to regulatory matters, green energy, induction of latest IT tools, inter and intra-port competition, capacity augmentation, operational efficiency improvement, availability of long-term liberalised funds, and creating safe and sustainable world class ports to address growing trade volume needs while reducing the logistics cost through better evacuation and cost-effective processes.

Our sector needs huge financial support for infrastructure growth including shipbuilding. Will IMC be involved in funding aspects also?

Yes, the task is humungous. The Maritime Amrit Kal Vision: 2047 envisages an investment of about 80 lakh crores including private sector investment into Logistics, Ports and Shipping. We have to tap into global and local resources by having an attractive investment policy which includes conducive regulatory mechanism, tax incentives, availability of long-term credit on liberalised terms etc. IMC will strive to achieve this through policy interventions with the Government.

Government is also planning to set up a Maritime Development Fund with a corpus of ₹25000 crores. Although it is a step in the right direction, the corpus needs to be increased suitably keeping in mind the huge requirements of funds, and all other possible sources to be tapped.

What are the efforts of the Indian Maritime Centre (IMC) to strengthen startups in the maritime sector?

There is a lot of scope for innovation and digital initiatives in maritime sector. We recognise a need for developing a Startup Maritime India initiative to build a strong ecosystem for nurturing innovation, startups and encouraging investments in the startup ecosystem of the country. We have Indian Maritime University and Institution of Naval Architects with us as a member. IIT, Chennai is in process of becoming a member. All the major ports are our members. We also have Cochin Shipyard Ltd and Shipyards Association of India as Members. With the help of these Members and other interested members, we will be drawing up schemes for Industry-Academia Partnership and Incubation, Funding Support and other incentives.

Connected risks: How geopolitics is reshaping global shipping

In this insightful interview **Punit Oza, Founder and CEO of Maritime NXT,** emphasizes the growing importance of understanding geopolitical risks for shipping and logistics companies. He highlights how these evolving challenges are reshaping global trade and supply chains - and stresses the urgent need for businesses to design operations that are not only agile but also resilient in the face of uncertainty.

Geopolitical risks seem to be intensifying globally. How do you see these developments shaping the shipping and logistics sector today?

Geopolitical risks have always been part of the landscape, but what's changed is their frequency, complexity, and the speed at which they affect global supply chains. Today, even a local disruption can create global consequences. The rise of decoupling, reshoring, and new strategic alignments is pushing companies to reconfigure supply chains quickly.

For example, when I was at Klaveness, we were Europe-centric with one Oslo office. But after opening in Singapore, we were closely tied to Southeast Asian developments. When Myanmar's political landscape shifted, we had to rapidly reassess risks and opportunities. That kind of responsiveness is essential for global shipping today.

What makes today's geopolitical risks harder to manage than in the past?

It's their unpredictability and overlapping nature. We're no longer dealing solely with war or unrest—

there's trade weaponisation, cyber threats, sanctions, and climate-linked instability. Businesses are deeply embedded across markets now, so a disruption in one place can cascade globally almost instantly. The fog of uncertainty is far denser than before.

Have customer expectations evolved in this environment?

Absolutely. Today's clients expect flexibility and transparency by default. Cost and delivery time are still important, but resilience is key. Customers want assurance that even if a port shuts down due to conflict or sanctions, their cargo will still move—even via longer, costlier routes. This has deepened partnerships between logistics firms and clients, especially in sectors like pharma and electronics.

How are shipping companies adapting to this new reality?

The sector often lags behind tech or finance in agility. But the awareness is there—the information exists. The real issue is operational bandwidth. Teams are often too absorbed in daily tasks to step back and connect geopolitical dots. Most companies lack internal mechanisms to consistently evaluate these risks. That's the bottleneck.

Should companies establish geopolitical advisory teams?

In theory, yes. But compliance and perception risks complicate things. What's happening instead is an outsourcing trend—firms like Drewry, IHS Markit, and S&P Global now integrate political risk into forecasts. This will likely become industry standard, much like ESG ratings are in finance.

Will the next generation of maritime leaders think differently about geopolitics and tech?

Absolutely. We are digital immigrants—we adopted tech mid-career. But the next CEOs will be digital natives. For them, using real-time feeds, tracking conflict zones, or running AI-based scenarios will be instinctive.

I often use this analogy: my son doesn't eat at a restaurant without checking TripAdvisor. Similarly, tomorrow's leaders will track geopolitical signals as part of their daily workflow, not as a special project. That will make our industry more responsive and resilient.

Today's clients expect flexibility and transparency by default. Cost and delivery time are still important, but resilience is key. Customers want assurance that even if a port shuts down due to conflict or sanctions, their cargo will still move—even via longer, costlier routes.

In any disruption, there are winners and losers. Who is likely to emerge stronger today?

It boils down to value, access, and relevance. Winners are those that offer something strategic—be it natural resources, location, or infrastructure. Countries or companies that can offer minerals, manufacturing capacity, or digital infrastructure will retain bargaining power.

Take Singapore. It lacks natural resources, but it's become indispensable by offering an all-in-one maritime services hub—refuelling, repairs, legal support, crew changes. That kind of multi-touchpoint efficiency guarantees its relevance.

Are you seeing a shift in the global cargo mix?

Yes, quiet but significant. Two forces are driving it:

- **Resource nationalism** — Countries like Indonesia are telling investors, "Don't just take our nickel—build a processing plant here." That changes trade from raw bulk (like bauxite) to processed or semi-finished goods, shifting from bulk carriers to containers.
- **Energy transition and EVs** — The green economy needs materials like lithium, cobalt, rare earths, nickel, graphite. These don't move in bulk like coal but are high-value, strategic cargoes.

This is now a scramble for critical minerals, not fossil fuels. The US, EU, and China are all racing to secure supply chains, and logistics players must evolve accordingly.

Are shipping lines and port ecosystems prepared for this shift?

Frankly, we're lagging. Shipping is still fragmented. Unlike aviation, which has introduced Sustainable Aviation Fuel (SAF) pooling, shipping hasn't developed a collective approach for handling new cargo types.

We need collaboration, standardisation, and digital systems to track and consolidate these emerging cargo streams. Otherwise, we risk becoming inefficient custodians of tomorrow's trade.

How is this environment affecting chartering and contracts?

Chartering is being reshaped by volatility. A key tool I recommend is continuous learning. Professionals must stay updated through institutions like The Institute of Chartered Shipbrokers or The Nautical Institute. You can't rely on past models anymore—you need agility.

We also need to upgrade contracts. The aviation sector has IATA, which enforces strong norms. Shipping lacks a central body with that kind of authority. IMO moves slowly due to consensus-based governance, so it's up to legal and chartering teams to tighten risk clauses and plan for contingencies.

Is data playing a role in smarter chartering decisions?

It absolutely should—and we've only scratched the surface. We have vast data sets, but they're stuck in company silos. If anonymised, they could reveal actionable insights.

For example, I don't need to know if MV Bahamas underperforms. But if you tell me "a 58,000 DWT ship from Yard X consistently underperforms its peers," that's powerful. That's the kind of benchmarking that improves decision-making.

The problem? Lack of collaboration. Until we share anonymised data in secure frameworks, information asymmetry will persist, and some players will remain exposed without even knowing it.


GREENLAND
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Redefining logistics with speed, scale, and sustainability

V.O. Chidambaranar Port, a premier trade gateway on India's southeastern coast line has emerged as a high-performance logistics hub, outpacing global standards in operational efficiency. In this interview, **Susanta Kumar Purohit, IRSEE, Chairperson of VOC Port Authority,** outlines the port's ambitious expansion strategy-ranging from deeper draft enhancements and improved hinterland connectivity to targeted transshipment plans-that reinforce its pivotal role in the east-west maritime corridor.

VOC Port's container turnaround time outperforms ports in the USA and Australia. What are the key factors behind this efficiency?

VOC Port has optimized terminal operations through smart port initiatives, process automation, and strong coordination with operators like DBGT and TICT. Unlike congested gateways such as Los Angeles and Sydney, Tuticorin offers quicker vessel turnaround. The Direct Port Entry (DPE) system allows factory-stuffed, e-sealed export containers to bypass Container Freight Stations (CFSs) and Inland Container Depots (ICDs), enhancing efficiency. Over 16 CFSs within a 10-km radius further support operational fluidity.

How is the port preparing for rising cargo volumes?

With capacity expansions and digitalization, VOC Port is scaling up to handle larger vessels and higher cargo volumes without raising costs. Infrastructure upgrades, including berth expansions and deeper draft capabilities, ensure efficiency.

How are partnerships with private operators like JM Baxi and JSW improving the port's capabilities?

Private participation through TICT (JM Baxi), DBGT, and JSW has significantly enhanced efficiency. DBGT and TICT maintain global benchmarks, consistently achieving over 30 moves per hour. JSW's bulk terminal is set for full mechanization by March 2027. The widening of the entrance channel to 230m will accommodate larger vessels, boosting industrial investments, including Vinfast's EV unit, Tata Power's solar module plant, and a proposed shipbuilding facility.

Are there logistics parks in the pipeline to support MSMEs and reduce costs?

VOC Port has launched Tuticorin SPEEDZ under the Sagarmala Coastal Employment Zone, allocating 600 acres to promote port-based industries. This initiative supports MSMEs, encourages export-oriented manufacturing, and lowers logistics costs through proximity-based integration.

How much of EXIM cargo now bypasses Colombo, and what sectors are driving this shift?

VOC Port handled over 795,000 TEUs in FY 2024–25, reflecting 7.52 per cent growth. While precise figures on Colombo bypass aren't disclosed, better connectivity, direct shipping services, and infrastructure improvements are reducing dependency. Key drivers include textiles, electronics, solar energy equipment, and consumer goods, leading to forex savings and shorter lead times for Indian exporters.

What role does Gangaikondan SEZ play in boosting container volumes?

The SEZ is witnessing growth in solar panel manufacturing and electronics, with companies like Tata Solar and Vikram Solar boosting exports. DBGT and TICT, equipped with a 14.2m draft and 370m quay length, can handle vessels up to 8,000 TEUs, ensuring efficient logistics for SEZ units.

What infrastructure projects are strengthening hinterland connectivity?

VOC Port is well-linked via NH 38 and NH 138, with six-laning work reducing congestion and transit time. The upcoming Madurai–Thoothukudi rail line will enhance cargo evacuation efficiency and open new logistics corridors. NHAI and Indian Railways partnerships aim to lower per-TEU transport costs.

How is VOC Port leveraging its East–West maritime positioning?

The port is engaging global carriers to establish direct call routes, reducing reliance on Colombo. Competitive tariffs, berth expansions, dredging, and cargo handling investments enhance VOC Port's attractiveness.

How is VOC Port diversifying beyond coal and containers?

The port is transforming into a green energy logistics hub, with investments including:

- ACME Green Hydrogen: ₹27,000 crore project spanning 222 acres.
- Sembcorp (Green Infra): ₹8,460 crore investment over 149 acres.
- Amplus Ganges Solar & Renew E-fuels: Developing green ammonia storage and production, expected to launch by 2028.

What threats does VOC Port face, and how is it preparing?

VOC Port is addressing this by developing an Outer Harbour with two container terminals (4 million TEU capacity), deepening dredging to 16m, and investing in smart logistics. By focusing on green fuel logistics, hinterland links, and policy-driven incentives, VOC Port aims to expand its market share and retain its competitive edge.

VOC Port has been hub for export of windmill blades; can you please throw some light on that?

VO Chidambaranar Port has been an icon of India in the windmill blade exports. The Port has handled 2635 number of blades in 96 windmill blade vessels in the year 2024-25, when compared to 2030 number of blades in 72 windmill blade vessels in the year 2023-24, witnessing an impressive growth of 30 per cent.

VOC Port has a number of advantages to suit the EXIM trade like, being an all weather port that facilitates handling of any cargo all through the year, best of its class hinterland connectivity for seamless and congestion free National Highway network, harbour mobile cranes for faster loading of windmill blades, adequate storage space for stacking any volume of Windmill blades and its accessories within the custom bound area, excellent and skilled workforce for handling sensitive project cargo.

What are capacity enhancement projects executed in the last financial year?

In the last fiscal year, VOC Port enhanced its cargo handling capacity through major infrastructure upgrades, including a new container terminal (Tuticorin International Container Terminal) with a capacity to handled 7 lakh TEUs of Containers in September 2024, bulk cargo terminal (JSW Tuticorin Multipurpose Terminal) with a capacity to handle 7 million Tonnes of cargo, and expanded turning circle and dredging in front of NCB-3 in May 2025. Key developments also include a multipurpose berth at berth-7 in March 2025, link conveyor system to tap the idle capacity in January 2025, and Direct Port Entry facility for Export containers in April 2025. Additionally, the Port marked a green energy milestone by commissioning Green Hydrogen Pilot Plant in May 2025, the first Indian Port to lead the transition to Green Energy. Port has allocated 501 acres for green hydrogen/ammonia projects, attracting ₹41,860 crores in investments.

What is mantra behind ecosystem for the faster execution of infrastructure projects in Tuticorin?

The Port promotes green mobility through electric vehicles and EV charging stations. The Port is producing Green Hydrogen from its pilot project with a capacity of 10 Nm3/day capable of powering certain stretches of streetlights in port colony and e-vehicle charging stations. A pilot green hydrogen bunkering facility and a dedicated terminal for windmill components are under development.

The remarkable pace of infrastructure project execution at VOC Port is driven by the all-weather ecosystem of Tuticorin, easy availability of the raw materials for construction, good work culture, strategic planning and guidance of Ministry of Ports, Shipping and Waterways. VOC Port leverages on periodic interaction with stakeholders of the port to assess the augmentation requirements and structured systems for monitoring the progress of projects. The infrastructure building ecosystem has been a platform for the investors to execute the project with ease in a scheduled manner.

Of late, VOC Port has been in the headlines of being the best in green initiatives, can you please elaborate on that?

VOC Port is leading India's Green Port movement with a comprehensive sustainability strategy. It operates multiple solar and wind energy facilities, generating over 10.35 million units of green power in FY 2024–25 and reducing CO_2 emissions by 8.49 million kg. It is the first major Indian port to surpass 1 MW in rooftop solar capacity.

The Port promotes green mobility through electric vehicles and EV charging stations. The Port is producing Green Hydrogen from its pilot project with a capacity of 10 Nm3/day capable of powering certain stretches of streetlights in port colony and e-vehicle charging stations. A pilot green hydrogen bunkering facility and a dedicated terminal for windmill components are under development. VOC Port is also working on India's first Coastal Green Shipping Corridor and exploring green fuel ship operations with global ports.

Additionally, the Port has launched India's first Green Port Policy, emphasizing eco-friendly infrastructure, renewable energy, electric vehicles, water conservation, and sustainable operations, solidifying its role as a leader in maritime sustainability.

Globally, ports are adopting Artificial Intelligence, smart port technologies, and ease of doing business initiatives to boost efficiency and minimise ship turnaround times. What steps has VOC Port taken to align with these advancements?

India's first indigenously developed Vessel Traffic System to optimise vessel movements, minimizing congestion and berthing delays has been commissioned at the Port. Port's RFID based Port gate management has facilitated real time gate monitoring and seamless movement of trucks. The newly commissioned Direct Port Entry (DPE) facility enables factories and exporters to deliver containers directly to the port terminal instead of routing through container freight stations (CFS). Port's Drive through Container Scanner can scan 100 vehicles per hour, capable of detecting suspicious material at ease, thereby improving Port evacuation efficiency.

VOC Port is working on implementing AI and IoT technologies to create a Smart, Green, and Secured Port. Port is set to commission an IoT-based street lighting system and water sprinkler system in coal yard. The Port is also exploring various avenues of automation, AI and IoT, Digital twin, 5G technology with IIT Chennai.

Record-breaking performance in FY 2024-25

In a landmark achievement, India's government-owned major ports have reported unprecedented growth in cargo handling, operational efficiency, and infrastructure development during the fiscal year 2024-25.

Collectively, these ports managed 855 million tonnes of cargo, marking a 4.3 per cent increase from the previous year's 819 million tonnes. This surge underscores the resilience and capacity of India's maritime infrastructure to accommodate rising trade volumes.

Key drivers of growth

The impressive growth in cargo handling was propelled by significant increases in various sectors: container throughput rose by 10 per cent, fertilizer cargo handling increased by 13 per cent, petroleum, oil, and lubricants (POL) saw a 3 per cent uptick, and miscellaneous commodities experienced a remarkable 31 per cent growth compared to the previous fiscal year.

Port-specific milestones

For the first time in history, both the Paradip Port Authority (PPA) and Deendayal Port Authority (DPA) surpassed the 150 million tonnes cargo handling mark, reinforcing their status as pivotal hubs in India's maritime trade. Additionally, the Jawaharlal Nehru Port Authority (JNPA) set a new record by handling 7.3 million twenty-foot equivalent units (TEUs), reflecting a 13.5 per cent year-on-year growth.

Over the past decade, from FY 2014-15 to FY 2024-25, cargo volumes at major ports surged from 581 million tonnes to approximately 855 million tonnes, reflecting a robust Compound Annual Growth Rate (CAGR) of around 4 per cent.

Infrastructure and investment

The fiscal year also witnessed significant strides in port-led industrialization. A total of 962 acres of land were allocated for industrial activities, projected to generate an income of ₹7,565 crore. Future investments on this land are expected to reach ₹68,780 crore, indicating robust investor confidence in the sector. Private sector participation has been instrumental, with investments in public-private partnership (PPP) projects at major ports tripling from ₹1,329 crore in FY 2022-23 to ₹3,986 crore in FY 2024-25.

Operational efficiency enhancements

Operational performance metrics have shown significant improvement. Pre-Berthing Detention (PBD) Time on port account improved by approximately 36 per cent compared to the previous fiscal year. Financially, major ports witnessed an 8 per cent increase in total income, rising to ₹24,203 crore from ₹22,468 crore, while operating surplus grew by 7 per cent to ₹12,314 crore.

Decade-long progress

Over the past decade, from FY 2014-15 to FY 2024-25, cargo volumes at major ports surged from 581 million tonnes to approximately 855 million tonnes, reflecting a robust Compound Annual Growth Rate (CAGR) of around 4 per cent. Containerised cargo saw a remarkable 70 per cent increase, from 7.9 million TEUs to 13.5 million TEUs. Productivity indicators also improved significantly: Output per Ship Berth Day (OSBD) rose from 12,458 tonnes to 18,304 tonnes, Average Turnaround Time (TRT) reduced by 48 per cent from 96 hours to 49.5 hours, and Idle Time percentage dropped by approximately 29 per cent from 23.1 per cent to 16.3 per cent.

Future outlook

India's major ports are now poised to elevate their competitiveness further, supported by continuous investments in mechanization, process reengineering, port community systems, and multi-modal logistics integration. These initiatives have resulted in higher cargo volumes, reduced vessel wait times, optimised capacity utilization, and increased investor confidence. As India expands its global trade footprint and modernizes logistics infrastructure, FY 2024-25 stands as a testament to the strategic vision and collaborative efforts of public authorities and private stakeholders.

Collaborate to survive: The new imperative for freight forwarders

Edward Kieswetter, Commissioner of the South African Revenue Service (SARS), is a globally respected tax and customs leader. With a legacy spanning SARS, Alexander Forbes, and major South African corporates, he now chairs the World Customs Organisation and the African Tax Administration Forum. Armed with multiple postgraduate degrees and global academic appointments, Edward is at the forefront of modernizing revenue systems, championing transparency, digital innovation, and international cooperation.

The role of freight forwarders in global trade

As stewards of $52 trillion in annual global trade, freight forwarders play a crucial role in facilitating the seamless movement of goods across borders. Yet, they face increasing complexity driven by geopolitical shifts, technological disruption, regulatory tightening, and heightened customer expectations. Strengthened cooperation among customs administrations, freight forwarders, and multilateral organisations like the World Customs Organization (WCO) is essential in tackling these challenges.

Five core challenges freight forwarders face

1. Regulatory complexity and compliance pressures: Global trade regulations remain fragmented despite efforts like the WCO SAFE Framework, resulting in delays, increased costs, and disproportionate impacts on smaller freight forwarders in the Global South.

2. Technological disruption and cybersecurity risks: AI, blockchain, and IoT enhance efficiency but also introduce cybersecurity vulnerabilities. While AI-enabled customs transactions now exceed 1.2 billion daily, many developing nations struggle with digital exclusion due to funding and infrastructure gaps.

3. Capacity constraints and supply chain disruptions: Geopolitical tensions—including the Red Sea crisis, US-China trade disputes, and the war in Ukraine—exacerbate bottlenecks, while natural disasters, truck driver shortages, and port congestion further strain logistics.

4. Sustainability pressures and decarbonisation demands: Governments and consumers increasingly push for cleaner supply chains, with regulations like the EU's CBAM affecting billions in imports. Larger logistics players can invest in R&D, but smaller firms struggle with the financial burden of green transitions.

5. Rising customer expectations and e-commerce growth: The booming $6.5 trillion e-commerce sector demands faster, more efficient logistics. Yet, rising delivery costs, last-mile challenges, and new import duty thresholds increase operational friction.

Collaborative solutions: Forging strategic partnerships

While the challenges are formidable, they also present an opportunity—perhaps even a mandate—for stronger, smarter partnerships. Here are five high-impact areas where customs administrations, freight forwarders, and institutions like the WCO can collaborate:

1. Co-development of AI-driven compliance tools

A key way to tackle regulatory complexity is through the co-creation

of smart compliance solutions. The WCO's SAFE Framework, already adopted by most of its 186 member states, offers an ideal foundation for integration with freight forwarding systems.

By working together to build AI-powered classification tools, automated Harmonized System (HS) coders, and sanctions-screening modules, governments and freight forwarders can significantly reduce errors, delays, and compliance costs. For instance, Singapore's TradeNet system has reduced clearance times by 40 per cent and error rates by 30 per cent—a benchmark others can emulate.

2. Expanded capacity building and training

Digital transformation is only as good as the people behind it. A concerted push toward training and skill development is essential to enable widespread adoption of technologies such as AI, blockchain, and paperless trade.

The WCO already runs training for customs officers through its global learning platforms. By extending this to private-sector freight forwarders—especially SMEs—through public-private training partnerships, stakeholders can address gaps in AI literacy, compliance with regulations like ACAS or CBAM, and ethical data management.

3. Joint infrastructure and data sharing platforms

Customs agencies and freight forwarders must co-invest in shared platforms to improve real-time visibility and operational coordination. Systems like India's ULIP (Unified Logistics Interface Platform) or South Africa's Customs Modernisation Program, which uses AI for risk profiling, show what's possible.

Public-private partnerships can also drive infrastructure upgrades in bottleneck-prone areas, such as land borders and minor ports, bringing lasting efficiency gains.

4. Sustainability through collaborative innovation

Rather than expecting freight forwarders to go it alone on decarbonization, governments can play an enabling role. Green finance schemes, subsidies for electric fleets, and tax rebates on low-emission technologies can help smaller operators keep pace.

Additionally, collaborative projects—such as port electrification, green corridors, or the pooling of data to track carbon intensity—can help align incentives and share the cost burden.

5. Bridging the digital divide for e-commerce enablement

While e-commerce is a growth engine, 2.9 billion people still lack access to basic digital tools. Governments and trade bodies should collaborate to expand digital literacy programs, provide cloud-based logistics software to smaller players, and encourage inclusive participation in global trade networks.

Policies that harmonize tax thresholds and balance the interests of online retailers with traditional stores can also ensure fairer competition and smoother operations.

A call for elevated partnerships

As emphasized in the WCO Chair's remarks, partnerships must rise above narrow transactional interests. True progress will be defined not just by faster clearance or reduced costs, but by achieving broader goals: security, sustainability, fairness, and resilience.

Freight forwarders are not just service providers—they are the arteries through which the global economy pulses. Their success, or failure, impacts everything from food security to industrial growth. Recognising this, customs administrations and industry leaders must work shoulder to shoulder to redesign the logistics ecosystem for the 21st century.

Only then can we turn today's challenges into tomorrow's competitive advantages—and deliver not just goods, but shared prosperity across borders.

(The article is based on the key note address delivered by Edward Kieswetter at the FFFAI 25th Biennial Convention.)

India–South Africa customs cooperation strengthens trade and security

India and South Africa are deepening their trade ties, with bilateral trade reaching over 280 billion Rand last year. India has consistently ranked among South Africa's top four trading partners, and this partnership is poised to strengthen further with the upcoming signing of a bilateral Mutual Recognition Agreement (MRA) in June. The MRA will streamline processes for certified operators, reduce industrial barriers, and enhance cross-border efficiency.

Both nations are also actively engaging within BRICS to develop a multilateral, inclusive MRA aimed at harmonising legal frameworks, securing supply chains, and integrating emerging economies.

India's Authorised Economic Operator (AEO) program stands out globally, with over 5,700 certified entities, including 900 logistics providers. Offering faster clearances, reduced inspections, and deferred duty payments, the AEO programme exemplifies India's inclusive trade facilitation, especially benefiting SMEs. This aligns with broader digital trade reforms and logistics policies, making India a model partner for South Africa.

Meanwhile, South Africa has launched a customs modernization program using AI for risk profiling, processing over 5 million declarations with 92 per cent accuracy and reducing clearance times. By partnering on real-time data sharing and enforcement, both countries aim to combat smuggling and inefficiencies, building a more resilient and competitive trade ecosystem.

Enabling seamless trade: How CBIC is reshaping India's logistics and customs landscape

India's trade and logistics ecosystem is undergoing a quiet but powerful transformation, led by structural reforms, digital innovations, and a renewed focus on ease of doing business. At the heart of this evolution is the Central Board of Indirect Taxes and Customs (CBIC), playing a pivotal role not merely as a regulator, but increasingly as a facilitator of global trade.

The PM Gati Shakti master plan and the National Logistics Policy (NLP) aim to create an integrated logistics framework to boost efficiency and reduce costs, enhancing India's global competitiveness. In alignment, CBIC is modernising customs to remove trade bottlenecks and lower logistics costs—currently 9–14 per cent of GDP—to global benchmarks by 2030.

Data-driven transparency and reform

CBIC is urging collaboration among academia, industry, and research bodies to replace outdated logistics metrics with objective, data-driven indicators. The goal is not just to improve global rankings like the World Bank's Logistics Performance Index but to achieve tangible gains in speed, cost, and predictability for businesses.

Digitisation and automation at the core

CBIC's digital-first reforms, including e-Bond and e-Bank Guarantee, streamline paperwork and compliance costs. The 'REGO' initiative allows Authorized Economic Operators (AEOs) to move imports directly to their premises for examination, minimizing port dwell times. Risk-based uniform examination orders and 24 installed container scanners reinforce cargo security.

Standardised customs processes and predictability

CBIC has also introduced time limits for finalising provisional assessments, a long-standing concern among businesses. The process must now be completed within two years (extendable by one year), providing greater predictability and cost efficiency for importers, particularly in sectors with complex valuation challenges.

The National Time Release Study conducted by CBIC showed measurable improvements in release times at major ports and integrated check posts, with reductions of 5–6 per cent over the previous year. This demonstrates real progress in accelerating cargo movement and minimising bottlenecks.

Empowering MSMEs and niche sectors

Recognizing MSMEs' compliance challenges, CBIC has digitized export clearance for e-commerce and gem & jewellery sectors, simplifying re-import procedures for returned goods to facilitate global trade access.

International collaboration and global alignment

CBIC is actively engaging in international cooperation, with a focus on bilateral Mutual Recognition Arrangements (MRAs) and customs data-sharing under FTAs. The latest MRA with Singapore enhances real-time collaboration and ensures faster and more secure cross-border cargo movements.

Additionally, the upcoming Customs Integrated System will unify procedures across all modes of transportation—air, sea, land—eliminating discrepancies and enabling a single-window interface for all customs operations.

Conclusion: From gatekeeper to trade enabler

Today, CBIC is no longer a passive checkpoint in the trade value chain—it is a strategic enabler, simplifying customs procedures, embracing technology, and collaborating with industry partners to shape a modern trade ecosystem.

With continued investment in automation, AI-driven risk management, and international standardisation, CBIC is setting the foundation for India's rise as a global logistics and manufacturing powerhouse.

As India aims to become a $5 trillion economy, CBIC's efforts stand out as a model of responsive governance and proactive reform, inspiring confidence among domestic and international businesses alike.

(This article is based on Sanjay Kumar Agarwal speech delivered at the FFFAI 25th biennial convention)

Ports of the Future: India's maritime vision 2047 unfolds

As India navigates its path toward becoming a developed economy by 2047, the maritime sector stands at a pivotal turning point, observes **Rajiv Jalota, Advisor to the Indian Ports Association (IPA).**

The recently concluded India Ports Conference 2025 in Mumbai—aptly themed Unleashing Next-Gen Port and Logistics Infrastructure—was not just a gathering of stakeholders but a strategic moment of reckoning. It laid the foundation for the next phase of India's port-led transformation, blending vision with actionable direction.

India's maritime moment has arrived

India's ports already handle over 90 per cent of the country's external trade by volume. In FY 2024-25 alone, total cargo throughput at Indian ports reached 1,460 million metric tonnes (MMT), including a growing 22.7 per cent share of coastal cargo. Yet, despite this growth, only 25 per cent of India's transshipment cargo is handled domestically—a statistic ripe for redress.

As global trade corridors realign and new supply chain dynamics emerge, India must transition from being a peripheral participant to becoming a central hub in global maritime logistics. The vision for 2047 positions Indian ports as smart, green, secure, and strategic gateways that can rival the best in the world.

Sustainability: From obligation to opportunity

Gone are the days when environmental compliance was merely a regulatory checkbox. Today, sustainability has become a critical differentiator for port competitiveness. To lead in this evolving landscape, Indian ports must:

- Deploy shore power and infrastructure for green fuels, including green hydrogen and its derivatives
- Electrify port operations and adopt energy-efficient designs
- Join or initiate green shipping corridors with global partners

Frameworks such as the Harit Sagar Guidelines, green port reporting protocols, and forthcoming ESG mandates provide an operational roadmap for decarbonization. However, these transitions require more than intent—they need robust government support through climate finance, blended capital models, and policy clarity to enable rapid, rather than cautious, transformation.

Building smart ports with smart people

India's ports must evolve not only in size but in intelligence. The next generation of ports will be defined by data, automation, and interoperability.

This demands full-scale integration of AI, IoT, and blockchain into logistics and trade platforms. Port systems such as ICEGATE, ULIP, the Logistics Data Bank, and Sagar Setu must converge into a unified national digital ecosystem. Strengthening cybersecurity through alliances such as the Maritime Transportation System Information Sharing and Analysis Center (MTS-ISAC) is equally critical.

However, digital infrastructure is only as strong as the talent behind it. India must cultivate a future-ready workforce—AI enablers, green engineers, data scientists, and port technologists—to sustain this transformation.

Ports as strategic assets in a changing geopolitical landscape

Ports are no longer passive trade enablers—they are vital geopolitical levers. As Asia's share of global maritime freight has risen from 38 per cent in 2000 to 54 per cent in 2023, India is uniquely positioned to assert itself as a stable, reliable partner amidst global flux.

Mega port projects like Vadhavan, Galathea Bay, and Vizhinjam are not just infrastructure investments—they are strategic imperatives. Bilateral and multilateral port development agreements, technology transfer frameworks, and maritime innovation partnerships must now form the cornerstone of India's foreign policy in the maritime domain.

The IPA is working to ensure Indian ports move in unison—not in silos. Our focus areas include:

- Standardising green port practices
- Coordinating sustainability benchmarks across major ports
- Enabling public-private partnerships for resilient infrastructure.

Adapting to change: The emerging role of logistics service providers in India's growing trade ecosystem

India's logistics sector stands at a transformational crossroads—fuelled by unprecedented economic expansion, rising trade volumes, and evolving policy frameworks like FTAs. As the country accelerates toward becoming a $5 trillion economy, logistics service providers (LSPs) find themselves both challenged and empowered. From shifting modal mixes to digital imperatives and changing freight economics, the landscape is being redrawn—and it demands an adaptive, strategic response from stakeholders across the value chain.

Modal mix shifts: Infrastructure driving opportunity and complexity

Traditionally, India's logistics backbone was heavily skewed towards road transport, commanding over 70 per cent share. However, with sustained government focus under the PM Gati Shakti National Master Plan, this mix is witnessing a decisive correction. Railways, which had seen a relative decline since independence, are now resurging with significant investments aimed at high-capacity freight corridors and multimodal logistics hubs. While rail's modal share may rise only marginally in percentage terms (from 15 per cent to 18 per cent), in absolute tonnage, the growth is dramatic—indicating a high CAGR and improved viability for bulk and long-haul cargo.

Simultaneously, coastal and inland waterways are gaining momentum, with coastal shipping projected to rise to nearly 9 per cent of the modal mix. Policy support for cabotage relaxation, as demonstrated by CMA CGM's deployment of Indian-flagged vessels for domestic coastal cargo, is helping slash coastal transport costs. While air cargo will remain a niche (2 per cent of cargo share), its strategic value for high-value goods, pharmaceuticals, and time-sensitive shipments cannot be understated.

The challenge for LSPs is twofold: adapting operations to the new modal mix, and developing seamless multimodal capabilities to offer integrated logistics solutions. Success will depend on investing in digital visibility, multimodal coordination, and real-time cargo tracking.

From freight to value: Evolution of the logistics services mix

Another tectonic shift is in the composition of logistics spending. While freight transport has traditionally dominated (around 80 per cent+), this share is now expected to decline to about 61 per cent, with warehousing and value-added services (VAS) rising to 35 per cent, and express logistics/E-comm-led services growing to 14 per cent.

For logistics providers, this signals a strategic opportunity—and an operational challenge. To stay competitive, LSPs must move beyond pure transportation and build capabilities in value-added offerings such as Packing and labelling, Customs documentation and compliance, Inventory management, Quality inspection and returns and E-commerce fulfilment

This value migration requires investments in warehousing infrastructure, digital platforms, and domain knowledge in industry-specific supply chains—be it textiles, handicrafts, pharma, or industrial components.

FTAs and trade-driven growth: A strategic realignment

India's proactive pursuit of Free Trade Agreements (FTAs) is another powerful growth lever. With 15–20 FTAs now operational or under negotiation, the Indian government is working to secure preferential market access for its exports. However, trade agreements alone cannot generate impact unless matched with logistics capacity and cost-effective freight connectivity.

This is where the logistics industry must align strategically. Freight forwarders, in particular, need to study trade corridors enabled by FTAs and create or expand services on south-

south and intra-Asia routes. As an example, FTAs with Southeast Asian and African nations require more direct feeder and short-sea shipping capacity from India's east and south coasts—something that large shipping lines are just beginning to address.

There's also a call to action for freight forwarders to become planners—not just executors. The traditional focus on execution must evolve to include planning roles: consulting exporters/importers on optimal routing, mode selection, cost optimization, and compliance with destination regulations. This is critical for mid-size exporters who may lack the scale or knowledge to navigate FTA-driven markets on their own.

Geopolitics and the logistics realignment

Global trade dynamics are undergoing a fundamental reset. The post-WWII multilateral trade order is fragmenting, replaced by bilateralism, regionalism, and geopolitical recalibrations. For India, this means not just greater engagement through FTAs, but also greater self-reliance in connectivity and capacity.

The emergence of India-Middle East-Europe Corridor (IMEC), revival of inland corridors like the Kaladan Project, and greater integration with ASEAN economies are part of this recalibration. LSPs must therefore anticipate geopolitical shifts and diversify trade route offerings to remain resilient.

Moreover, regulations are becoming more stringent globally—with sustainability, packaging standards, and carbon footprints taking centre stage. Forwarders and 3PLs must ensure that their clients' cargo meets destination-specific sustainability standards—down to the materials used for pallets and packaging.

Shipping lines enter the hinterland: A disruptive shift

A major disruptor for traditional freight forwarders is the changing role of global shipping lines. Formerly focused solely on port-to-port transport, major carriers are now expanding end-to-end logistics offerings, including trucking, customs brokerage, and warehousing. Maersk, MSC, CMA CGM and others are rapidly moving inland, eating into the traditional territory of forwarders.

Simultaneously, platform-based digital freight aggregators are emerging, offering small and mid-size shippers direct access to competitive rates and real-time bookings. These platforms allow them to bypass traditional intermediaries, enabling democratised access to shipping.

This dual disruption—vertical integration by carriers and digital disintermediation by tech platforms—threatens the traditional revenue models of freight forwarders. Unless forwarders differentiate through customer-centric services, industry knowledge, and value-added offerings, their relevance may shrink in the evolving supply chain ecosystem.

Digitisation, AI, and the rise of agentic automation

Digitisation is no longer optional—it is central to logistics competitiveness. But more than digitisation, intelligent automation is emerging as a game-changer.

One promising innovation is agentic AI—systems designed to preemptively flag document compliance errors by simulating the perspective of customs officers or port authorities. Such tools can help ensure "first-time right" documentation, reducing delays, penalties, and rejections.

Moreover, standardised digital processes for customs, packaging, warehousing, and even sustainability reporting can significantly enhance mid-sized exporters' ability to scale globally. Freight forwarders must become enablers of this digitised trade ecosystem.

Sustainability and regulatory preparedness

Sustainability is no longer a soft concern. Regulatory frameworks around packaging waste, emissions, and circular logistics are tightening globally. Many developed markets are introducing rules around pallet reusability, plastic use, and emissions transparency.

The challenge for LSPs is twofold: adapting operations to the new modal mix, and developing seamless multimodal capabilities to offer integrated logistics solutions. Success will depend on investing in digital visibility, multimodal coordination, and real-time cargo tracking.

This means LSPs must offer advisory and compliance support, redesign packaging, and even collaborate with exporters on carbon offsetting programs. The risk is clear: failure to comply with sustainability norms can lead to shipment rejections or trade bans.

Conclusion: Future-ready forwarding in a changing world

The Indian logistics sector is being redefined by trade growth, digital innovation, policy reform, and global realignments. Logistics service providers, especially freight forwarders, must move swiftly to reinvent themselves.

They must:

- Embrace multimodal logistics and invest in rail/coastal capabilities
- Transition from freight brokers to end-to-end service orchestrators
- Leverage FTAs through network design and trade intelligence
- Adopt intelligent tools like agentic AI to improve compliance
- Prepare for regulatory shifts in sustainability and packaging
- Differentiate through domain knowledge, customer service, and specialisation

India's logistics journey is entering an era of complexity—but also unprecedented opportunity. Those who adapt will thrive. Those who remain static risk disintermediation. The choice, as always, lies with the players of the game.

(This article is based on Niraj Ambani speech delivered at the FFFAI 25th biennial convention)

From supercycle to strategic slowdown

The global shipbuilding sector has sailed into a transformative phase. After three years of robust order activity, delivery schedules are now stretching well beyond the latter half of the decade. The industry, shaped by decarbonisation imperatives, shifting trade routes, and digital integration, is facing a paradoxical challenge: full yards with declining new orders.

Surging orderbooks and delayed deliveries

According to Danish Ship Finance, nearly 20 per cent of ships currently on order are set for delivery beyond 2028–29, compared to just 5 per cent in 2021. Average contract-to-delivery timelines have extended significantly: 3.2 years for container ships, 3 years for tankers, and nearly 4.8 years for LNG carriers. This backlog reflects both pent-up demand and a forward-looking response to upcoming IMO emissions regulations.

China now dominates the future pipeline, with over 75 per cent of deliveries due post-2027, and some LNG carrier contracts already stretching into the 2030s.

Vessel demand and technological shift

As of 2025, the global orderbook features:

- Container ships (24 per cent) – dominated by energy-efficient mega ships and regional feeders
- LNG carriers (19 per cent) – driven by Europe's gas pivot post-Ukraine conflict
- Bulk carriers and tankers (36 per cent) combined – supported by mineral and refined product demand
- Car carriers (10 per cent) – surging due to China's booming EV exports

There's also a clear trend toward larger ship sizes and dual-fuel, ammonia- or methanol-ready propulsion systems, as environmental compliance becomes non-negotiable. Wind-assisted propulsion, battery hybrids, and shore power integration are also gaining traction.

Regional dynamics and India's ambitions

China leads global shipbuilding with 62.4 per cent of market share by gross tonnage, followed by South Korea and Japan. While China focuses on volume, South Korea dominates high-end LNG, LPG, and dual-fuel segments. Japan remains focused on niche and regional demand.

India is emerging with a bold ambition: to become one of the world's top five shipbuilding nations by 2047. Key initiatives include:

- A proposed ₹10,000 crore mega shipyard at Thoothukudi with HD Hyundai
- A ₹25,000 crore Maritime Development Fund
- Duty exemptions and incentives to encourage domestic newbuilds and recycling

Recent MoUs with Maersk and prospective partnerships with CMA CGM underscore growing international interest in India's shipbuilding vision.

From supercycle to slowdown

After a three-year boom, ordering is cooling. Clarksons Research reports a 57 per cent YoY drop in Q1 2025 orders, and BRS forecasts total new orders to fall to 100 million DWT in 2025, down from 193 million last year. Owners are wary of softening freight rates, long lead times, and geopolitical risks.

Yet, yard utilisation remains tight: only 348 shipyards globally remain active, down from 700 in 2007.

While new orders may slow, the strategic backlog ensures shipyards remain busy through the decade. The focus is shifting from volume to value, compliance, and flexibility. In a decarbonising, digitising world, shipyards are not just building vessels—they're laying the foundation for the future of maritime trade.

For owners, charterers, and investors, this is a period that demands patience, precision, and perspective. Orders are no longer just about fleet renewal—they are about compliance readiness, energy transition, and long-term trade positioning.

As the world sails toward a lower-carbon, higher-complexity maritime future, shipyards are not merely building vessels. They are shaping the infrastructure of the new global economy.

Unlocking India's aviation future

Capt. BVJK Sharma, revered as the doyen of India's maritime and greenfield infrastructure sectors, currently leads the ₹20,000 crore **Navi Mumbai Greenfield Airport project as CEO**. With a rich legacy from the merchant navy to IIM Ahmedabad, he has resolved complex challenges around R&R, environment, and financing. His diverse expertise spans shipping, port connectivity, inland waterways, and rail infrastructure, making him a transformative force in India's logistics and infrastructure landscape.

Navi Mumbai airport has been in the spotlight recently. Could you share the latest updates on the project?

Absolutely. Navi Mumbai Airport is progressing well. We began groundwork back in August 2000, and a lot of effort has gone into land acquisition and development. We're now nearing completion, and once operational, it promises to offer a world-class experience for travellers and cargo users alike. We're initially targeting a capacity of 20 million passengers, with future scalability planned to handle up to 90 million passengers and around 9,000 aircraft movements.

How does Navi Mumbai Airport fit into India's broader aviation growth story?

India's aviation market is booming. This year alone, we're hitting close to 400 million passengers, and projections show we'll cross 480 million soon, heading toward 536 to 540 million passengers annually. With that kind of growth, Navi Mumbai Airport plays a vital role in decongesting existing hubs like Mumbai and enhancing connectivity across the country. It's part of our strategy to support both passenger and cargo growth as India becomes the third-largest aviation market globally.

Tell us more about India's aviation growth trends?

India's aviation sector is booming, with demand (9.9 per cent) outpacing capacity growth (7.7 per cent). Domestic and international travel are surging, positioning India as a key global hub. Infrastructure expansion is critical, and airlines like Indigo are setting efficiency benchmarks with aircraft turnarounds under 30 minutes.

What does your partnership with Indigo involve?

Yes, we recently signed a significant partnership with Indigo. They've shown strong interest in our capacity build-out, and they recognize the growing demand. As of now, Indigo operates around 400 aircraft, but they've ordered nearly 2,000 more. That scale requires robust airport infrastructure, and partnerships like this ensure the alignment of airport capacity with airline growth.

What's the outlook for air cargo in India?

India is poised for a major leap in air cargo. The goal is to move from the current volumes to around 10 million tonnes annually, and Navi Mumbai Airport aims to contribute at least 25 per cent of that capacity. We are working on developing automated storage systems, dedicated cargo terminals, and robust infrastructure.

How do you see the aviation infrastructure evolving?

It's not just about scale—it's about speed, size, and seamlessness. We're designing terminals with future-ready technologies, improving turnaround times, and ensuring smooth passenger and cargo movement. There's also a strong focus on passenger experience, from better layouts to faster security and baggage handling. Moreover, seaplanes and regional connectivity schemes are being actively integrated to expand the aviation footprint beyond major metros.

What challenges do you see in cargo logistics?

One of the main challenges is avoiding the "funnelling effect"—where cargo and passenger movements get congested at a few key hubs. We are consciously working on decentralizing operations, building capacity in tier-2 and tier-3 cities, and ensuring our infrastructure supports distributed growth. Technology, automation and data-driven planning, will be critical to addressing these challenges.

Any final thoughts on what's next for Indian aviation?

We're at the cusp of a transformation. As India grows economically and demographically, aviation will be one of the biggest enablers. Navi Mumbai Airport is a symbol of India's aspirations to lead in connectivity, cargo efficiency, and passenger service. We're excited about what lies ahead and committed to delivering an aviation experience that matches global benchmarks.

Driving India's logistics transformation

Rajkiran Kanagala, President & Chief Business Officer – TCIL Group, highlights how TCI leverages AI, IoT, and digital platforms like ONDC and NLDSL to streamline supply chain operations, boost efficiency, and enhance connectivity.

TCI manages 2.5 per cent of India's GDP by cargo value. What key strategies have driven this scale and can you share how TCI is leveraging technology and innovation to enhance supply chain efficiency, especially in the context of your role as Chair of the Logistics and Supply Chain Tech Committee at IAMAI, and what emerging technologies do you see revolutionizing logistics?

Over the years, TCI has grown with India both in ambition and execution. The scale we operate at today stems from a deep-rooted multimodal logistics philosophy, where we blend road, rail and coastal shipping. It's not about moving more goods; it's about moving them smarter. In 2024, we handled 150,000 TEUs through multimodal containers and ran over 2,500 full rake movements with rail multimodal solutions.

Technology is central to this journey. AI helps us fine-tune routes in real time, IoT keeps our fleet visible at every mile and digital platforms like ONDC and NLDSL plug us into a wider logistics grid. As Chair of IAMAI's Logistics & Supply Chain Tech Committee, the focus is to push the digitalization of the logistics industry. The key initiatives being:

1. Advocacy for the establishment of e-commerce export hubs under the Public-Private Partnership (PPP) model to boost India's export capabilities.
2. Engagement with the Logistics Sector Skill Council to explore joint programs for workforce development and future-proofing supply chain skills.
3. Committee-level engagement with industry stakeholders to gather insights on operational challenges and represent the sector's concerns to policymakers and regulatory authorities.

These initiatives reflect our commitment to creating a smarter, more collaborative, and digitally empowered logistics ecosystem.

Generative AI is revolutionizing logistics by optimizing operations such as invoicing, documentation, and asset management, reducing inefficiencies, improving turnaround times, and cutting logistics costs through automation. The future horizon of digital transformation follows a structured adoption timeline.

In the short term (0-2 years), innovations like crowdsourcing, same-day delivery, logistics control towers and real-time information services are driving immediate digital shifts. The medium term (2-5 years) will see the scaling of efficiency with shared warehouse capacity, shared transport systems and city logistics. In the long term (5+ years), pioneering advancements like autonomous trucks, digitally enhanced cross-border platforms and circular economy integration

will make logistics more sustainable and agile. Technologies such as crowdsourcing, delivery capabilities and logistics services offer the highest industry and societal impact, while emerging technologies like drones, 3D printing and autonomous trucks promise transformative potential. For TCI, this transformation is about aligning with the core pillars of logistics innovation—better, faster, and greener delivery. By focusing on multimodal logistics, adopting cleaner fuels, and driving efficiency, we aim to reduce our carbon footprint while enhancing supply chain sustainability and global competitiveness.

Please share some insight on cargo portfolio that your company handles, hinterland & major catchment areas and recent trends?

We have deliberately built a cargo portfolio that mirrors India's economic diversity, serving over 15 diverse industry verticals ranging from traditional sectors like automotive, steel and energy to emerging domains such as e-commerce, retail, and pharmaceuticals. In simple terms, we move what moves the country. Our strength stems not only from the range of what we deliver, but also from the reach of where we deliver it. With a truly pan-India presence, we operate in every district, supported by 70+ rail terminals, connectivity to 11 major ports, and a fleet of over 10,000+ trucks.

Our coastal operations are scaling rapidly, with six vessels and 78,000 DWT capacity, offering a sustainable and efficient alternative to overland routes by helping decongest roads and cut emissions. What we're seeing now is an increased demand for speed and customization, especially with the rise of quick commerce and omni-channel retail. Warehousing is also growing, our 16+ million sq. ft. capacity is not just about storage but seamless fulfilment. India's infrastructure push, freight corridors, cargo parks add momentum. Our job is to keep pace and stay agile to ensure our network and services evolve in sync with India's dynamic logistics landscape.

With your experience leading TCI's international ventures, what are the biggest challenges and opportunities for Indian logistics companies in the global market today? How is TCI positioning itself to capitalise on these opportunities?

Despite higher-than-average logistics costs, India is rapidly raising the Global Logistics Performance Index. A strong government policy push, coupled with rapid infrastructure development, is driving significant improvements in logistics efficiency and manufacturing growth. Emerging tariff structures and global trade realignments are further reinforcing India's position as a preferred hub in global supply chains. With our improved integration across transport modes and borders, we stand to gain significantly.

At TCI, we are actively leaning into this transformation. Our strategy is centred on multimodal logistics—leveraging rail and coastal shipping to optimize costs and delivery timelines. On the digital front, we have made key investments in AI-driven demand forecasting and block chain-based security protocols to enhance transparency and efficiency. We have also forged strategic international partnerships to streamline cross-border operations. With the ongoing improvements in the ease of doing business and growing demand for supply chain resilience, TCI is uniquely positioned to capitalize on global opportunities. The global logistics narrative is shifting—from speed alone to a focus on resilience, reliability and quality. We believe Indian logistics companies, with robust systems and a forward-looking mind set, can emerge as the agile and scalable partners the world increasingly seeks.

The TCI-IIM Bangalore Sustainability Lab focuses on net-zero goals. Could you elaborate on TCI's roadmap for decarbonising

logistics, especially through collaborations like Zero Emission Trucking (ZET) and electric lorry adoption? How do these align with India's broader climate commitments?

Sustainability isn't a trend for us—it's our responsibility. Through our partnership with the TCI-IIMB Supply Chain Sustainability Lab, we are dedicated to implementing science-based strategies for achieving net-zero logistics. Our TCI-IIMB Supply Chain Sustainability Lab has designed Transportation Emissions Measurement Tool (TEMT), which became India's first ISO 14083-certified platform to track emissions across multimodal networks. This is not just compliance, it's a clarity. When you can measure emissions accurately, you can cut them smartly.

Apart from the Lab we are also working closely with Smart Freight Centre, CoZET at IIT Madras and other think tanks and policy bodies for enhancing sustainability in the transport & logistics sector. One of our flagship efforts in collaboration with WRI & Niti Aayog is the Zero Emission Trucking (ZET) initiative, where we are deploying electric and hydrogen-powered long-haul trucks on designated highways & clusters.

All of this ties into national goals—India's hydrogen mission, FAME-II— aligned with what we are building. We are not just adapting to climate action but heeding the clarion call to shape the Transport & logistics sector to its demands.

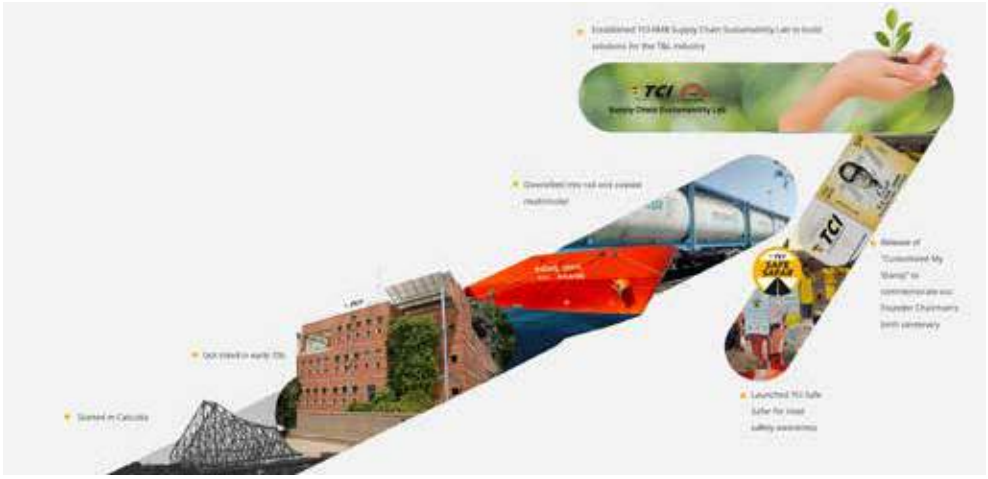
"TCI Safe Safar" recently won the FICCI Road Safety Award. What unique technologies or practices has TCI implemented to improve driver safety and reduce accidents? How can smaller players in the sector adopt similar cost-effective solutions? You actively mentor talent through platforms like Aspire and TEDx. What skills will define the next generation of logistics leaders, and how is TCI fostering a culture of innovation and sustainability among young professionals entering this sector?

Safety is where operational excellence begins. TCI Safe Safar is our way of institutionalizing that mindset. It's not about big tech alone, it's about instilling consistent habits at grass-root level. Our AI-based driver monitoring, real-time alerts and risk analysis are built on years of observing what happens and what works.

"Ab Har Safar, Safe Safar" is not just a slogan—it's a behaviour change program, especially for drivers operating in high-risk corridors. We equip them with awareness, tools, training and importantly self & societal respect.

Smaller players can start with GPS-based monitoring, structured training and even basic fatigue detection. Starting with small steps, we can eliminate the biggest dangers.

On leadership, future logistics professionals will need more than operational know-how. They'll need a safety-first mind set, discipline to adhere to stringent SOPs, digital fluency, ESG literacy and a global perspective. Through platforms like Aspire and TEDx, we are mentoring the next wave, blending tech with purpose. Innovation only matters if it's sustainable, scalable and inclusive.



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Any other key points on air cargo sector you'd like to add?

The air cargo sector is evolving with a focus on sustainability and efficiency. TCI is exploring opportunities in this sector for integration of air freight into its multimodal logistics solutions, ensuring timely and eco-friendly delivery options for clients. The company's investment in green logistics practices, such as the adoption of electric vehicles and renewable energy sources, supports the industry's shift towards sustainability. By leveraging technology and adopting green practices, TCI aims to contribute in future to the growth and development of the air cargo sector while promoting eco-friendly practices in logistics operations.

Empowering logistics providers with next-gen AI & analytics

In this interview, **Girish Chandra, CTO & Director, Softlink Global,** explains how Softlink aims to redefine logistics through intelligence, embedding AI, cloud computing, and analytics into every layer of the supply chain. The company remains committed to scalable, secure, and future-ready solutions.

Investment strategy & product development

Softlink's investment strategy is centered on innovation and customer-centricity. A substantial portion of our annual budget is allocated to R&D, enabling us to continuously enhance our offerings and respond to dynamic logistics trends. This is balanced with strategic investments in global sales growth and dedicated customer support, ensuring a seamless experience across all regions. Logi-Sys is evolving rapidly, with AI-powered features in development to tackle pressing industry challenges. We're introducing BoxyAI – an embedded AI assistant that supports users in real time. Additionally, our ESG-aligned roadmap includes a comprehensive Carbon Emissions Tracker that helps logistics providers measure and report their environmental impact.

Customer ROI & operational efficiency

Our clients see strong returns from modules like financials, BI dashboards, and customer service. In many cases, automation has reduced billing cycles, while visibility tools have improved customer retention. AI-driven automations like

LogiLENS, an AI engine that turns complex, unstructured documents into structured data—instantly, will enable operators to act faster, with minimal effort and errors, particularly in environments where shipment timing is critical. Our products like LogiBRAIN – the next generation Business Intelligence analytics and dashboard system are instrumental in delivering operational efficiencies and measurable ROI. Real-time dashboards provide actionable visibility across the supply chain. By leveraging AI, we empower users with intelligent alerts and predictive insights—transforming freight forwarders from reactive to proactive decision-makers.

Competitive differentiation & integration

What sets Logi-Sys apart is our holistic approach. Logi-Sys is an Intelligent Cloud platform covering is an end-to-end suite that simplifies logistics workflows across Freight Forwarding, Customs Compliance, Transport, Sales & CRM, Billing, Finance and more with built-in interoperability. For legacy clients with fragmented systems, we offer seamless migration paths and modernization without business disruption. We utilise a hybrid integration strategy comprising secure APIs, connectors, and middleware—enabling plug-and-play capabilities with both cloud and on-premise setups. Our multi-tenant SaaS architecture is fortified with robust data encryption, role-based access control, and tenant-level isolation to uphold stringent data privacy norms.

Technology & security

Our AI engine incorporates Natural Language Processing (NLP) techniques like Named Entity Recognition (NER), semantic clustering, and intelligent OCR to extract structured insights from diverse logistics documents like AWB, BL, Invoices, etc. We are also piloting Generative AI to summarize shipment events and Digital Twin technology to simulate logistics operations, helping customers visualize outcomes and optimize planning. Cybersecurity is integral to our global SaaS operations. We have a robust DR setup running across Tier-3 and Tier-4 data centers positioned at least 500km away from primary sites. Softlink follows a Zero Trust Architecture, coupled with real-time threat detection, penetration testing, and adherence to standards in force, ensuring proactive defense against evolving cyber risks.

Sustainability & innovation

Our Carbon Emissions Calculator empowers customers to align with global ESG mandates. It calculates emissions per shipment, evaluates route-based efficiency, and generates exportable reports for compliance audits. LogiTHON, is our internal innovation lab and hackathon, engages young minds and logistics veterans alike to co-create and prototype future-ready solutions. It fosters a collaborative culture that champions experimentation and technological advancement. We recently collaborated with IIT Bombay, one of if not the premier technology institutions in India, for LogiTHON 2025.

Outcome measurement & communication

We track key metrics across both operational and strategic levels—things like turnaround time, billing cycle duration, and job-level profitability. Logi-Sys offers configurable dashboards that let executive sponsors view performance trends and connect them to business outcomes. It helps leadership see what's working, where the gaps are, and where the ROI is coming from—clearly and quickly

Additional points

We're witnessing a pivotal transformation in logistics—from automation to intelligence. At Softlink, our mission is to make logistics not just digital, but decisively smart. By embedding AI, cloud, and real-time analytics into every layer of the supply chain, we empower logistics providers to operate with agility, precision, and foresight. As we move forward, we remain committed to delivering solutions that are scalable, secure, and built for the logistics of tomorrow.

Softlink, MITCON partner to build skilled workforce for logistics industry

Softlink Academy, the skill development arm of Softlink Global bridging the skills gap in logistics, has signed an MoU with MITCON which specialises in skill development and employment-focused training. This collaboration is part of LogiSKILL, a key program under Softlink Academy, the company said in a statement.

By combining Softlink Academy's expertise in logistics technology with MITCON's experience in skill development, this initiative aims to equip aspiring professionals with practical logistics expertise that will make them ready for jobs and careers in logistics.

The company noted that despite being the second-largest employment generator in any country, yet the industry continues to face a critical talent shortage that further adds to the unemployed youth count in India.

By leveraging MITCON's expertise in skill development and Softlink Global's cutting-edge technology, the LogiSKILL program will provide specialised training for graduates, preparing them for diverse roles in logistics operations, back-office management, documentations and customs, the company added.

Decarbonisation, the EV boom, and green technologies require a whole new set of materials: lithium, cobalt, rare earths, nickel, graphite — what we now call critical minerals. These aren't shipped in massive volumes like coal or oil, but they are strategically important and high-value.

Driving intermodal excellence in Euro-India trade corridors

Amal Louis, Director of Business Development at Grand Port Maritime de Marseille – Port de Marseille Fos, discusses how GPMM, one of Europe's premier ports, leverages innovative intermodal solutions, sustainability initiatives, and digital transformation to enhance global trade connectivity.

What are the innovative intermodal solutions Grand Port Maritime de Marseille-Fos (GPMM) practicing and how can they be adopted by Indian ports?

At the Port of Marseille Fos, intermodality is at the heart of our logistics strategy. We operate a fully integrated multimodal platform that connects maritime, rail, river, road, and pipeline networks. With over 150 trains per week and 7 river shuttles to Lyon, we ensure seamless cargo movement across Europe. Our partnerships with 12 rail operators and 3 river transport companies enable 190 combined services to 19 destinations.

One of our key innovations is the development of a digitalised cargo community system (CCS), which streamlines administrative and logistics procedures with zero paper. This system enhances transparency, efficiency, and traceability across the supply chain. Indian ports could benefit from adopting similar digital platforms and investing in inland multimodal corridors to reduce congestion and carbon emissions.

Can you explain a bit about the innovative low-carbon concrete slab track you are using for your rail network?

The Port of Marseille Fos is the first in the world to install a patented ballastless rail track using low-carbon concrete, developed by SYSTRA and STRADAL. This prefabricated system is quick to install, highly durable, and requires minimal maintenance. It includes an integrated geometry adjustment feature and is resilient to climate risks. Elevated by 10 cm, it allows water drainage and wildlife passage. The track's permeability avoids costly hydraulic redesigns. This innovation supports our modal shift strategy.

What are the sustainable and decarbonisation initiatives taken at port?

Sustainability is embedded in our development model. Marseille Fos is a European leader in shore power and LNG bunkering, and we are actively investing in hydrogen, synthetic fuels, and electro-fuel production. Our port is home to major industrial decarbonization projects, including the DEOS floating wind initiative and the Fos 3XL terminal expansion, which integrates green energy solutions.

We are also advancing modal shift strategies, with over 17 per cent of container traffic moved by rail and nearly 6 per cent by river in 2024. Our goal is to become a hub for low-carbon logistics and energy, supporting France's and Europe's climate ambitions.

How is Port de Marseille meeting geopolitical challenges?

Ports today must navigate a volatile global environment marked by geopolitical tensions, supply chain disruptions, and regulatory shifts. At Marseille Fos, we respond with agility and resilience by diversifying our trade routes, investing in digital infrastructure, and strengthening our role as a strategic gateway between Europe, Africa, and Asia. Our participation in international corridors like IMEC (India–Middle East–Europe Corridor) reflects our commitment to secure, diversified, and sustainable trade flows. We also work closely with institutional and industrial partners to anticipate risks and co-develop solutions that ensure continuity and competitiveness. Fos is the natural choice for IMEC, as it offers significantly lower CO2 emissions compared to the northern ports. Marseille stands as the gateway to Europe, and we are determined to take on a central role.

Can you explain how Port de Marseille can help in enhancing Euro-India trade connectivity?

Marseille Fos is uniquely positioned to serve as the European anchor of the Euro-India trade corridor. We offer direct maritime connectivity with India, a robust industrial and energy platform, and seamless intermodal access to Europe's heartland. Our strategic location on the Mediterranean and our integration into the IMEC corridor make us a natural partner for Indian ports and logistics stakeholders.

From L to R: **Samir Shah,** Vice President ACAAI; **Bui Trung Thuong,** Trade Counsellor & Head of the Vietnam Trade Office in India, Embassy of Vietnam, New Delhi; **Turgut Erkeskin,** President, FIATA; **Piyush Srivastava,** Sr. Economic Advisor, MoCA; **C.K. Govil,** President, ACAAI; **M.R. Venkatesh,** Eminent Economist

FIATA-ACAAI Summit 2025: Rethinking global logistics for a brave new world

As global logistics undergoes a transformative shift driven by digital disruption, sustainability, and geopolitical realignments, New Delhi played host to one of the region's most pivotal logistics gatherings—FIATA Region Asia-Pacific (RAP) Field Meeting 2025.

Held at the Radisson Blu Plaza, New Delhi, the FIATA RAP Field Meeting 2025 convened an influential cohort of logistics professionals, freight forwarders, trade association leaders, and government officials under the theme "A Brave New World Destined to Succeed." Jointly organised by FIATA (International Federation of Freight Forwarders Associations) and ACAAI (Air Cargo Agents Association of India), the two-day summit explored the sweeping changes shaping global logistics—from AI, e-commerce, IoT, and 5G to quantum computing and environmental sustainability.

Opening the summit, ACAAI President C.K. Govil called for a bold reimagining of supply chains, emphasising that the sector is pivoting from efficiency to resilience and adaptability. This shift, he noted, is not aspirational but essential.

Piyush Srivastava, Senior Economic Advisor at the Ministry of Civil Aviation (MoCA), highlighted India's growing cargo infrastructure, noting that over 100 cargo terminals now support trade across the country, aligned with the National Logistics Policy and flagship infrastructure programs.

Green Logistics: India leads by example

The first business session focused on green logistics, where India's achievements stood out. Of the 121 operational airports in the country, 87 (72 per cent) are now powered by green energy, compared to 50 per cent in Europe. India has met its 2030 solar energy target six years ahead of schedule. Delhi's road transport is now fully CNG-based, eliminating diesel and petrol in public transport.

Speakers underscored that logistics contributes to less than 4 per cent of global CO_2 emissions, with air freight accounting for just 17 per cent of that. The session called for public-private collaboration to accelerate decarbonisation without vilifying logistics.

Multimodalism and regional integration

The second session explored regional logistics hubs and multimodal transshipment. A case study on the Port of Antwerp-Bruges showcased its unique dual-location model that links maritime and inland logistics seamlessly, contributing significantly to Belgium's GDP. A proposed logistics training center in India, developed in partnership with FIATA and ACAAI, was also highlighted.

Digital simplification for global trade

The third session examined the challenge of digitising logistics across jurisdictions. Experts emphasised the need for interoperable trade documentation and regulatory convergence to facilitate seamless cross-border movement. Without harmonisation, they warned, digitalisation could become fragmented and ineffective.

Youth leadership and fresh perspectives

One of the summit's standout sessions brought young professionals into the spotlight. Speakers from new-generation logistics firms stressed the need for cross-generational collaboration and digital-first thinking, calling for greater mentorship and inclusion. The next wave of logistics leaders, they noted, is entering the industry by choice—not chance—with a purpose-driven mindset.

Resilient trade and strategic alliances

The final session tackled geo-economic disruptions and the importance of diversified alliances and trade routes. Speakers highlighted the need for redundancy planning, regional cooperation, and infrastructure resilience to safeguard supply chains against future shocks. The takeaway: "Isolation is not an option."

Dredging Conclave

Charts course for resilient infrastructure

As India aspires to become a global maritime powerhouse by 2047, the Dredging India Conclave 2025, organised by FICCI, underscored the pivotal role of indigenous capabilities, sustainable practices, and strategic collaboration in transforming the nation's port and dredging ecosystem.

Held in New Delhi under the theme "Strengthening India's Maritime Infrastructure & Reliance," the event convened policymakers, industry leaders, and technical experts to outline a forward-looking agenda for the dredging sector. Dr. Ameya Pratap Singh, Managing Director of Dharti Dredging & Infrastructure Ltd, opened the conclave, stating, "India's dredging industry is evolving from a support function to a strategic enabler of port-led growth. Larger ships demand deeper berths and channels, making dredging indispensable."

He emphasized the need for indigenous manufacturing capacity and the execution of complex capital and maintenance dredging projects. "To seize this opportunity, we must build together—resiliently, sustainably, and indigenously," he added.

Vision 2047: Deep ports, deep economy

Delivering a special address, H. N. Aswath, Development Advisor (Ports), Ministry of Ports, Shipping and Waterways, highlighted the government's commitment under Maritime Amrit Kaal Vision 2047. "Ports are the gateways to global trade, and dredging is the first step to creating those gateways," he noted.

He cited the Wadhwan Port project as a landmark initiative, with a planned depth of 20 meters, capable of handling ultra-large container vessels of 20,000+ TEUs. "Over 30 million cubic meters of sand will be dredged for Wadhwan alone," he said, projecting annual cargo throughput of 20 million TEUs, making it one of the world's top 10 ports.

While most Indian major ports currently operate with 14–18-meter drafts, ports like Gangavaram have already reached 20 meters, showcasing the strength of public-private synergy.

Unlocking inland potential

Durgesh Kumar Dubey, Deputy Chairman, Visakhapatnam Port Authority and MD & CEO, Dredging Corporation of India Ltd, stressed the broader economic role of dredging. "It's not just about navigation—it's about enabling access, resilience, and development," he said.

He projected a rise in capital dredging with the growth of mega ports, coastal corridors, and inland waterways, advocating for inland shipping as a low-cost, last-mile logistics option.

Collaboration, technology, sustainability

The conclave featured leaders from across the sector who emphasized innovation and green practices: Ashutosh Gautam (IWAI) spoke on integrating waterways with multimodal logistics. Capt. S Divakar (DCI) emphasized eco-friendly equipment and operational optimisation. Sanjeev Kumar (Adani Ports) called for long-term private involvement. Kaushik Nandi (ITD Cementation) and Vandepitte Bram (International Seaport Dredging) highlighted global best practices and localization. Gaurav Kumar (SNF India) and Mahesh Zagade (NMDC Dredging) discussed innovations in sustainable dredging polymers and technologies.

The road ahead

The conclave reinforced that dredging is a strategic pillar of India's maritime journey—not just a backend operation. As the country builds next-generation ports and unlocks its inland waterways, the focus must remain on indigenous innovation, environmental sustainability, and global competitiveness.

India's maritime rise will be built on deep waters, deeper collaboration, and a unified national effort.

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