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Editorial

Welcome to the fifth edition of Navigator, your trusted guide through the ever-evolving currents of the maritime world.

This issue shines a spotlight on the future of the marine industry through our cover story, "Smart Ports: Redefining the Maritime Frontier." As technology continues to transform global trade, Smart Ports stand at the helm of this digital revolution—integrating AI, IoT, and automation to create faster, safer, and more sustainable operations. We explore how these tech-driven hubs are not just modernizing logistics but also reshaping the very fabric of global maritime commerce.

Beyond innovation, we turn our gaze to a more grounded yet equally vital theme: eco-based marine tourism. In this feature, we examine how new models of tourism are emerging that balance planet, people, and profit—a truly holistic approach to sustainability that honors both our oceans and the communities that depend on them.

We are also deeply honored to include insightful contributions from the Bangladesh Coast Guard, offering expert perspectives on pressing maritime issues that impact national and regional security, safety, and environmental stewardship. Their voices enrich this edition, grounding our conversations in real-world experience and strategic foresight.

As we look toward the horizon, besides our regular sections, this issue of Navigator captures a maritime sector in motion—one that is becoming smarter, greener, and more connected than ever before. The transformation may be digital, but its impact is deeply human.

Thank you for sailing with us through yet another exciting chapter. Together, let's continue navigating toward a maritime future that is innovative, sustainable, and inclusive.

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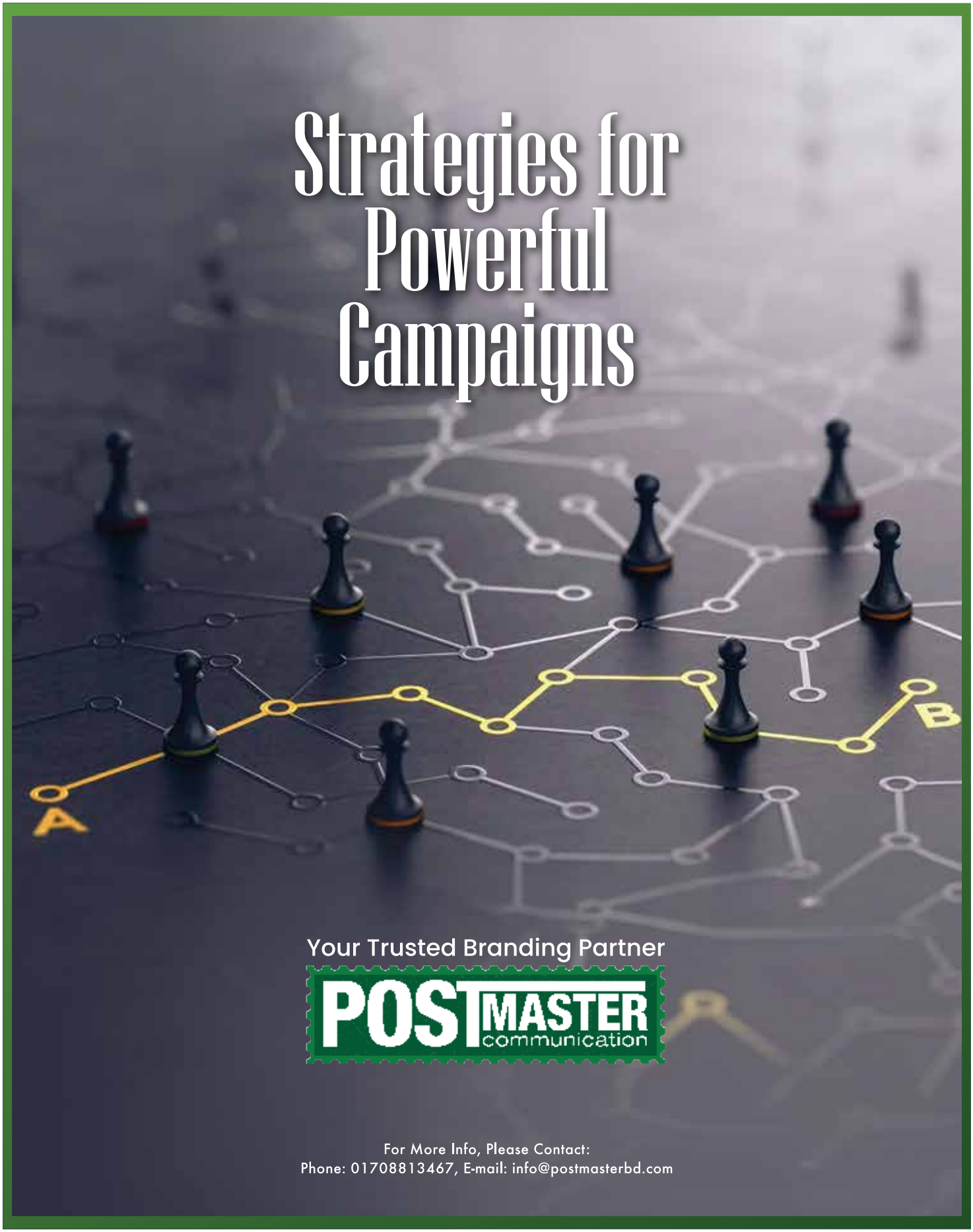
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INDIA LAUNCHES SHIP TECHNOLOGY CENTRE TO BOOST DOMESTIC SHIPBUILDING

India has inaugurated the **Indian Ship Technology Centre (ISTC)** at the **Indian Maritime University (IMU), Visakhapatnam**, aiming to strengthen indigenous shipbuilding and reduce dependence on foreign designs. The ₹305 crore centre was virtually inaugurated by Union Shipping Minister **Sarbananda Sonowal** during the university's 10th convocation in Chennai.

Envisioned as a central agency to drive India's maritime innovation, the ISTC will serve as a **hub for ship design, research, and skills development**, offering single-window consultancy, training, and policy support. Equipped with advanced software and design tools, it will collaborate with industry to develop modern ship production technologies and promote a robust ecosystem for maritime engineering.

Sonowal described the initiative as part of India's **"Maritime Amrit Kaal Vision 2047"**, which targets placing the country among the **world's top ten shipbuilding nations by 2030**. He highlighted significant progress in the sector — port turnaround time has dropped to 0.9 days, outperforming several developed nations, while **nine Indian ports** now rank among the world's top 100.

The minister also noted major infrastructure growth, including the **₹76,000 crore Vadhavan container port**, and a sevenfold rise in cargo movement through inland waterways. India's seafarer workforce has tripled over the past decade, making it one of the world's largest suppliers of maritime professionals.

IMU officials said the ISTC marks a transformative step in

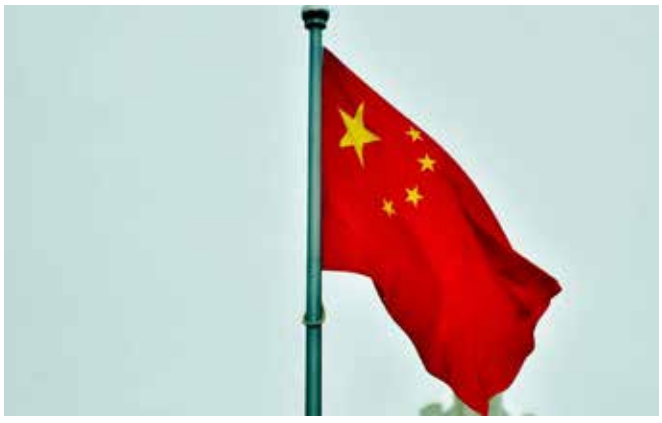
advancing India's maritime capabilities through innovation, collaboration, and self-reliance in ship design and technology.

Source: marineinsight.com

CHINA AND PAKISTAN UNVEIL MARITIME ACTION PLAN TO TRANSFORM GWADAR INTO REGIONAL TRADE HUB

China and Pakistan have launched a **Maritime Action Plan (2025–2029)** to expand cooperation in the maritime sector and accelerate the development of **Gwadar Port** into a regional centre for trade, logistics, and connectivity.

Announced under the framework of the **China–Pakistan Economic Corridor (CPEC)** — the flagship component of the **Belt and Road Initiative (BRI)** — the plan aims to boost collaboration in **marine economy development, shipbuilding, scientific research, sustainable resource use, and environmental protection**.



A key focus of the roadmap is to introduce **electronic data interchange and smart port technologies**, linking Gwadar with Chinese and global shipping networks. It also envisions the establishment of **port-related industries, warehousing, and cold storage facilities** to enhance regional trade and transhipment efficiency across the Arabian Sea and beyond.

Pakistan's Federal Minister for Maritime Affairs, **Muhammad Junaid Anwar Chaudhry**, said the initiative underscores Pakistan's commitment to building a **resilient blue economy** while deepening its strategic partnership with China. He noted that the new framework would help strengthen Pakistan's maritime presence, foster innovation in port operations, and advance shared prosperity under the CPEC's long-term vision.

Positioned at the crossroads of key sea lanes, Gwadar's transformation into a technologically advanced port city could redefine trade dynamics in the Indian Ocean region — further cementing China–Pakistan maritime cooperation as a cornerstone of the 21st-century Silk Road.

Source: seatrade-maritime.com

SINGAPORE AND INDIA FORGE GREEN AND DIGITAL SHIPPING CORRIDOR PARTNERSHIP

Singapore and India have signed a Memorandum of Understanding (MoU) to jointly develop the Singapore-India Green and Digital Shipping Corridor (GDSC). The agreement was formalized during Singapore Prime Minister

Lawrence Wong's official visit to New Delhi on 4 September 2025, and was witnessed by the Prime Ministers of both countries.

The MoU outlines a strategic collaboration aimed at accelerating the maritime sector's transition towards sustainability. Key initiatives under the agreement include the development of infrastructure and the adoption of advanced technologies to facilitate the use of zero or near-zero greenhouse gas (GHG) emission fuels in shipping. Additionally, the partnership will promote digital information exchange and support joint research on innovative green maritime solutions.

This bilateral initiative is expected to significantly contribute to the global maritime industry's twin goals of decarbonisation and digitalisation. India's expanding renewable energy capacity and strong industrial base offer a solid foundation for producing and exporting alternative marine fuels. At the same time, Singapore, as a leading global port and maritime innovation hub, brings its extensive experience in bunkering operations and a mature ecosystem for green and digital maritime technologies.

Through this collaboration, Singapore and India aim to enhance maritime sustainability and establish a model for future green shipping corridors, reinforcing their shared commitment to combat climate change and advance global maritime innovation.

Source: mpa.gov.sg

INDIA'S LARGEST CONTAINER TERMINAL INAUGURATED AT JNPT IN NAVI MUMBAI

On 4 September 2025, the second phase of the Bharat Mumbai Container Terminal (BMCT) at Jawaharlal Nehru Port Trust (JNPT) in Uran, Navi Mumbai, was officially inaugurated during a virtual ceremony attended by Prime Minister Narendra Modi and Singapore's Prime Minister Lawrence Wong.

The Maharashtra Chief Minister Devendra Fadnavis and Union Minister of State for Ports, Shipping and Waterways Shantanu Thakur were present on-site.

With this expansion, Maharashtra now boasts a container-handling capacity of 10 million TEUs (twenty-foot equivalent units), surpassing Gujarat's 8.2 million TEU benchmark.

Fadnavis declared that Maharashtra is set to emerge as India's maritime super-power, pointing to the forthcoming development of the upcoming Vadhavan Port in Palghar district.

Developed under a public-private partnership, the terminal was built with investment of approximately $1.3 billion by PSA International of Singapore.

The facility features a 2 km quay, a sprawling 200-hectare container yard and some of Asia's most advanced port-handling equipment — including 24 quay cranes, 72 rubber-tyred gantry

cranes and multiple rail-mounted gantry cranes designed to streamline movement between sea and land.

To bolster multimodal connectivity, the terminal includes six dedicated rail sidings and deep-draft berths capable of accommodating the world's largest container vessels of up to 18,000 TEUs.

The inauguration marks a significant milestone in India's efforts to elevate its global maritime competitiveness and enhance infrastructure for international trade.

Source: Times of India

PAKISTAN ACCELERATES $1 BILLION PORT MODERNISATION DEAL WITH HUTCHISON PORTS

Pakistan is accelerating efforts to modernise its port infrastructure by fast-tracking a **US $1 billion investment** with global terminal operator Hutchison Port Holdings Limited. The deal, aimed at upgrading the country's pivotal maritime facilities, was announced by the Minister for Maritime Affairs, Muhammad Junaid Anwar Chaudhry, who emphasised its strategic importance in driving trade growth and enhancing the maritime sector.

The investment will specifically target key facilities such as the Karachi International Container Terminal (KICT) and South Asia Pakistan Terminals Limited (SAPT). Discussions earlier this year between Chaudhry and Andy Tsoi, Managing Director of Hutchison Ports, laid the groundwork to accelerate regulatory approvals, infrastructure upgrades and logistics enhancements. Plans include deploying automation, digitalisation and green-port technologies to bring Pakistan's ports up to global standards.

Pakistan's seaports are critical for the nation's trade, handling over 90 % of import-export volumes and contributing more than 10 % to the national GDP, according to the minister. The Karachi Port Trust alone handles more than 125 million tons of cargo annually. Despite this, Pakistan currently spends an estimated US $6-8 billion annually on freight for foreign shipping lines, illustrating the urgency to bolster domestic maritime capacity.

By attracting Hutchison's global expertise, Pakistan hopes to strengthen its shipping sector, reduce dependence on external operators and accelerate the transition to smart, sustainable port operations. The initiative aligns with broader goals to upgrade supply chains, improve operational efficiency and create employment across the sector.

The partnership marks a pivotal step in Pakistan's broader maritime strategy, positioning it to better leverage its geographic location, expand its role in regional trade and enhance port competitiveness in Asia's rapidly evolving shipping landscape.

Source: profit.pakistantoday.com

DP WORLD SIGNS $2.1 BILLION PORT MODERNISATION DEAL WITH VIETNAM

DP World has entered into a landmark $2.1 billion, 25-year public-private partnership with the Vietnamese government to upgrade and expand two major container terminals—Hai Phong in the north and Cai Mep-Thi Vai in the south. This strategic agreement aims to transform Vietnam's port infrastructure, positioning the country as a leading logistics and transshipment hub in Southeast Asia.

The project includes the implementation of advanced port technologies such as automated container-handling systems, integrated rail logistics, and blockchain-enabled digital trade platforms. These innovations are expected to improve customs clearance, enhance cargo tracking, and streamline overall port operations. The initiative will also contribute to the local economy by creating over 12,000 jobs and offering training programs focused on modern supply chain and logistics skills.

Vietnamese officials have described the agreement as a major step forward in strengthening the country's logistics capacity and reducing terminal congestion. The upgraded ports will better accommodate increasing trade volumes, particularly exports from Vietnam's growing industrial base.

Hai Phong and Cai Mep serve as critical nodes in Vietnam's

trade network, linking manufacturing hubs to global shipping routes connecting East Asia to Europe, the Middle East, and Africa. With DP World's investment, container throughput capacity at these ports is expected to increase by more than 50% within the next five years. Additionally, improved multimodal connectivity will reduce container dwell times and enhance supply chain efficiency.

The project reflects a growing trend of Middle Eastern logistics giants deepening their presence in Asia. Construction is set to begin in early 2026, with phased infrastructure and technology rollouts continuing through 2030. This development marks a significant move towards regional trade resilience and maritime modernization.

Source:israeltribune.com

CHINA–US PORT FEE DISPUTE DISRUPTS GLOBAL CARGO FLOWS AND RAISES SHIPPING COSTS

A tit-for-tat port fee conflict between China and the United States is disrupting global cargo operations, reducing vessel availability, and driving up freight rates. The new levies, imposed simultaneously in mid-October 2025, have led shipping lines to reroute vessels and skip key port calls to avoid escalating charges.

Shipping companies are pulling China-linked ships from U.S. ports and removing U.S.-linked vessels from Chinese schedules, contributing to a tightening of cargo space. Industry analysts report a noticeable reduction in the number of vessels willing or able to call at Chinese ports, particularly on transpacific routes. The resulting disruption is not just logistical—it's economic. Rising freight rates, triggered by constrained supply, are already impacting shippers, with costs likely to trickle down to consumers.

The Shanghai Containerized Freight Index has surged nearly 13% in response to the changes, while oil and dry bulk shipping markets are also feeling the pinch. Very Large Crude Carrier (VLCC) rates to China have risen as fewer tankers are available without incurring penalty fees. Some exemptions exist—for example, Chinese-built vessels avoid the new levies—but they have not fully offset the impact.

Major shipping alliances, including Gemini (Maersk and Hapag-Lloyd), are adjusting service patterns. Some ships have already dropped Chinese ports like Ningbo from their routes. Experts warn that continued regulatory uncertainty and lack of clarity over enforcement criteria in China could further destabilize trade flows and vessel deployment.

The fallout from the dispute has prompted analysts to revise forecasts, with some now expecting elevated freight and tanker rates through the end of the year. If unresolved, the standoff could deepen the volatility of global supply chains already strained by geopolitical tensions and economic uncertainty.

Source: reuters.com

PORT KLANG BREAKS INTO GLOBAL TOP 10, ELEVATING MALAYSIA'S MARITIME STANDING

Port Klang has officially joined the ranks of the world's top 10 busiest container ports, marking a historic moment for Malaysia's maritime industry. The achievement is a result of sustained growth, robust trade performance, and aggressive infrastructure investment.

In 2024, Port Klang handled over 14.6 million twenty-foot equivalent units (TEUs), a 4.1% increase from the previous year. This performance pushed it ahead of traditional leaders like Hong Kong and signaled Malaysia's rising stature in global logistics.

Ongoing expansion projects at Westports and Northport have significantly increased operational capacity. Westports is undergoing a major extension (CT10–CT17) that will double its throughput to 28 million TEUs by 2028. Meanwhile, long-term development at Carey Island aims to add another 30 million TEUs by 2060, positioning Malaysia to meet future trade demands.

Port Klang's strategic location along the Strait of Malacca continues to be a major asset, making it an essential transshipment hub for trade between the East and West. The

government attributes the port's success to strategic planning, efficient cargo handling, and resilience in the face of global disruptions.

With additional investment in digitalisation and automation, Port Klang is set to further enhance productivity and competitiveness. Analysts project that the port will handle close to 15 million TEUs in 2025, solidifying its place among the elite global ports.

This milestone reflects Malaysia's commitment to becoming a regional maritime leader and reinforces its role in the evolving dynamics of global trade.

Source: mot.gov.my

CHINA'S DRILLING IN TAIWAN'S EEZ ESCALATES REGIONAL TENSIONS

China's recent deployment of oil and gas drilling rigs inside Taiwan's exclusive economic zone (EEZ) has heightened geopolitical tensions and raised serious questions about maritime sovereignty in the South China Sea region.

In recent months, Chinese state-run vessels and fixed rigs have appeared near the Pratas Islands, well within the EEZ that Taiwan claims under international maritime law. This activity, involving both mobile exploration ships and permanent platforms, has been described as a calculated incursion and a test of Taiwan's maritime enforcement capabilities.

Taiwanese authorities have denounced the operations as violations of international law, specifically the United Nations Convention on the Law of the Sea (UNCLOS). However, Taiwan's limited participation in international legal frameworks and its constrained Coast Guard capacity make direct intervention difficult.

Strategic analysts warn that these so-called "grey-zone" actions are intended to normalize Chinese presence in contested waters, weakening Taiwan's de facto control. The rigs, while

officially for energy exploration, could potentially serve dual-use purposes such as surveillance or military infrastructure in the future.

The situation is further complicated by the proximity of the installations to key shipping lanes and air routes. If left unchallenged, experts suggest that the precedent may embolden further unilateral actions, not just by China, but by other regional actors seeking to expand control over resource-rich maritime zones.

The developments underscore the fragile security dynamics in the Taiwan Strait and the need for clear regional frameworks to prevent escalation in disputed waters.

Source: oilprice.com

PORT EVERGLADES AMONG WORLD'S TOP-PERFORMING CONTAINER PORTS

Port Everglades has earned recognition as one of the world's most efficient container ports, placing in the top 20% globally and ranking No. 3 in North America, according to the newly released 2024 Container Port Performance Index (CPPI).

The rankings, published by the World Bank and S&P Global Market Intelligence, place Port Everglades at **No. 67 out of 403** international ports—a strong position, just two spots down from last year's ranking of No. 65. Among U.S. ports, it stands out as the **No. 1 container port in Florida**.

The CPPI is one of the most comprehensive global studies on port efficiency. It evaluates ports using six key performance indicators, focusing on how quickly ships are berthed, how efficiently containers are loaded and unloaded, and how fast vessels can leave port. This year's data covers over **175,000 ship calls** and **247 million container movements** worldwide, offering a detailed look into global port operations.

Port Everglades' strong performance is no accident. It reflects years of steady investment in infrastructure, technology, and logistics—both from public funding and private partnerships. A senior port official credited the high ranking to the port's modernization efforts and efficient operations.

But infrastructure alone doesn't drive results. The port's success also relies on collaboration between customers, workers, the Broward County Board of County Commissioners, and port staff. Their combined efforts have helped create a smooth, well-run port that can handle high cargo volumes quickly and reliably.

Efficiency matters more than ever in today's competitive shipping industry. Ports that can turn vessels around faster and move containers efficiently are better positioned to support trade, attract carriers, and stimulate regional economies.

Industry experts say Port Everglades' continued focus on performance gives it a clear advantage as global supply chains evolve and competition between ports intensifies.

This year's CPPI recognition reinforces the port's role as a vital link in the global shipping network—and a rising leader in the U.S. maritime economy.

Source: marineinsight.com

U.S. CRACKS DOWN ON CHINA OVER IRAN OIL TIES AS TRUMP UPS PRESSURE

In a sharp escalation of his second-term foreign policy, President Donald Trump has imposed fresh sanctions on Chinese oil companies and terminals accused of supporting Iran's energy exports. The move is part of Washington's renewed effort to choke off Iran's oil revenue — and, by extension, target China's ongoing financial and political ties with Tehran and Moscow.

The latest sanctions target China's **Rizhao Shihua Crude Oil Terminal** and **Shandong Jincheng Petrochemical**, both linked to millions of barrels of Iranian oil transfers. These actions follow similar penalties on other Chinese terminals and firms believed to be bypassing international sanctions to continue dealing in Iranian crude.

Trump's stance on China has hardened significantly compared to his first term, where critics accused him of prioritizing trade over security. Now, his administration is using economic pressure — including **100% tariffs** on Chinese imports and sanctions on key oil handling infrastructure — to isolate Beijing's support for what the U.S. sees as rogue states.

Officials say the U.S. is also responding to China's tightening control over rare earth exports and its indirect role in sustaining Russia's war effort via backdoor financial support.

China's deepening energy ties with Iran are backed by a long-term deal giving it discounted access to Iranian oil and gas. Much of this trade is hidden from official customs records, routed through covert transfers and mislabelled shipments to avoid detection.

This latest wave of U.S. sanctions underscores Trump's more aggressive posture in global energy geopolitics — aiming not just to restrict Iran's influence, but also to send a clear message to Beijing about Washington's intent to reassert dominance in international affairs.

More sanctions are expected in the weeks ahead as the U.S. pushes allies to isolate Iran and curb China's growing strategic footprint.

Source: oilprice.com

AMERICAN CRUISE LINES TO LAUNCH FIRST-EVER ALL-U.S. CRUISES ON THE GREAT LAKES

American Cruise Lines is set to make history in 2026 by launching fully domestic cruises on the Great Lakes — a first in decades. Aboard the *American Patriot*, the company will offer three new itineraries that stay entirely within U.S. waters, requiring no passports or international travel.

Sailing from **May through August**, these cruises mark a major expansion of American Cruise Lines' domestic offerings. Unlike larger cruise ships restricted to major international ports, *American Patriot* will dock at small towns, private marinas, and scenic parks — offering a more intimate, uniquely American experience.

The 2026 Great Lakes program includes:

- **Thousand Islands & Niagara Falls (9 days)** – A scenic cruise through one of North America's most iconic river regions.
- **Lake Michigan & Upper Peninsula (9 days)** – Exploring the Green Bay inlet and Michigan's wilderness.
- **American Great Lakes Cruise (14 days)** – A sweeping 800-mile voyage across Lakes Erie, Huron, and Michigan.

All cruises begin and end at U.S. ports and come with **pre-cruise hotel stays** and **complimentary domestic airfare**.

American Patriot is built for just **130 guests**, offering private balconies in all staterooms, with no extra charge for single cabins. Onboard amenities include:

- Spacious lounges and a panoramic dining room
- A sun deck with walking track
- Chart room, fitness center, and laundry
- Elevators on all decks
- A stabilised hull for smoother sailing

Each cruise blends relaxed onboard days with guided shore excursions in charming towns and natural settings.

Industry watchers say the new program reflects growing interest in **local, immersive travel**. With these new Great Lakes cruises, American Cruise Lines is opening up a fresh chapter in U.S. cruising — combining comfort, convenience, and classic Americana.

Source: marineinsight.com

GLOBAL MARITIME COMMITS TO UN GLOBAL COMPACT FOR SUSTAINABLE SHIPPING FUTURE

Global Maritime Group has officially joined the United Nations Global Compact, strengthening its commitment to responsible business practices and a more sustainable future in the marine and offshore sectors.

The UN Global Compact is the world's largest corporate sustainability initiative. By becoming a participant, Global Maritime pledges to align its operations with ten core principles spanning human rights, labor standards, environmental responsibility, and anti-corruption. The company also supports the broader United Nations Sustainable Development Goals.

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As part of this commitment, Global Maritime is actively working to reduce emissions from its operations while helping the wider maritime industry move toward Net Zero. This includes support for offshore wind energy projects, optimizing marine operations to cut fuel use and emissions, and advising on sustainable technologies such as hybrid and electric vessels.

CEO Jonny Logan said the move reflects the company's long-standing values: "Becoming a participant in the UN Global Compact highlights our deep commitment to sustainability, human rights, and ethical business practices. We are dedicated to being part of the global shift toward more sustainable maritime solutions."

The company is also working with clients to develop and implement strategies that reduce their environmental impact. This includes fuel-saving initiatives, technical advisory services like Failure Mode and Effects Analysis (FMEA), and promoting the adoption of alternative fuels.

Chief Safety, Sustainability and Compliance Officer Hannah Crutchley added: "This is a key step in our wider sustainability strategy. Our teams are focused on delivering practical, measurable solutions that not only support our Net Zero by 2050 goal but also help our clients achieve theirs."

Through collaboration, innovation, and transparency, Global Maritime is positioning itself as a proactive leader in the transition to a cleaner, safer, and more sustainable maritime industry.

Source: globalmaritime.com

LONDON INTERNATIONAL SHIPPING WEEK 2025 REINFORCES LONDON'S MARITIME LEADERSHIP

Last month, London International Shipping Week 2025 (LISW25) served as a powerful reminder of London's continuing role as the heartbeat of global commercial shipping. With over 300 events spread across the city, the week brought industry leaders, regulators, and innovators together in vibrant conversation and action. Maritime London Chief Executive Jos Standerwick described LISW25 as a unique platform "to bring together our members, partners and stakeholders to engage with the defining issues shaping the future of global shipping."

The series of seminars and forums aimed not merely to highlight expertise, but to ask the tough questions—about regulation, sustainability, risk, and innovation—and to underline the central role London's service cluster continues to play in helping the maritime industry tackle a complex and fast-changing landscape.

The week opened at the historic Lloyd's Register venue in Lloyd's Old Library with the Shipping Risk Forum, supported by leading associations including IGP&I, LMA and the IUA. Discussions ranged from regulatory and safety foundations to key themes such as future fuel liability, sanctions enforcement, and geopolitical risk, with speakers including Nick Shaw, Lord Simon Stevens and Steve Gordon.

On 16 September, a session titled "Navigating Crisis: The Vital Role of Maritime Pilots in Salvage" highlighted the critical function of pilots in emergency response. Chair Mark Lloyd brought together voices from SOSREP, Port of Tyne and UKMPA to examine real-world challenges. The following day, "Investment in UK Maritime: Supporting the Zero-Carbon Future," chaired by Harry Theochari, explored how London's professional and financial services can help mobilise capital for the estimated $1.5–1.9 trillion global decarbonisation agenda.

Climate action featured heavily, with a high-profile event launching the Global Maritime Forum's 2025 progress report on zero-emission fuels and charting the sector's path to its 2030 breakthroughs. Meanwhile, on 18 September, a Sanctions Roundtable co-hosted with NorthStandard brought government and enforcement agencies together to dissect the challenges of sanctions and the "dark fleet" phenomenon.

The week culminated in the flagship Headline Conference at the International Maritime Organization (IMO), where over 750 delegates debated decarbonisation, finance, digitalisation and resilience—undoubtedly reinforcing London's status as where global maritime solutions are shaped.

"As always, LISW25 confirmed London's role as the place where global maritime solutions are shaped," concluded Jos Standerwick. Thanks to the dedication of members, sponsors, speakers and attendees, the programme made meaningful impact and set the stage for the next chapter in maritime innovation.

Source: maritimelondon.com

CANADA URGED TO LEAD ON SHIPPING EMISSIONS AS IMO DELAYS CARBON TAX VOTE

Environmental groups are urging Canada to take a leadership role following the International Maritime Organization's (IMO) recent decision to delay a vote on the global shipping carbon tax framework by one year. The Net-Zero Framework, despite its imperfections, offers a crucial path to reducing emissions from the shipping sector worldwide.

Organizations including Oceans North, WWF-Canada, Equal Routes, and the Clean Arctic Alliance are calling on Canada to strengthen its commitment both internationally and at home. Brent Dancey, Director of Marine Climate Action at Oceans North, emphasized that postponing the framework's adoption hinders innovation and harms Indigenous and coastal communities already facing climate impacts. He highlighted Canada's opportunity to lead by setting strong national regulations and incentives that support decarbonization and electrification in the maritime sector.

Andrew Dumbrille, Co-Director of Equal Routes, stressed the urgent need to act despite the IMO delay. He urged Canada to push for improved efficiency targets for the global fleet, invest in wind energy, develop strict marine fuel guidelines excluding methane-based fuels, and implement mandatory measures to reduce black carbon emissions by early 2026. These steps would align with global zero-by-2050 ambitions and protect vulnerable Arctic and coastal communities.

Sam Davin of WWF-Canada warned that further delays risk increased emissions and biodiversity loss, emphasizing that shipping could become the first global sector with a regulated net-zero pathway if the framework is adopted. He called on Canada to ensure the framework is strengthened to meet climate science standards fairly and equitably.

Domestically, Canada can take immediate actions such as requiring shore power at ports, enabling ships to connect to local electrical grids while docked, and banning scrubbers to reduce black carbon and methane—pollutants that accelerate ocean warming and Arctic ice melt. These initiatives are seen as vital for reducing the shipping sector's climate impact and boosting economic competitiveness.

Source: maritimemagazine.com

IEA HIGHLIGHTS CHALLENGES FOR GLOBAL OFFSHORE WIND SECTOR AMID STRONG RENEWABLE GROWTH

Renewable electricity generation continues to expand rapidly worldwide, with global capacity expected to more than double by 2030, according to the International Energy Agency's (IEA) latest medium-term forecast. This surge is primarily driven by solar photovoltaic (PV) growth but occurs amid supply chain constraints, grid integration issues, financial pressures, and shifting policies.

However, the IEA's *Renewables 2025* report points to a weaker outlook for the offshore wind industry. Projected growth for offshore wind is about 25% lower than previous estimates due to policy changes in key markets, supply bottlenecks, and rising costs.

The report forecasts global renewable power capacity to increase by 4,600 gigawatts (GW) by 2030—equivalent to adding the combined total power generation of China, the European Union, and Japan. Solar PV is expected to contribute roughly 80% of this growth over the next five years, benefiting from low costs and quicker permitting. Wind, hydropower, bioenergy,

and geothermal will also expand, with geothermal installations reaching record levels in markets like the US, Japan, and Indonesia. Additionally, pumped-storage hydropower growth is set to accelerate by nearly 80% compared to the previous five years, driven by rising grid integration challenges.

Emerging economies in Asia, the Middle East, and Africa are accelerating renewable deployment thanks to improved cost competitiveness and stronger policy frameworks. India, projected to become the world's second-largest renewables market after China, is on track to meet its ambitious 2030 goals.

Despite these positives, the overall global renewable capacity growth forecast has been slightly downgraded, mainly due to US policy shifts, including the early phase-out of federal tax incentives, and China's transition from fixed tariffs to auction-based pricing. These declines are partly balanced by increased optimism in regions like India, Europe, and developing economies, where expanded auctions and faster permitting are boosting solar and other renewables.

OFFSHORE INDUSTRY LEADERS UNITE TO DEVELOP NEXT-GEN SUBSEA FLOWLINE HEATING TECHNOLOGY

A consortium of major offshore energy companies—including TotalEnergies, Equinor, Aker BP, DeepOcean, Tenaris, and LS Cable & System—has launched a joint industry project to commercialize FlowHeat, a new subsea flowline heating technology designed to reduce costs and carbon emissions in deepwater oil and gas tie-back projects.

FlowHeat aims to cut manufacturing and installation expenses by up to 35% and lower carbon emissions by 30% by separating the pipeline and heating installation processes. Subsea tiebacks connect remote wells to processing facilities, but cold deepwater conditions cause challenges like wax and hydrate buildup. FlowHeat addresses this by allowing power cables to be installed after the pipeline is laid or integrated within a reeled pipeline.

According to Andries Ferla, DeepOcean's Technology Director, the patented system offers significant benefits including reduced topside weight, lower power consumption, simpler installation, repairable cables, and real-time monitoring through optical fibers.

The technology supports tiebacks of up to 30 km—potentially 50 km—and water depths of 3,000 meters. Its design allows installation using smaller remotely operated vehicles (ROVs), cutting project complexity and vessel needs. Early trials have proven its electrical efficiency and reliability over long distances and challenging obstacles.

Florent Boemare of TotalEnergies highlighted enthusiasm for full-scale validation of FlowHeat, believing it will enable access to remote reserves with longer tiebacks. The system's ability to reduce emissions by 30% stems from optimized pipeline use, fewer installation days, and smaller vessels.

With over 300 potential projects worldwide—particularly in Norway, Brazil, the U.S., and Africa—the consortium combines expertise: DeepOcean leads project management; Tenaris supplies advanced insulation; LS Cable & System provides power and fiber-optic cables; while TotalEnergies, Equinor, and Aker BP offer operator support and infrastructure.

Funding from the Research Council of Norway supports pilot testing and helps advance FlowHeat toward commercialization.

Source: marinetechnologynews.com

EU COUNCIL AGREES ON PLAN TO END RUSSIAN GAS IMPORTS BY 2028

The European Union is moving forward with a plan to phase out all Russian gas imports by January 1, 2028, aiming to tighten economic pressure on Russia amid its ongoing war in Ukraine. EU energy ministers agreed on October 20 to gradually reduce both pipeline and liquefied natural gas (LNG) imports from Russia, reinforcing the bloc's commitment to energy independence.

The decision aligns with the EU's REPowerEU Plan, adopted in 2022, which sets a roadmap to end Europe's reliance on Russian energy. The Council presidency announced that negotiations with the European Parliament will soon begin to finalize the regulation, which will also form part of the EU's broader 19th sanctions package targeting Russian oil, gas, and shipping sectors.

Under the agreed plan, EU countries will stop importing Russian gas starting January 2026, with a transition period allowing existing contracts to phase out by 2028. Short-term contracts may continue until June 2026. This staged approach balances the need to reduce dependency with practical supply adjustments.

Lars Aagaard, Danish Minister for Climate, Energy, and Utilities, emphasized the importance of this step, saying, "An energy independent Europe is a stronger and more secure Europe." He noted the overwhelming support from EU energy ministers for legislation that will definitively ban Russian gas imports.

Despite efforts, Russia remains a significant supplier, accounting for about 13% of EU gas imports in 2025, valued at over €15 billion annually. In 2024, the EU imported 52 billion cubic meters of Russian gas, representing 19% of its total gas imports. The bloc also imported Russian crude oil and enriched uranium.

The EU has imposed multiple sanctions, including bans on coal and oil imports and measures to curb circumvention through "shadow fleets." Gas imports from Russia have fallen from 45% in 2021 to 13% in 2025, and oil imports have dropped from 27% to 3%.

Member states will be required to submit national diversification plans and increase monitoring to prevent Russian gas from entering via transit routes. This comprehensive strategy aims to sever Europe's energy dependence on Russia and weaken Moscow's war-funding capabilities.

Source: maritime-executive.com

ENVIRONMENTAL PROTESTORS RETURN TO IMO TO CAMPAIGN AGAINST BIOFUELS

Environmental groups have returned to the International Maritime Organization's (IMO) London headquarters to protest against the inclusion of biofuels in the Net-Zero Framework. The protest coincides with the Marine Environment Protection Committee (MEPC) working group session, which is discussing key elements of the framework, including fuel policies, just days after the adoption vote was postponed for a year.

Groups like Biofuelwatch, Forest Watch Indonesia, and the Global Forest Coalition are urging the IMO to exclude biofuels, citing the environmental and social harm caused by their production. They highlight how land-use changes for biofuel crops such as palm oil and soy are driving deforestation, agricultural displacement, and food insecurity, negating any claimed climate benefits.

"Biofuels are not a sustainable solution under any circumstances," said Jana Uemura, Climate Campaigner at the Global Forest Coalition. She warned that increasing biofuel demand would lead to more emissions, inequality, and land grabbing.

Data from Transport & Environment (T&E) reveals that international shipping could become the fourth-largest biofuel consumer, with biofuels potentially making up 36% of the global fuel mix by 2030, rising to 76% by 2040, mostly from soy and palm oil.

Protestors also expressed concerns over limited supplies of sustainable biofuels like used cooking oil, which could only meet about 5% of shipping's energy demand, pushing the industry toward more harmful land-use change biofuels.

The groups emphasize that other sectors, including aviation and the EU's maritime policies, already exclude or limit biofuels with high indirect land-use change (ILUC) emissions and urge the IMO to follow suit, calling for biofuels to be removed from future fuel options.

Source: maritime-executive.com

Photo: Internet

NAVIGATING THE FUTURE: WHY IMO'S NET-ZERO SHIPPING TALKS ARE PAUSING UNTIL 2026

The shipping industry is the backbone of global trade. Nearly every product we buy has traveled across the ocean by ship. But this vital industry also plays a major role in climate change, producing significant greenhouse gas emissions. That's why the International Maritime Organization (IMO), the global body responsible for regulating shipping, is working hard to cut emissions and move toward net-zero carbon by mid-century.

In October 2025, the IMO's Marine Environment Protection Committee (MEPC) gathered for a special meeting to finalize new rules aimed at reducing greenhouse gases from ships. These rules included a global fuel standard to encourage cleaner energy and a mechanism to put a price on emissions. Such measures could drive the shipping industry to innovate faster and use less polluting fuels. However, the meeting ended without agreement. Instead, the talks were paused and scheduled to resume in October 2026.

Why is this delay significant?

Shipping is complex and international. Countries and companies involved have very different needs, interests, and capabilities. Some are concerned about the costs of switching to new fuels. Others worry about the impact on trade and developing economies. The proposed rules must work fairly for everyone, and that requires careful negotiation.

There are also technical hurdles. New fuel standards need to be practical—ships must be able to safely store and use these fuels, and ports must be equipped to supply them. Meanwhile, setting a global price on emissions involves economic and political challenges.

The IMO decided that more time is needed for consultations and studies to address these issues, and to build consensus. Rather than rush into decisions, they want to get it right.

What happens during this break?

The IMO isn't standing still. Working groups will keep refining the details of the framework and developing guidelines to help countries and industries prepare. Experts will analyze how new fuel standards could be implemented and what economic tools are best for pricing emissions.

At the same time, shipowners, fuel suppliers, and governments have a window to invest in research and development of alternative fuels like green hydrogen, ammonia, and biofuels. Energy efficiency improvements—such as better hull designs and advanced engines—are also a focus.

Why should we care?

The shipping industry moves over 80% of global trade by volume, making it essential for daily life and economic growth. But if it continues polluting at current rates, it will undermine global efforts to combat climate change.

The IMO's work reflects a shared responsibility to protect the planet's health while keeping goods moving smoothly. The pause in talks may feel frustrating, but it shows the seriousness with which these decisions are being handled.

With the right balance, shipping can lead the way toward a cleaner, greener future for the oceans and the planet. When the talks resume in 2026, the world will be watching closely.

A GREENER PATH FOR SHIP RECYCLING: THE HONG KONG CONVENTION COMES INTO FORCE

Ship recycling, the process of breaking down ships at the end of their service life, has long been a source of pollution and health hazards—especially in places where safety standards are weak. On June 26, 2025, a landmark moment arrived when the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships officially came into force. This treaty sets global rules to ensure ships are dismantled in a way that protects workers, communities, and the environment.

What does the Hong Kong Convention do?

Adopted in 2009, the convention provides a comprehensive framework covering three key areas:

- **Design and construction:** Ships must be built with recycling in mind, making it easier and safer to take them apart later.
- **Recycling facilities:** The places where ships are dismantled must follow strict environmental and safety rules.
- **Enforcement:** Countries must have systems to monitor compliance, including inspections and certifications.

Why is this important?

Older ships often contain dangerous materials like asbestos, heavy metals, and toxic chemicals. If not handled properly during recycling, these substances can harm workers and pollute nearby land and water.

The convention requires ships to keep an Inventory of Hazardous Materials—a detailed list of all such substances onboard. This helps recycling yards plan for safe disposal. It also bans or limits the use of certain hazardous materials on new ships.

Shipowners must prepare a Ship Recycling Plan, laying out how each vessel will be dismantled safely. And recycling yards have to be certified and regularly inspected.

Who is involved?

As of June 2025, 24 countries have ratified the convention. Together, these countries represent more than half of the world's merchant shipping fleet. This includes major shipping nations like Japan, Liberia, and Panama, as well as top shipbreaking countries such as Bangladesh, India, and Pakistan.

To help developing countries meet the requirements, the IMO has launched support programs, including training and technical assistance.

What challenges remain?

While the convention sets a new global standard, implementing it everywhere is a big task. Some recycling facilities may struggle to upgrade their operations to meet the rules. Governments need to enforce regulations consistently, and shipowners must take responsibility.

However, the entry into force of the convention is a huge step forward. It sends a clear message that the maritime industry must prioritize safety and environmental care—not just profit.

Why does this matter beyond shipping?

Ship recycling has been linked to serious environmental damage and health risks for coastal communities. By improving practices worldwide, the convention helps protect marine ecosystems and the people who depend on them.

Photo: Internet

It also supports a more circular economy—where materials from old ships are recovered and reused instead of wasted.

The Hong Kong Convention marks a turning point for a cleaner, safer, and more responsible maritime industry. It shows that with global cooperation, even tough challenges like shipbreaking can be tackled for the good of all.

Information and picture: International Maritime Organization (IMO)

Show Preview

ALL EYES ON SEATTLE: WHY PACIFIC MARINE EXPO 2025 IS THE MARITIME EVENT OF THE YEAR

From cutting-edge propulsion systems to smart port integration and sustainable seafood logistics, Pacific Marine Expo 2025 promises to set the tone for the future of the maritime industry. Here's why it matters now more than ever.

As global supply chains recalibrate, fuel prices fluctuate, and environmental compliance tightens, the maritime industry is in a state of transformation. Vessels are becoming smarter, ports are going greener, and the technology that connects sea to shore is advancing rapidly.

Against this backdrop, the Pacific Marine Expo 2025, scheduled for November 20–22 at Seattle's Lumen Field Event Center, arrives as a timely convergence of the people, products, and ideas shaping the future of commercial marine industries.

Billed as the largest and longest-running commercial marine trade show on the U.S. West Coast, this year's Expo is more than a regional gathering—it's a barometer of where the industry is headed next.

WHY PACIFIC MARINE EXPO STANDS OUT

Now in its decades-long run, Pacific Marine Expo (PME) brings together over 6,000 marine professionals annually, ranging from commercial fishermen and shipbuilders to port operators, engineers, and equipment manufacturers. Whether you're working offshore, running a seafood processing operation, designing vessels, or managing a port terminal, PME offers something crucial: access.

Access to:

- New products and technologies
- Workshops and best-practice haring
- Government and regulatory updates
- Environmental and safety innovations
- Business development and partnerships

For three days, the event transforms into a dynamic showcase of working-waterfront excellence, particularly relevant as maritime sectors globally push toward sustainability, efficiency, and resilience.

WHAT TO EXPECT IN 2025: KEY THEMES AND HIGHLIGHTS

This year, PME reflects the maritime industry's top priorities—and anxieties. From automation and emissions reductions to digital vessel tracking and hybrid propulsion, the exhibition and program content is aligned with solving real-world operational challenges.

1. Tech on Deck: Innovation in Action

The exhibit hall will feature **over 500 companies** showcasing marine-specific technologies, including:

- Autonomous and remote-operated vessel systems
- IoT-based engine monitoring and diagnostics
- Alternative fuel propulsion (hydrogen, electric, hybrid)
- Smart port and docking solutions
- Cold-chain equipment for seafood logistics
- Fire and safety systems
- Hull coatings, lubricants, and fuel efficiency tech

Live demos and hands-on exhibits are expected to draw significant attention—particularly from port authorities and fleet managers scouting for retrofit solutions.

2. Training and Education

PME 2025 offers robust programming with technical workshops, regulatory briefings, and safety sessions, helping participants stay ahead of compliance changes and operational best practices.

Scheduled sessions include:

- Vessel stability and emergency preparedness
- Maritime emissions regulations (IMO 2020, MARPOL updates)
- Fleet decarbonization strategies
- Data-driven decision making in marine logistics
- Women in Maritime: Expanding the Talent Pool

These sessions are curated to offer actionable insights for crews, operators, managers, and regulators alike.

SMART, SUSTAINABLE, AND SEA-READY

One of the Expo's more urgent themes is the growing environmental mandate across maritime sectors. With global emissions targets, fuel regulation, and consumer demand for sustainable seafood all converging, PME 2025 is expected to spotlight eco-conscious innovation.

SMART PORTS, GREENER FLEETS

As ports look to become smart and sustainable, technologies enabling cleaner vessel calls and reduced emissions will feature prominently. Expect solutions like:

- **Cold ironing systems** to cut emissions at berth
- **Hybrid tugboats and workboats**
- **Sensor-based emissions monitoring**
- **Digitized traffic control and scheduling** to minimize port congestion
- **AI-driven weather and current forecasting** for safer navigation

For port planners from emerging economies—like Bangladesh or Vietnam—these solutions offer a blueprint for reducing carbon footprints while boosting efficiency.

NETWORKING BEYOND THE DOCKSIDE

More than just a trade show, PME offers a collaborative environment where deals are initiated, partnerships formed, and knowledge exchanged. Through networking events, meetups, and award ceremonies, attendees are able to build real, working relationships.

Highlights include:

- **Highliner Awards** – Honoring leaders in the North Pacific fishing industry
- **Happy Hour on the Show Floor** – Daily networking with exhibitors and peers
- **Fisher Poets Reading** – A cultural spotlight blending storytelling and the sea

In a time when the maritime industry is grappling with change—from digital disruption to workforce shortages—these human moments matter.

WHY THIS EXPO MATTERS IN 2025

PME 2025 arrives at a critical time for the industry:

- **Fuel and maintenance costs** are rising, pushing operators to seek more efficient solutions
- **Environmental compliance** is no longer optional
- **Labor gaps** require smarter, safer vessel designs and processes

- **Digitalization** is moving from optional to essential, especially in port-vessel coordination

For participants from across the Pacific Rim—and beyond—the Expo is more than an industry meet-up; it's a crucial forum for adaptation and resilience.

AN OPPORTUNITY FOR GLOBAL ENGAGEMENT

While PME has traditionally focused on the U.S. West Coast, the implications—and opportunities—are global. For countries like Bangladesh, where port modernization and green maritime growth are policy priorities, PME provides a front-row view of cutting-edge developments.

- **Smart port planners** can explore technologies for digitized cargo handling and IoT-integrated terminals
- **Shipbuilders** can discover sustainable materials, design practices, and propulsion options
- **Marine agencies** can network with U.S. Coast Guard, NOAA, and global regulators
- **Investors and policymakers** can evaluate potential partnerships with U.S.-based manufacturers and service providers

THE BOTTOM LINE

In an industry often defined by tradition, the Pacific Marine Expo offers a welcome surge of forward momentum. It's where old knowledge meets new solutions—where the challenges of fuel, fish, and freight are tackled not in theory but in real time, with real tools.

Pacific Marine Expo 2025 is more than an event—it's an essential checkpoint in maritime innovation, sustainability, and global cooperation.

Whether you're managing a port, upgrading a fleet, or navigating the complex tides of marine regulation, this is a show you don't want to miss.

Show Review

SAIL AMSTERDAM 2025: WHERE HISTORY, HUMANITY, AND HORIZONS MEET

Amsterdam | August 20–24, 2025 – Every five years, something extraordinary happens in the heart of Amsterdam. The city's iconic waterways, normally bustling with ferries, houseboats, and commuter vessels, give way to a stunning procession of towering masts, billowing sails, and global maritime pride. In 2025, after a 10-year pause due to the pandemic, **SAIL Amsterdam** returned in full glory—and it was worth the wait.

From **August 20 to 24**, the Dutch capital played host to one of the largest free maritime events in the world. With **over 2.5 million visitors** flooding into the city and its harbors, **SAIL 2025** delivered a spectacular celebration of maritime heritage, naval innovation, and international friendship.

A PARADE OF GIANTS

The showstopper of every SAIL edition is its **Parade of Sail**, and 2025 was no exception. On the opening day, more than **50 tall ships**—some of them century-old sailing legends—entered the IJ harbor in a ceremonial procession led by the **Dutch naval vessel HNLMS Holland**.

Among the stars:

- **Sedov (Russia)** – One of the largest traditional sailing ships in the world, returning to Amsterdam after more than a decade.
- **Cisne Branco (Brazil)** – The Brazilian Navy's elegant ambassador, gleaming white against the backdrop of Dutch summer skies.
- **Statsraad Lehmkuhl (Norway)** – A symbol of Nordic maritime strength and sustainability, arriving fresh from its One Ocean expedition.

Surrounded by hundreds of **smaller heritage boats**, **yachts**, and **modern patrol vessels**, the parade painted a moving portrait of the global maritime community—past and present sailing side by side.

WHERE THE PAST MEETS THE FUTURE

While tall ships drew the biggest crowds, **SAIL Amsterdam 2025** was far from just a nostalgic affair. This year's theme,

Photo: Internet

Photo: Internet

"Sailing Towards Tomorrow," pushed the event into future waters.

A dedicated **Innovation Dock** featured:

- **Hydrogen-powered vessels** by Dutch shipbuilders experimenting with zero-emission inland transport
- **Autonomous shipping prototypes** developed by European marine research institutions
- **Digital navigation and safety systems** aimed at smarter, safer sailing for professional and recreational fleets

For many attendees—especially students, young professionals, and policymakers—this blend of history and innovation proved inspiring. It underscored the message that while the sails may be traditional, the journey forward is all about technology and sustainability.

A FLOATING CULTURAL FESTIVAL

Beyond ships, **SAIL 2025** offered an immersive cultural experience that turned the entire city into a stage.

- **Concerts on the water** – Floating barges became platforms for jazz, classical, and global music performances every evening.
- **Food from the sea** – Dutch herring, North Sea mussels, and maritime cuisines from around the world fed the masses along the docks.
- **Children's Discovery Zone** – Interactive exhibits taught kids about knots, navigation, and the ocean ecosystem, building the next generation of sea stewards.
- **Fireworks & Drone Shows** – Each evening closed with a stunning light display over the IJ, combining tradition with futuristic spectacle.

These elements transformed SAIL into a **multi-generational event**, where grandparents could relive their seafaring memories while their grandchildren engaged with marine tech or danced to DJ sets by the water.

INTERNATIONAL COOPERATION IN ACTION

SAIL Amsterdam has always been more than a tourist attraction—it's a statement of diplomacy and solidarity. **Naval vessels from 13 nations** were docked and open for public tours, offering rare glimpses into maritime defense and disaster-response strategies.

Moreover, a closed-door **Maritime Leaders Summit**, hosted alongside the event, brought together officials from

Photo: Internet

IMO, the **European Commission**, and **coastal states**, focusing on:

- Collaborative green shipping corridors
- Safety regulations for autonomous vessels
- The blue economy and job creation in the maritime sector

These dialogues reaffirmed SAIL's role as a **platform for policy and progress**, not just parades.

Photo: Internet

CROWDS, COORDINATION & COMMUNITY SPIRIT

Handling 2.5 million visitors over five days is no small feat, and **Amsterdam's public services rose to the occasion**. Extra trams and ferries were deployed, crowd-control zones were clearly marked, and volunteer groups—many made up of local sailing enthusiasts—kept the docks orderly and welcoming.

Even with the crowds, the spirit remained joyous. Locals opened their homes and balconies. Cafés stayed open late. Artists sketched the ships from canal bridges. It wasn't just an event—it was a citywide embrace of the sea.

THE TAKEAWAY: MORE THAN JUST A SHOW

SAIL Amsterdam 2025 delivered on every level: heritage, innovation, spectacle, diplomacy, and community. It reminded the world why the sea still matters—economically, environmentally, and emotionally.

For maritime professionals, it was a chance to connect, recruit, and reflect. For visitors, it was a celebration of humanity's enduring relationship with the ocean.

And for Amsterdam? It was a triumphant return to form—proving once again that when wind and water meet, something magical happens.

DOLPHIN COATING SOLUTIONS:

PIONEERING MARINE COATING INNOVATION IN BANGLADESH

Bangladesh's shipbuilding industry is one of the country's most promising frontiers, already exporting oceangoing vessels to Europe, Africa, and Asia. Yet the sector faces a persistent challenge: corrosion. Saltwater, humidity, and harsh operating environments eat away at steel hulls, shortening vessel lifespans and driving up maintenance costs. At this critical juncture, **Dolphin Coating Solutions Ltd.**, led by **Mohammad Shahjan Shiraj**, a seasoned Master Mariner with international training, has emerged as a transformative force.

Shiraj brings to the industry not just technical products, but a seafarer's perspective on durability, safety, and global competitiveness. *"I'm not just supplying paint—I'm helping shape a new era of durable, eco-friendly, and globally competitive vessels,"* he remarked, summarizing his mission at Dolphin Coating Solutions.

From Deck to Dock: A Mariner's Perspective

Having sailed the world's oceans, Shiraj applies the discipline and foresight of his maritime career to the business of coatings. He explained that his team views coatings not merely as surface treatments, but as **strategic investments**: essential to vessel longevity, operating efficiency, and lifecycle cost management.

Under his leadership, Dolphin Coating Solutions has partnered with **PPG Sigma**, a global leader in protective and marine coatings. By introducing internationally proven systems and training local teams, the company helps Bangladeshi shipyards adopt world-class practices. Shiraj believes this approach positions Bangladesh's shipbuilders to compete confidently with established global yards.

Battling Corrosion: Extending Vessel Lifespans

Corrosion is often called the "silent enemy" of ships, capable of reducing a vessel's life expectancy by years if left unchecked. According to industry estimates, maintenance and repair costs associated with corrosion consume billions of dollars globally each year.

Shiraj noted that Bangladeshi shipyards face this challenge acutely. Dolphin Coating Solutions addresses it with **high-performance corrosion protection systems**—from epoxy-based hull coatings to specialized ballast tank linings. These coatings reduce dry-docking frequency and extend operational lifecycles, directly lowering costs for owners and making locally built vessels more attractive in export markets.

"Our systems protect hulls, ballast tanks, and cargo holds from harsh marine environments," he explained. "That means fewer breakdowns, less downtime, and ships that buyers can trust."

Leading the Green Transition in Marine Coatings

Globally, the marine coatings sector is undergoing a dramatic transformation as regulators and shipowners demand **eco-friendly, low-VOC solutions**. From the International Maritime Organization's PSPC standards to stringent EU directives, the pressure to adopt sustainable coatings is growing.

Dolphin Coating Solutions is bringing this shift to Bangladesh. Shiraj pointed to technologies such as **waterborne epoxies, high-solids epoxies, and polysiloxane topcoats** that significantly reduce solvent emissions and enhance worker safety. These systems not only comply with international environmental regulations but also improve performance through better color retention, UV resistance, and durability.

Indirectly, Shiraj emphasized that by guiding local shipbuilders through this transition, Dolphin Coating is preparing Bangladesh to meet the future demands of eco-conscious buyers worldwide.

Tailored Solutions for Diverse Vessels

Bangladesh's yards construct a wide variety of ships—from oceangoing cargo carriers to patrol boats and fishing trawlers. Each vessel type requires a different protective strategy.

Dolphin Coating Solutions tailors its offerings accordingly:

- **Cargo Ships** benefit from high-solids epoxies and fouling-release coatings, improving efficiency and reducing fuel costs.
- **Patrol Boats** demand abrasion resistance and long-term color stability, achieved through epoxy systems combined with polysiloxane finishes.
- **Fishing Trawlers** operate under tight margins, so Dolphin emphasizes cost-effective anti-corrosive coatings that minimize downtime and extend working life.

By aligning coating systems with operational realities, Dolphin

helps builders optimize for both durability and cost efficiency without compromising international quality benchmarks.

R&D and Reliable Supply Networks

Innovation is only part of the equation—reliability is equally critical. Shiraj explained that Dolphin Coating Solutions combines **global R&D insights** from PPG Sigma with a robust local distribution network. This ensures that shipyards across Bangladesh receive coatings on time, with consistent quality and on-site technical support.

Every product, he added, is benchmarked against international standards such as **ISO 12944, IMO PSPC, and EU VOC directives.** This builds confidence not only for domestic clients but also for international buyers who demand compliance and traceability in procurement.

Looking Ahead: A Vision for the Next Decade

As Bangladesh's shipbuilding industry grows, Dolphin Coating Solutions is positioning itself as more than a supplier—it aims to be a partner in progress. Shiraj outlined an ambitious five- to seven-year vision:

- Introducing **next-generation eco-friendly coatings** tailored to local climatic conditions.
- Establishing a **training and technical support center** to upskill shipbuilders and applicators.
- Driving **sustainability initiatives**, ensuring Bangladesh's vessels meet future green shipping regulations.
- Expanding collaborations between global R&D hubs and local yards to co-create durable, cost-efficient solutions.

"Our vision is clear," Shiraj stated. *"Dolphin Coating Solutions will be synonymous with innovation, quality, and reliability—empowering Bangladesh's shipbuilding sector to compete confidently on the world stage."*

The trajectory of Bangladesh's shipbuilding sector depends not just on steel and design, but on the protective layers that preserve its investments. In this regard, Dolphin Coating Solutions is more than a participant—it is a pioneer, ensuring that every vessel built in Bangladesh can sail farther, last longer, and meet the toughest standards of the global market.

GUARDIAN OF THE SEAS:

REAR ADMIRAL MUHAMMAD ZIAUL HOQUE ON SHIPBUILDING, SECURITY, AND THE FUTURE OF BANGLADESH'S MARITIME INDUSTRY

When Rear Admiral Muhammad Ziaul Hoque, the 18th Director General of the Bangladesh Coast Guard, speaks about the sea, it is not just from a position of command but from a lifetime of service spanning naval operations, global shipping, and now the guardianship of the nation's maritime frontier. His career — from commanding warships to serving as Managing Director of the Bangladesh Shipping Corporation — reflects a dual vantage point: the rigor of security operations and the pragmatism of shipping and trade. Together, these experiences shape a vision that is both national in responsibility and global in outlook.

"Commanding operations at sea instilled discipline, teamwork, and decisive leadership in complex environments, while leading the Bangladesh Shipping Corporation provided valuable insight into shipbuilding, trade, logistics, and strategic investment," Rear Admiral Hoque noted.

This synthesis of operational and commercial insight is the foundation of his strategy for a modern Coast Guard aligned with national priorities. With nearly 90 percent of Bangladesh's trade moving through the sea, maritime security directly reduces risk, lowers insurance costs, and strengthens competitiveness. His leadership, therefore, is not limited to enforcement — it extends to safeguarding the economy, the environment, and the livelihoods tied to the blue economy.

Building a Future-Ready Force

Central to this vision is BCG Goal 2030, the modernization roadmap that positions the Coast Guard as a three-dimensional force — combining ships, aviation assets, and land-based systems. A pivotal component of this strategy is domestic shipbuilding, which is now firmly intertwined with international technologies.

The Sobuj Bangla Class patrol vessels, designed and built locally, stand as a showcase of this hybrid approach. They are cost-effective yet equipped with advanced global-standard


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systems. “Developing domestic capacity while incorporating established international technologies is a cornerstone of this plan,” he explained. “It strengthens national shipbuilding capacity while ensuring the force remains technologically advanced.”

By 2030, the Coast Guard envisions a fleet integrated with UAVs, helicopters, long-range tracking systems, and digital command tools like VTMIS. The goal is to prepare not only for traditional security threats but also for protecting fisheries, combating oil spills, and responding swiftly to disasters in one of the world’s most climate-vulnerable nations.

Scaling the Shipbuilding Industry

Bangladesh’s shipbuilding sector is no longer a fledgling. Shipyards such as Dockyard and Engineering Works, Khulna Shipyard, Western Marine, and Ananda Shipyard have already delivered vessels to Europe, Africa, and Asia — from multipurpose container ships to passenger ferries and patrol boats. Yet, the path to scaling remains steep.

Rear Admiral Hoque emphasizes the role of technology: “Continuous investment in advanced technologies, including artificial intelligence for design optimisation, predictive maintenance, and quality assurance, alongside workforce development and strategic partnerships with international players, will be essential.”

The Coast Guard’s procurement strategy reflects this commitment. Local yards are prioritized for new builds, while the upcoming Gozaria Drydock promises to add high-speed boat production and full-scale fleet repair to the national capacity. Each vessel built or maintained locally not only secures operational readiness but also stimulates the economy, creates jobs, and anchors the resilience of Bangladesh’s blue economy.

Security Meets Humanitarian Service

Bangladesh’s maritime geography — a long coastline, intricate rivers, and cyclone-prone waters — demands a unique operational strategy. A three-dimensional Coast Guard means fast patrol boats and UAVs for wide-area surveillance, helicopters for rapid disaster response, and hovercraft for shallow flood zones.

This integrated force is designed not just to secure trade routes or deter smuggling but to protect fishing communities and act as a humanitarian lifeline. “Our strategy ensures that the Coast Guard stands as both a guarantor of security and a first responder,” he said. From medical evacuations during cyclones to safeguarding biodiversity, the force is increasingly intertwined with the well-being of coastal communities.

Infrastructure as an Anchor

The recent addition of a boat workshop and slipway at Mongla has already enhanced the Coast Guard’s ability to maintain assets locally and extend vessel lifespans. Looking ahead, the Gozaria Drydock is expected to be transformative, serving both the Coast Guard and the wider industry.

“Together, Mongla and Gozaria will anchor a robust shipbuilding and maintenance ecosystem that strengthens resilience, supports industrial growth, and positions Bangladesh as a responsible maritime nation in the Bay of Bengal,” Rear Admiral Hoque said.

This dual-use infrastructure — benefiting both defense and industry — is emblematic of a strategy where national security and economic growth reinforce each other.

An Industry at the Crossroads

The significance of shipbuilding for Bangladesh cannot be overstated. Already, the nation exports an impressive range of vessels, from ferries to patrol craft, and is increasingly recognized as a reliable supplier for small and medium seagoing ships. Yet, the next phase requires a shift from volume to sophistication — embracing AI, green technologies, and global best practices.

In his BIMOX 2025 speech, Rear Admiral Hoque underlined the importance of such platforms for knowledge-sharing and collaboration: “The marine and offshore industry is a cornerstone of our national economy… Platforms such as BIMOX serve as invaluable avenues for innovation and international cooperation.”

This cooperative spirit — marrying local capability with global partnerships — is what can turn Bangladesh from a low-cost shipbuilder into a recognized global maritime hub.

Sailing Toward a Blue Economy

Rear Admiral Muhammad Ziaul Hoque embodies a vision that transcends the boundaries of uniformed service. His leadership blends security with commerce, national strategy with global foresight. Under his guidance, the Bangladesh Coast Guard is becoming not just a maritime law enforcer but a driver of industrial growth, humanitarian response, and environmental stewardship.

As he reflects, “Every vessel built or repaired locally fortifies both the Bangladesh Coast Guard and the nation’s blue economy.”

With the Coast Guard’s modernization, the expansion of shipbuilding infrastructure, and the momentum of events like BIMOX 2025, Bangladesh stands at the threshold of a maritime transformation — one that secures its coasts, empowers its industry, and anchors its role in the global blue economy.

MENTOR AI: SHAPING THE FUTURE OF MARITIME TRAINING

The maritime industry, steeped in tradition, is rapidly embracing a technological revolution as digital transformation reshapes how seafarers learn, operate, and adapt to a complex, evolving environment. With over 1.79 million seafarers worldwide, the industry faces critical challenges, including skills shortages and the need to upskill crews in emerging areas like automation, decarbonisation, cybersecurity, and alternative fuels. To meet these demands, innovative solutions like AI-powered training tools are proving indispensable—and Mintra's Mentor AI is at the forefront of this change.

THE CHANGING FACE OF MARITIME TRAINING

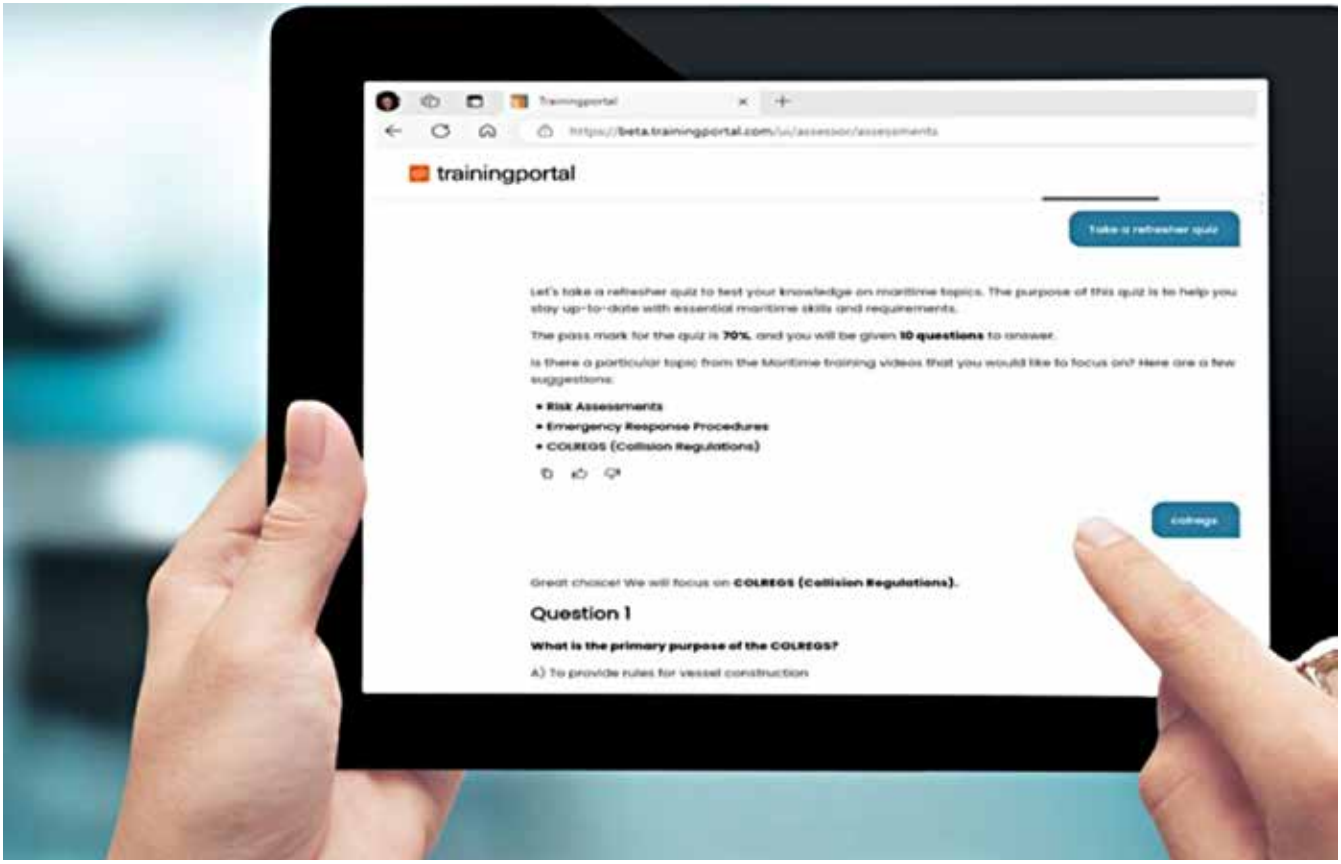
The traditional model of maritime training, often classroom-based and periodic, is giving way to flexible, personalized, and on-demand learning. Modern seafarers require access to critical knowledge precisely when and where they need it—whether navigating a technical challenge or staying updated on rapidly changing regulations. AI chatbots like Mentor AI offer this real-time, accessible support, transforming training from a scheduled event into a continuous, integrated process.

Mentor AI is an intelligent chatbot built specifically for maritime professionals. It leverages Mintra's extensive database of accredited, safety and compliance-focused content to provide accurate, up-to-date information on demand. Whether a crew member needs guidance on safety procedures, regulatory compliance, or troubleshooting technical problems, Mentor AI delivers precise, context-aware answers. Its multilingual capabilities further enhance accessibility across the diverse, global maritime workforce.

Real-World Impact: Immediate, Practical Assistance

Imagine a seafarer named John, conducting routine engine maintenance on a cargo ship. He encounters an unfamiliar issue with an auxiliary engine—something not covered in his initial training. Traditionally, John would have to rely on trial and error, contact shore-based experts, or wait for support, risking delays and operational inefficiencies.

With Mentor AI, John simply describes the problem to the chatbot. The AI instantly provides step-by-step instructions based on Mintra's comprehensive knowledge base, including safety precautions and necessary tools. This real-time guidance



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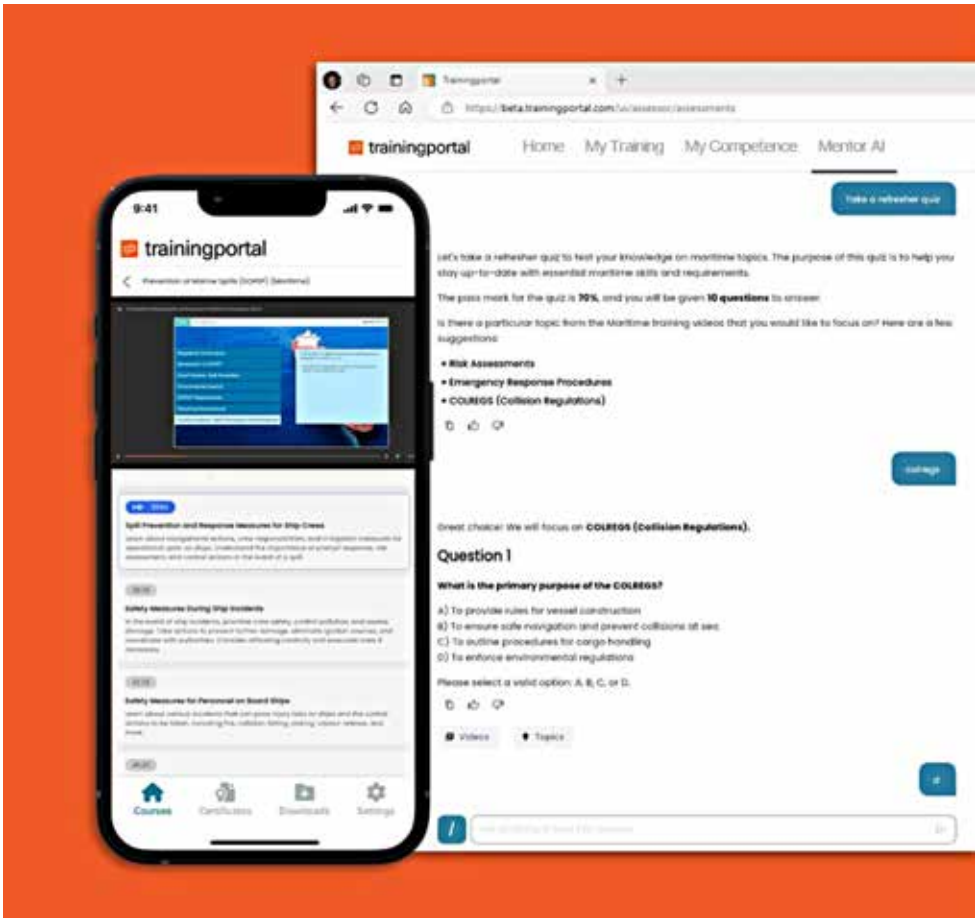


helps John resolve the issue efficiently, avoiding downtime and enhancing safety without the need for lengthy courses or external assistance.

MEETING INDUSTRY CHALLENGES WITH AI

The maritime sector is contending with a shortage of skilled officers and rising demands for expertise in digital and environmental domains. Mentor AI helps address these challenges by supporting continuous upskilling and knowledge retention. Its "test me" feature enables users to take quick quizzes, reinforcing learning through immediate feedback—a crucial tool for maintaining competency in a high-risk, fast-changing industry.

Moreover, Mentor AI functions as a 24/7 virtual mentor, crucial for crews operating in remote locations with limited shore access. This constant availability helps reduce human error, improve compliance, and ultimately enhance vessel safety and efficiency.

CONNECTIVITY: THE BACKBONE OF AI INTEGRATION

While AI tools hold enormous promise, their effectiveness depends on reliable connectivity—something historically limited at sea. However, advances in satellite communications, especially with Low Earth Orbit (LEO) constellations like Starlink, are improving internet access on vessels worldwide. As connectivity improves, Mentor AI's capabilities will expand, enabling more sophisticated real-time analytics and integration with shipboard systems for predictive maintenance and operational decision support.

FUTURE HORIZONS FOR MENTOR AI

Mintra envisions Mentor AI evolving beyond a reactive tool into a proactive partner. Upcoming enhancements include predictive analytics to anticipate operational issues before they arise, allowing crews to prevent problems rather than just react to them. Further integration with onboard systems will provide seamless workflows and enhanced decision-making capabilities.

Improved natural language processing will enable Mentor AI to handle more complex queries and diagnostics, adapting dynamically to the user's expertise and context. This will be vital for supporting crews in multilingual environments and ensuring consistent operational standards worldwide.

CONCLUSION: AI AS A MARITIME GAME-CHANGER

The maritime industry stands at the brink of a digital era where AI-driven tools will become essential rather than optional. Mentor AI exemplifies how artificial intelligence can revolutionize maritime training—making learning more accessible, personalized, and effective. By empowering seafarers with immediate, data-driven insights, AI supports safer, more efficient operations and accelerates the transition to a greener, smarter maritime future.

At Mintra, we are proud to lead this transformation, harnessing AI to tackle real-world maritime challenges and equipping crews for the demands of tomorrow. As technology and connectivity continue to advance, Mentor AI will remain a critical asset, shaping the future of maritime operations and workforce development for years to come.

Feature

THE BLUE ECONOMY'S TURNING TIDE: HOW COASTAL TOURISM CAN GO NATURE-POSITIVE BY 2030

Once hailed as a driver of prosperity for coastal communities, the tourism industry now faces a reckoning. As half of all global tourism occurs near the sea, the sector's unchecked growth has placed immense pressure on fragile marine ecosystems. A new WWF framework—*Towards Nature Positive for the Ocean*—offers companies a blueprint to not only minimize harm but actively restore the ocean's health. This is the story of how the industry can shift from exploitation to regeneration, steering the blue economy toward a sustainable, nature-positive future.

THE OCEAN'S WARNING

The ocean—our planet's largest ecosystem and climate regulator—is in steep decline. Industrial activity, overdevelopment, and pollution have pushed marine life to the brink, with scientists warning that $8.4 trillion in global assets linked to the blue economy are now at risk. Yet amid this crisis lies an opportunity for reinvention. The World Wide Fund for Nature (WWF) argues that corporate actors in marine and coastal tourism can play a pivotal role in reversing biodiversity loss by embracing "nature-positive" practices—those that halt and reverse environmental damage by 2030 and ensure full recovery by 2050.

The urgency is undeniable. The ocean supports life, livelihoods, and local economies. It drives climate stability, sustains biodiversity, and powers the tourism sector that millions rely

Photo: Internet

on. But without systemic change, the same forces that built the industry could destroy the foundation it depends on.

THE COASTAL CONUNDRUM

Coastal and marine tourism—spanning resorts, cruises, and destination development—accounts for roughly half of all global tourism. By 2030, it is projected to become the largest contributor to ocean-based GDP, a double-edged achievement. The expansion of this lucrative sector generates jobs and infrastructure, but it also concentrates human activity in biodiverse coastal zones. Mangroves, seagrass beds, dunes, and coral reefs—ecosystems that buffer coastlines and store carbon—are increasingly under threat.

Cruise tourism epitomizes this paradox. While it stimulates economies in developing regions, it also brings congestion, waste, and emissions to sensitive areas. Unregulated construction and over-tourism exacerbate erosion, habitat loss, and pollution, leaving local communities vulnerable to the very environmental collapse that tourism once sought to celebrate.

RETHINKING TOURISM THROUGH A NATURE-POSITIVE LENS

WWF's *Towards Nature Positive for the Ocean* report offers a roadmap for change. It introduces the AR3T Action Framework—a practical guide for companies to Avoid, Reduce, Restore, Regenerate, and Transform their interactions with nature. Rooted in the International Finance Corporation's Performance Standard 6 and the Science Based Targets Network's (SBTN) guidance, AR3T transforms sustainability from a compliance measure into an innovation strategy.

This approach reframes corporate responsibility as an opportunity for leadership. By adopting AR3T, coastal tourism businesses can align profitability with ecological resilience—reducing risks, creating new revenue streams, and enhancing brand credibility in a market increasingly driven by sustainability-conscious travelers.

STEP ONE: AVOIDING THE UNAVOIDABLE

The first line of defense is avoidance—designing and planning projects that prevent harm before it occurs. Developers are urged to site infrastructure away from critical habitats, migratory corridors, and protected areas. Building on dunes or within high-tide zones should be avoided altogether. Instead, projects should favor brownfield sites—previously developed areas—minimizing new habitat conversion.

WWF's report emphasizes the importance of comprehensive marine spatial planning. By integrating ecological data into zoning decisions, developers can reduce pressure on sensitive ecosystems while supporting equitable land use that benefits both communities and biodiversity. Such proactive measures don't just protect nature—they also future-proof investments against climate-related disruptions.

STEP TWO: REDUCING IMPACTS AND RETHINKING CONSTRUCTION

Even the most sustainable projects leave a footprint. The next step is reduction—minimizing unavoidable harm through smart design and technology. The report calls for low-impact construction methods, including horizontal directional drilling to limit seabed disruption and silt curtains to prevent sediment plumes.

Circular economy principles are essential: using recycled materials, upcycling waste, and sourcing locally to cut emissions. Developers are encouraged to restrict night-time construction to protect nocturnal species and nesting turtles, while adopting noise and light thresholds to reduce disturbance.

The logic is clear—better planning means fewer repairs. Building for the environmental conditions of tomorrow, not just today, ensures resilience in the face of sea level rise and intensifying storms.

STEP THREE: RESTORING AND REGENERATING WHAT'S LOST

Avoidance and reduction alone are insufficient. A nature-positive future demands active restoration and regeneration. This means restoring mangroves, seagrass beds, and coral reefs—ecosystems that serve as carbon sinks, nurseries, and natural barriers.

WWF highlights the potential of reef modules—biomimetic structures that replicate natural habitats and strengthen coastal resilience. These can be incorporated into resort designs, marinas, or mooring systems, turning infrastructure into habitat. Similarly, native vegetation and dune rehabilitation can stabilize coastlines while enhancing biodiversity and guest experiences.

At the community level, businesses are encouraged to fund and partner in local restoration efforts, combining conservation goals with economic incentives. As the World Economic Forum reports, nature-positive action could generate $10.1 trillion in new business opportunities and create 395 million jobs by 2030—proof that ecological recovery and economic growth are not mutually exclusive.

STEP FOUR: TRANSFORMING SYSTEMS AND MINDSETS

True change requires transformation—rethinking how tourism interacts with people, policy, and place. WWF's call to action goes beyond corporate checklists; it urges companies to advocate for systemic change. This includes pushing for stricter coastal zoning laws, promoting renewable energy integration, and participating in collaborative frameworks like the Taskforce on Nature-related Financial Disclosures (TNFD).

Transparency is key. Currently, few companies publicly report their nature-related impacts. Standardized frameworks such as the EU's Corporate Sustainability Reporting Directive (CSRD) and Environmental and Social Reporting Standard (ESRS) can bridge this gap, ensuring consistent accountability across the sector.

Transformation also involves empowering local communities. By hiring local staff, sourcing from small-scale fishers and farmers, and co-designing conservation programs, companies can enhance livelihoods while strengthening cultural and ecological resilience.

The New Ethic of Travel

Tourism has long marketed the illusion of untouched paradise. But the modern traveler increasingly demands authenticity—and accountability. WWF proposes that hotels and operators integrate responsible, nature-based guest experiences that educate visitors about marine conservation. Simple interventions, like using wildlife-friendly lighting, restricting visitor numbers in sensitive zones, and offering "citizen science" tours, can turn leisure into learning.

Even menus can tell a story. Replacing invasive species with local, sustainable ingredients supports biodiversity while giving guests a taste of place—literally.

By embedding conservation into the visitor experience, the tourism industry can redefine luxury as harmony with nature, not domination over it.

A Blueprint for the Blue Economy

From site selection to vessel operation, WWF's nature-positive pathways provide a clear, science-backed guide for companies navigating the complex intersection of business and biodiversity. Avoiding construction in sensitive habitats, reducing emissions through local sourcing, deploying reef-based mooring systems, and engaging in transparent reporting are not abstract ideals—they are actionable steps toward a resilient blue economy.

The transition will not be easy. It demands capital, collaboration, and courage. But the payoff—a restored ocean that sustains both people and profit—is immeasurable.

The Call of the Tide

The ocean's message is unmistakable: business-as-usual is no longer an option. As the WWF authors write, *"Collective action across industry, finance, policy, civil society, and local communities can drive transformative change toward a resilient, inclusive, and sustainable blue economy."*

The coastal tourism sector stands at the frontline of that transformation. By embracing nature-positive principles, it can lead the charge—not as an agent of extraction, but as a steward of regeneration.

The tide is turning. The question now is whether the industry will rise with it.

(Feature inspired by WWF's 2025 report "Towards Nature Positive for the Ocean: Pathways for Corporate Contributions – Coastal Tourism Sector Summary.")

Feature

WHEN THE TIDE TURNS: CAN THE MARITIME WORLD STAY GREEN AS TRADE FALTERS?

Rising shipping costs and slowing trade are forcing the maritime industry into tough choices. Can the sector stay committed to going green when survival itself feels uncertain?

The ocean has always been a place of resilience. It carries 90% of the world's trade, fuels global growth, and connects distant economies. But today, the maritime industry that depends on it is caught in rough seas. As trade slows and costs climb, shipowners and port operators face a difficult question—how do you stay afloat *and* stay green?

Over the past few years, the cost of moving goods across oceans has quietly soared. From rising fuel prices and carbon levies to new environmental regulations, doing business at sea is more expensive than ever. Geopolitical tensions, shifting trade routes, and consumer demand downturns have all added to the strain. For many shipping companies, profit margins are thinning just as global expectations for sustainability are thickening.

"Everyone agrees we need cleaner ships," says a South Asian ship operator, "but when freight volumes drop and costs rise, it's hard to convince owners to invest millions in green fuels." His words echo across ports from Singapore to Rotterdam, where dockside cranes move fewer containers and investment in decarbonization projects slows.

The maritime world is under pressure to transform. The International Maritime Organization's (IMO) new emission goals call for cutting shipping's greenhouse gas output by 20–30% by 2030—a bold step toward a zero-carbon future. Yet, for many smaller operators, this transition feels like a luxury they can't afford right now. Switching to cleaner fuels such as methanol or ammonia, or retrofitting vessels to meet stricter emission standards, comes with high upfront costs and uncertain payoffs.

But the story isn't all storm clouds. Some companies are treating this slowdown as a chance to reset. Industry leaders like Maersk and CMA CGM are still investing in dual-fuel vessels, betting that the world will soon demand cleaner freight options. They see sustainability not as a burden, but as a bridge to future competitiveness.

The maritime industry's green journey mirrors the ocean itself—slow, powerful, and relentless. Trade may be slowing, and costs may be rising, but the tide toward sustainability has already turned. For the industry's stewards, the challenge now is to ride that wave, even when the waters are rough. Because when the world begins to trade at full speed again, those who stayed the course will be leading the fleet.

WAVES OF PROGRESS: BCG ANCHORS A NEW ERA OF MARITIME GROWTH

By Captain Mohammad Assaduzzaman

"The ocean is the lifeblood of our planet—it produces the oxygen we breathe, sustains billions of people, and drives global prosperity. The future of our well-being depends on how we protect this vital resource from harm." — Adapted from António Guterres, United Nations Secretary-General

GUARDIANS OF GROWTH

For Bangladesh, the sea has never been just a border — it has always been a bridge. With 710 kilometers of coastline and an Exclusive Economic Zone (EEZ) stretching across nearly 118,813 square kilometers, the ocean represents both opportunity and obligation. And standing at the center of this vast frontier is the Bangladesh Coast Guard (BCG) — an institution that has evolved from a modest law enforcement agency into a key player in the nation's economic transformation.

"Strengthening the Bangladesh Coast Guard is not merely a matter of security — it is an investment in growth," writes Captain Mohammad Assaduzzaman of Bangladesh Coast Guard. *"A modern, capable Coast Guard can transform our maritime frontier into a domain of prosperity, security, and sustainable development."*

BUILDING CONFIDENCE, BUILDING SHIPS

Over 90% of Bangladesh's international trade flows through maritime routes. Each container vessel leaving Chattogram carries more than just goods — it carries the quiet assurance of the Coast Guard's vigilance. The safety and stability BCG provides have become the foundation on which Bangladesh's shipbuilding industry has found new strength.

Secure sea lanes mean lower insurance premiums, faster vessel

turnaround, and greater investor confidence. These conditions have encouraged local shipbuilders like Ananda Shipyards, Khulna Shipyard, and Western Marine to expand capabilities and compete globally. By keeping piracy, smuggling, and illegal fishing under control, the Coast Guard has created the stability required for long-term industrial investment.

"Every taka invested in maritime security generates multiple returns," says Captain Assaduzzaman. *"From trade reliability to sustainable resource use, the Coast Guard transforms safety into prosperity."*

A MARITIME MULTIPLIER

Between 2022 and 2024, the Coast Guard seized 57 million Yaba tablets, 11.7 kilograms of crystal methamphetamine, and apprehended over 800 offenders, crippling transnational crime networks and safeguarding legitimate trade. These enforcement actions not only secure the nation's coastline but also strengthen investor trust in the maritime industry — including shipbuilding and offshore logistics.

The Coast Guard's work extends into environmental protection, a cornerstone of sustainable industry. In December 2022, when the Sagar Nandini-2 oil spill threatened Bhola's fragile coastline, the Coast Guard led a rapid containment and cleanup effort, preventing large-scale ecological damage. Their environmental vigilance ensures that shipyards and ports remain compliant, maintaining Bangladesh's reputation as a responsible maritime nation.

TECHNOLOGY MEETS TIDE

The modernization of BCG has been transformative. Through the Bangladesh Satellite-1 (BS-1) network, communication between headquarters and patrol vessels is now real-time. The use of unmanned aerial vehicles (UAVs)and coastal radars has expanded Maritime Domain Awareness (MDA), creating a digital shield around Bangladesh's waters.

For shipbuilders, this network translates into predictability — the ability to plan, deliver, and deploy vessels without fear of disruption. It also allows collaboration between defense and industry, as BCG's fleet modernization demands high-quality local builds, spare parts, and maintenance infrastructure — all of which fuel growth in the shipbuilding sector.

The Coast Guard's demand for Offshore Patrol Vessels (OPVs), interceptor boats, and UAV-assisted patrol systemsopens up opportunities for Bangladeshi shipyards to localize production, boosting technology transfer and skilled employment.

RESCUE, RELIEF, AND RELIABILITY

Beyond economics, the Coast Guard's humanitarian work strengthens public faith in maritime governance. Between 2022 and 2024, over 870 fishermen and maritime personnel were rescued from distress situations — including the dramatic MV Green Line-1 rescue in December 2023. These missions reinforce BCG's identity as a protector of people and property, ensuring that the maritime economy remains both productive and humane.

When storms batter the Bay, it is often the Coast Guard that responds first — saving lives, securing vessels, and maintaining port operations. Their presence ensures that Bangladesh's maritime industries can rebound quickly from natural disasters — a resilience that global investors value.

NAVIGATING CHALLENGES

However, progress doesn't sail without headwinds. Limited funding restricts acquisition of modern vessels and surveillance systems. Jurisdictional overlaps between agencies — Customs, Navy, and Police — create operational friction. And without a comprehensive Integrated Maritime Security Policy, enforcement remains fragmented across territorial and EEZ waters.

"Some high-threat areas remain under-monitored due to infrastructure limitations," Captain Assaduzzaman notes. *"We must develop new coastal bases with maintenance docks, logistics hubs, and command centers integrated through secure communication systems."*

He also highlights the need for Maritime Patrol Aircraft (MPA) and dedicated intelligence frameworks to improve response times and situational awareness — crucial for protecting national and industrial assets.

BLUEPRINTS FOR A STRONGER SEA FORCE

To sustain its momentum, the Coast Guard's roadmap focuses on four priorities:

1. **Strategic Base Development:** Expanding presence near major sea routes and smuggling corridors.
2. **Fleet Modernization:** Investing in OPVs, high-speed interceptor boats, and autonomous platforms.
3. **Smart Surveillance:** Integrating AI-driven radar, thermal-imaging UAVs, and unified information centers.
4. **Human Capital:** Enhancing professional training and inter-agency coordination.

These upgrades will not only strengthen maritime law enforcement but also stimulate domestic shipbuilding demand. Each vessel commissioned represents new work for local yards — and every skilled technician trained for the Coast Guard strengthens the national talent pool for future marine manufacturing.

ECONOMIC TIDES RISING

Bangladesh's fisheries sector contributes over 3% to GDP, sustaining millions of livelihoods. By curbing illegal, unreported, and unregulated (IUU) fishing, the Coast Guard preserves food security and ensures fair competition for legal operators.

Equally, safe ports and secure sea lanes attract global investors to projects like the Payra Deep Sea Port and private shipyards supplying regional fleets. The Coast Guard's consistent enforcement has kept piracy incidents at record lows — from 16 cases in 2014 to just one in 2023 (ReCAAP Report) — signaling to global insurers that Bangladesh is a reliable maritime hub.

THE BLUE ECONOMY CONNECTION

A strong Coast Guard is more than a defense asset — it is an economic catalyst. By ensuring a safe maritime environment, the BCG underpins Bangladesh's ambitions in offshore energy, marine biotechnology, and shipbuilding exports. Confidence in maritime safety drives foreign investment and encourages collaboration between government, defense, and private industry.

"A secure maritime domain inspires investor confidence in port development, shipbuilding, and offshore ventures," Captain Mohammad Assaduzzaman writes. *"The Coast Guard stands as a strategic economic enabler — transforming maritime safety into national prosperity."*

This synergy is already visible. Local shipbuilders are now designing multi-purpose patrol vessels and high-speed craft for both defense and commercial clients. In turn, these innovations support BCG's modernization drive — a virtuous cycle where security fuels industry, and industry strengthens security.

THE FUTURE: WAVES OF POWER, WAVES OF WEALTH

As Bangladesh advances toward Vision 2041, maritime power will increasingly define its destiny. The Coast Guard's evolution reflects that national trajectory — from reactive patrols to proactive stewardship of the nation's blue wealth.

"Our maritime destiny depends on our ability to secure, sustain, and harness the sea's potential," Captain Mohammad Assaduzzaman affirms. *"Investing in the Coast Guard is investing in Bangladesh's blue future."*

In that vision, the shipbuilding industry is not just a partner — it is a pillar. Each new hull built in Narayanganj, Chattogram, or Khulna is a testament to Bangladesh's growing self-reliance at sea. Together, the Bangladesh Coast Guard and the nation's shipbuilders are charting a course toward something larger — a future where prosperity and protection sail side by side.

Because in the end, the waves that guard us are the same waves that grow us.

This article is specially contributed to Navigator Bangladesh by Captain Mohammad Assaduzzaman, (G), afwc, psc, BN (P No 1212), Bangladesh Coast Guard.

Regulatory

OUR OCEAN, OUR OBLIGATION, OUR OPPORTUNITY: WHY WORLD MARITIME DAY 2025 MATTERS TO ALL OF US

Every year, on the last Thursday of September, people around the world take a moment to celebrate World Maritime Day. It might sound like a day just for sailors and shipping companies, but it's really a day for everyone—because the ocean touches all our lives.

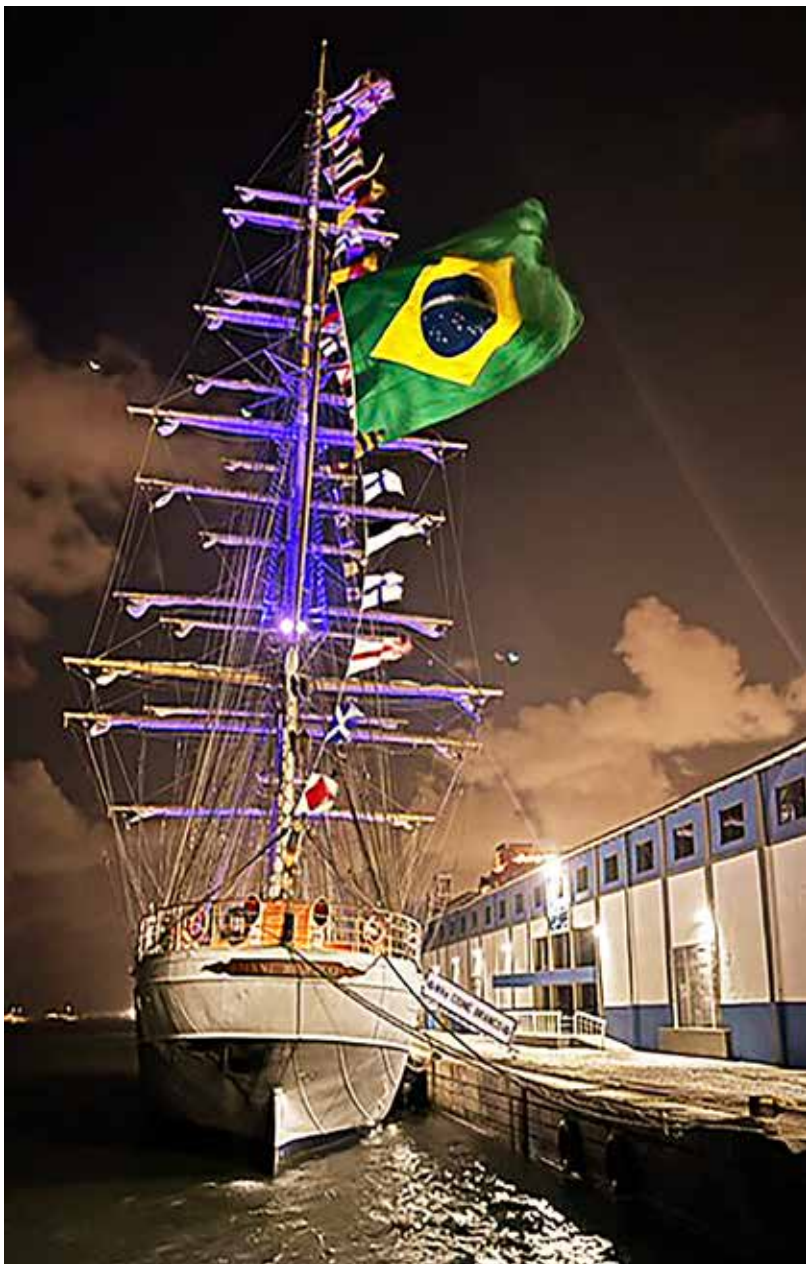
This year, on September 25, 2025, the theme is clear and urgent: "Our Ocean, Our Obligation, Our Opportunity." It's a reminder that the ocean isn't just a vast blue space out there—it's the lifeblood of our planet, supporting billions of people, driving global trade, and regulating our climate. And it's up to us to care for it.

WHY SHOULD WE CARE ABOUT SHIPPING?

Believe it or not, over 80% of everything we buy and sell crosses the ocean by ship. From the food on our plates to the clothes we wear, shipping is the quiet engine that keeps the world moving. But with that comes a huge responsibility. The shipping industry uses more ocean space than any other sector, and that means it has to be part of the solution to protect marine life, reduce pollution, and fight climate change.

LEADERSHIP WITH HEART: THE INTERNATIONAL MARITIME ORGANIZATION (IMO)

At the heart of these efforts is the International Maritime Organization, or IMO—the global body that sets the rules



areas beyond any country's borders—places often called the "last frontier" of our planet.

At a recent UN Ocean Conference in Nice, countries pledged to support sustainable maritime industries and invest in a "blue economy" that helps both people and the planet thrive.

And the fight against plastic pollution is gaining steam, with new agreements in the works to stop plastic waste from ships polluting our seas.

UN Secretary-General António Guterres captured the spirit of the day:

"Let us reaffirm our obligation to safeguard the ocean and those who depend on it."

WHAT'S IMO DOING TO HELP?

IMO is already making big moves:

- Tackling marine plastic pollution with a new action plan aimed at cutting plastic waste from ships and fishing vessels.
- Protecting ocean biodiversity by creating rules to stop invasive species hitching rides on ship hulls.
- Pushing for a net-zero future by proposing new fuel standards and emission pricing to cut greenhouse gases from shipping.
- Reducing harmful air pollution, especially in the Mediterranean Sea, where strict fuel rules are helping cleaner air and healthier communities.
- Ensuring old ships are recycled safely, protecting workers and the environment.

for shipping. IMO's Secretary-General, Arsenio Dominguez, puts it simply:

> "We don't want the shipping industry to be the problem. We want it to be the solution."

IMO brings together governments, businesses, scientists, and communities to create global rules that protect both the ocean and the people who work at sea.

REAL PROGRESS, REAL HOPE

This year, the world is making big strides. Soon, an important new treaty called the High Seas Treaty will come into force, protecting marine life in the vast ocean

Photo: Internet

- And even addressing underwater noise pollution, which can disturb marine life.

INSPIRING TOMORROW'S OCEAN CHAMPIONS

Protecting the ocean isn't just for today's leaders. It's a mission for the future—especially young people. This year, IMO teamed up with UNESCO and the Universal Postal Union to invite young writers around the world to share their thoughts on the ocean's beauty and challenges.

The voices of the winners—from Türkiye, Viet Nam, and Burkina Faso—remind us how deeply the ocean touches people's hearts, no matter where they live.

HOW CAN WE CELEBRATE?

World Maritime Day is also a celebration! The IMO headquarters will glow with blue light—a symbol of unity and hope. Many countries and organizations will light up famous landmarks in blue too, showing the world that caring for the ocean is a shared mission.

There's also a special screening of *"Ocean with David Attenborough"* planned, bringing the wonders and fragility of the sea to life.

And online, you can join the conversation by sharing posts and stories with the hashtag #WorldMaritimeDay. Whether you're a sailor, a scientist, or just someone who loves the sea, there's a place for you in this global movement.

OUR OCEAN, OUR RESPONSIBILITY—AND OUR CHANCE

The ocean is more than just water. It's a source of life, a connector of people and places, and a regulator of our planet's climate. It's also fragile and facing big challenges.

This World Maritime Day, we're reminded that our ocean is a shared responsibility. It's up to all of us—governments, businesses, communities, and individuals—to protect it.

At the same time, it's an incredible opportunity. By working together, embracing innovation, and making smarter choices, the maritime community is steering us toward a future where the ocean can thrive—and so can we.

So next time you see a ship on the horizon or hear the waves at the shore, remember: the ocean connects us all. And it's in our hands to keep it healthy, vibrant, and full of life.

Source and picture: International Maritime Organization (IMO)

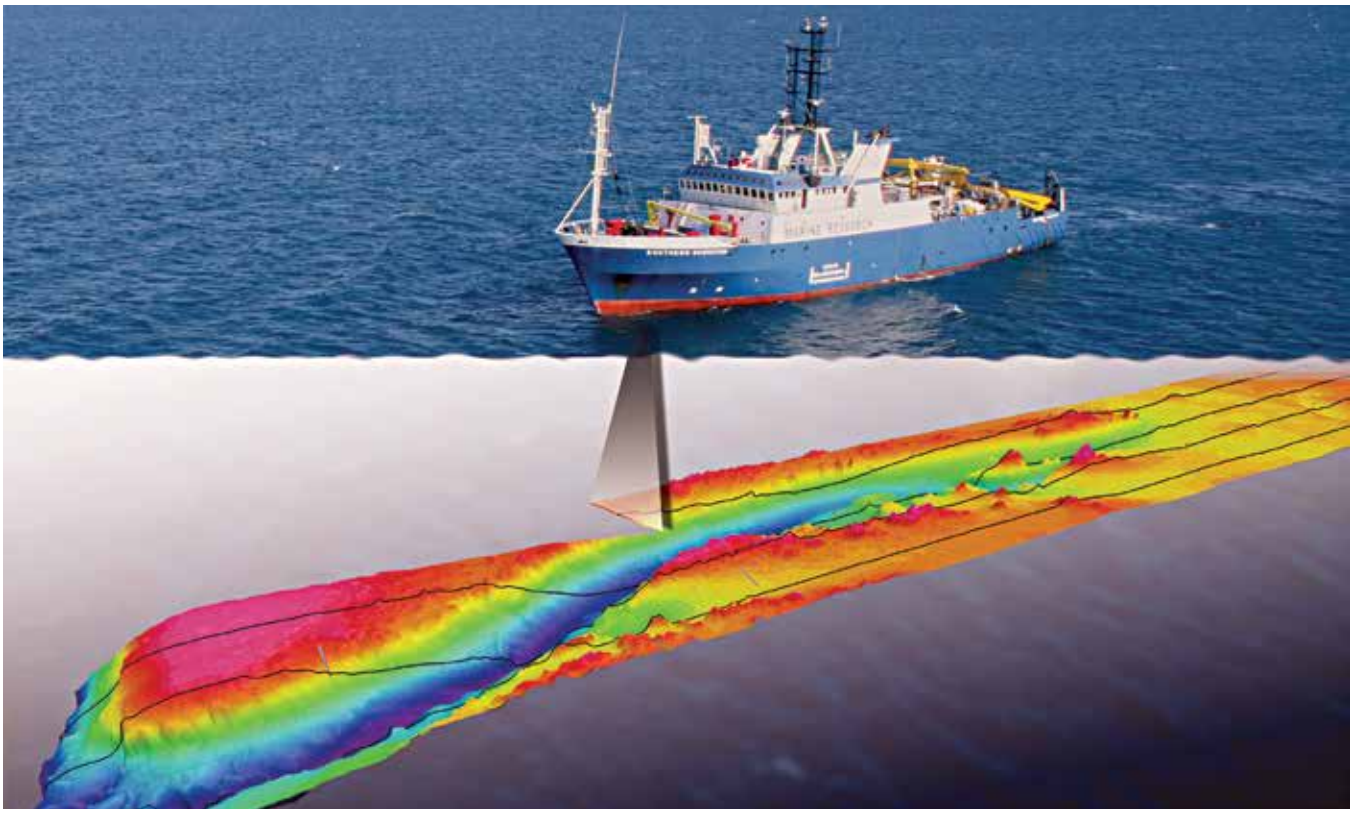


Photo: Internet

HOW NEW TECHNOLOGIES ARE CHANGING BANGLADESH'S MARITIME FUTURE IN 2025

Bangladesh is making big strides in its maritime world. With thousands of kilometers of rivers and a long coastline along the Bay of Bengal, the country's waterways are vital to its economy and people. This year, 2025, is proving to be a turning point as Bangladesh embraces new marine technologies to make shipping, port operations, and coastal management safer, cleaner, and more efficient.

The government, along with the Bangladesh Inland Water Transport Authority (BIWTA) and the Navy, is adopting fresh tools and systems to keep up with growing demands and environmental challenges. Here's a look at the top five ways technology is reshaping the country's maritime scene:

1. BETTER MAPS BENEATH THE WATER

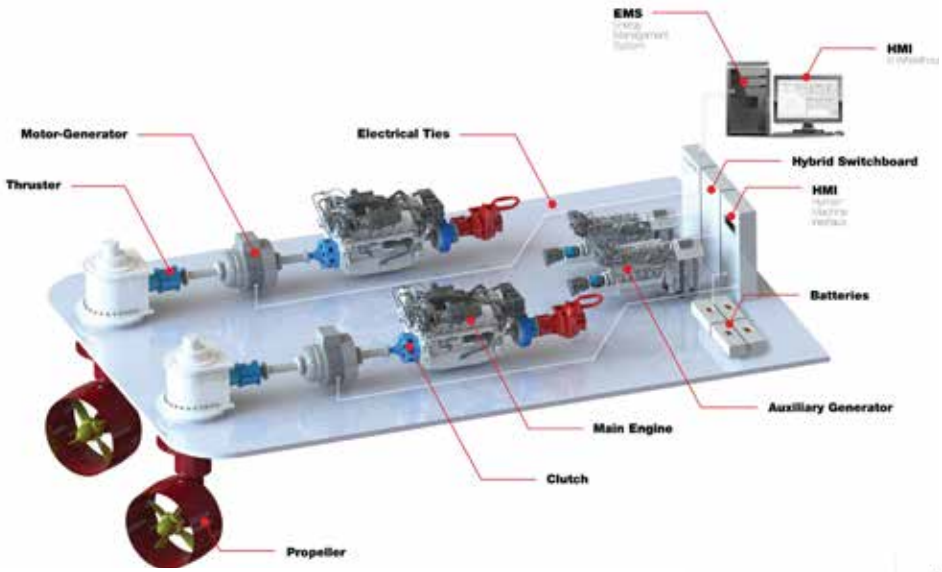
Knowing what lies beneath the surface is key to safe sailing and planning. Bangladesh's rivers and coastline change with tides and floods, so detailed seabed maps are more important than ever. Agencies are using advanced tools like Multibeam Echo Sounders (MBES), GPS systems, and sonar to get clear pictures of the underwater terrain.

These technologies help with safe navigation, dredging to keep channels open, and building ports that can withstand weather and rising sea levels. Local companies like Celestial Tech are helping bring these tools to life, making sure Bangladesh's waters are better understood and safer to navigate.

2. CLEANER ENGINES FOR A GREENER FUTURE

The world is pushing to cut pollution, and Bangladesh is joining in. Instead of relying only on traditional diesel engines, the country is testing hybrid electric engines and solar-powered systems for ferries and smaller boats. These greener options use less fuel and produce fewer emissions, helping protect the environment.

Governments and ports are looking at ways to update old vessels with these cleaner technologies. Engine makers like Volvo Penta are offering hybrid models that combine power with a lighter environmental footprint, a perfect fit for



Bangladesh's busy waterways.

3. SMARTER NAVIGATION AND SAFETY SYSTEMS

Busy ports like Chattogram and Mongla are getting digital upgrades. Systems like AIS transponders, electronic charts, marine radars, and cameras that work at night are being installed to keep ships safe and avoid accidents.

These tools give port operators better visibility and control, which is crucial in crowded waters. With smarter navigation systems, Bangladesh can handle more traffic without compromising safety.

4. FAST, AGILE BOATS FOR EVERY NEED

Bangladesh's rivers and coastal areas require boats that are quick, nimble, and able to operate in shallow waters. The government is investing in modern patrol and survey boats designed for tasks like mapping the seabed, enforcing laws, rescue missions, and monitoring the coast.

These new vessels are built with lightweight materials, use waterjets for speed, and have features to make crews more comfortable on rough waters. Projects like those from Celestial Tech show how Bangladesh is growing its shipbuilding capabilities to meet these needs.

5. KEEPING EQUIPMENT RUNNING SMOOTHLY WITH SMART MONITORING

Downtime is costly, especially when it comes to engines and generators that keep ports and ships running. To fix problems before they happen, Bangladesh is turning to remote monitoring systems that track equipment health in real time.

Using sensors and cloud technology, operators get instant alerts if something isn't right. This helps them plan maintenance before a breakdown occurs, saving time and money. It's a modern approach that's catching on fast, especially for important machines used across ports and naval facilities.

LOOKING AHEAD: SMARTER, SAFER, AND GREENER SEAS

Bangladesh's maritime sector is clearly on the move. These new technologies don't just mean better tools—they represent a shift in how the country thinks about the sea and its role in the economy.

For boat operators, port managers, and industry players, staying updated with these trends is crucial. It means safer voyages, cleaner waters, and a stronger maritime economy that can weather future challenges.

With ongoing innovations in technology and a growing focus on sustainability, Bangladesh is well on its way to becoming a modern maritime nation—ready to protect its waters and use them wisely for generations to come.

Information and picture: celestial-tech.net

Company Profile

GUANGXI YUCHAI MARINE & GENSET POWER CO. LTD (YCMGP)

WHERE INDUSTRIAL LEGACY MEETS THE INTELLIGENT FUTURE

In an era when artificial intelligence is reshaping industries, few traditional engineering brands have managed to evolve as seamlessly as YUCHAI. Born from the deep industrial heritage of Yuchai — a global powerhouse in diesel and marine propulsion engines — YUCHAI stands at the crossroads of mechanical precision and digital innovation. The company embodies China's transformation from manufacturing strength to smart industrial leadership, integrating data, automation, and sustainability into the very core of heavy engineering.

FROM STEEL AND SMOKE TO SENSORS AND SOFTWARE

Yuchai's story is inseparable from the development of Asia's power and marine sectors. For decades, the company has powered fishing fleets, cargo ships, and industrial engines across continents with a reputation built on endurance and engineering discipline. Its marine propulsion engines, ranging from compact 25 Ps units to massive 4000 Ps systems, became benchmarks of performance across Southeast Asia and beyond.

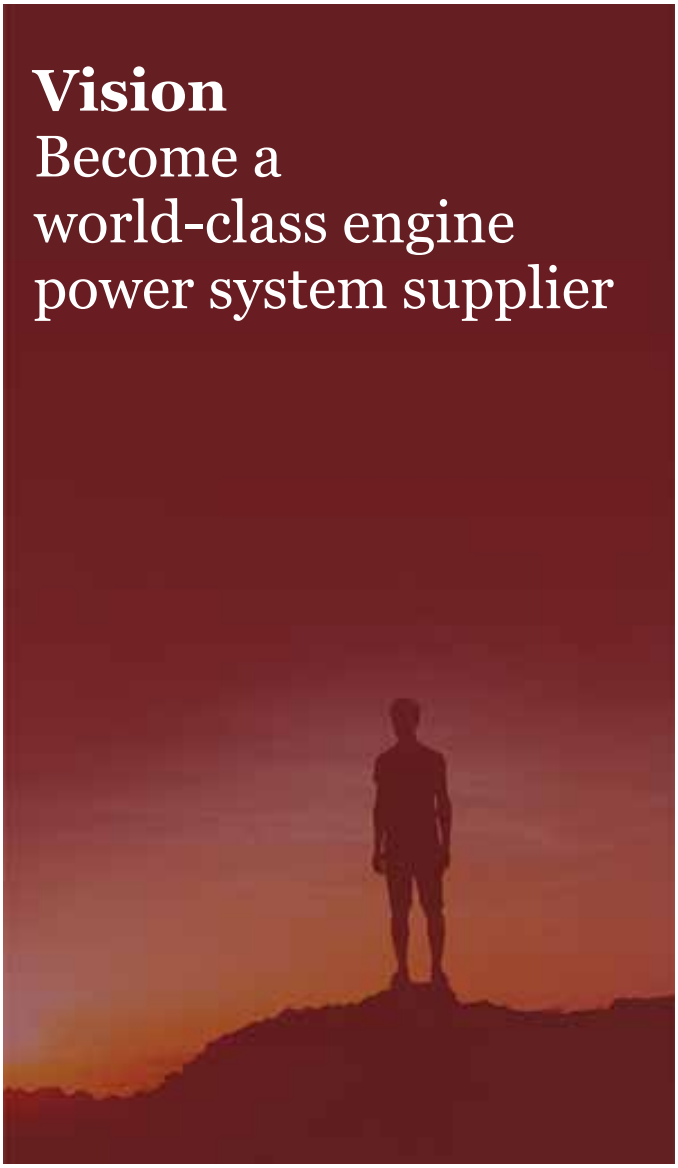
Yet in recent years, a silent revolution has taken shape. YUCHAI, a forward-looking arm of this legacy brand, has been quietly rewriting what "power engineering" means in the 21st century. By blending the mechanical expertise of Yuchai with the predictive and adaptive capabilities of artificial intelligence, the company is building a future where every engine isn't just powerful — it's *intelligent*.

THE INTELLIGENCE LAYER: PREDICTIVE POWER AND EFFICIENCY

At its core, YUCHAI's transformation lies in data. Through AI-driven monitoring, the company's propulsion and diesel systems can now predict wear, optimize fuel consumption, and even recalibrate output in real time based on load conditions and environmental factors. The result is a significant leap in operational efficiency — not only extending engine life but also reducing emissions and fuel costs.

In a global market increasingly governed by carbon targets, this innovation is not just about performance — it's about survival. "The next phase of industrial power will be measured by intelligence, not horsepower," says one YUCHAI executive. "We are engineering systems that think, learn, and sustain themselves."

The company's marine propulsion engines already span a power coverage of **25 Ps to 4000 Ps**, across 20 series designed for fishing vessels, commercial ships, and industrial applications. Its diesel generators, with coverage between **16 kW and 2000 kW**, now come embedded with YUICHAI's proprietary digital modules that track temperature gradients, vibration, and efficiency metrics through real-time analytics. This fusion of old-world engineering with cutting-edge AI is redefining reliability.



SUSTAINABILITY AS SMART ENGINEERING

YUCHAI's embrace of artificial intelligence is more than a technical upgrade — it's a philosophical shift. The company's innovation strategy is deeply tied to environmental stewardship, aiming to align industrial growth with sustainability goals.

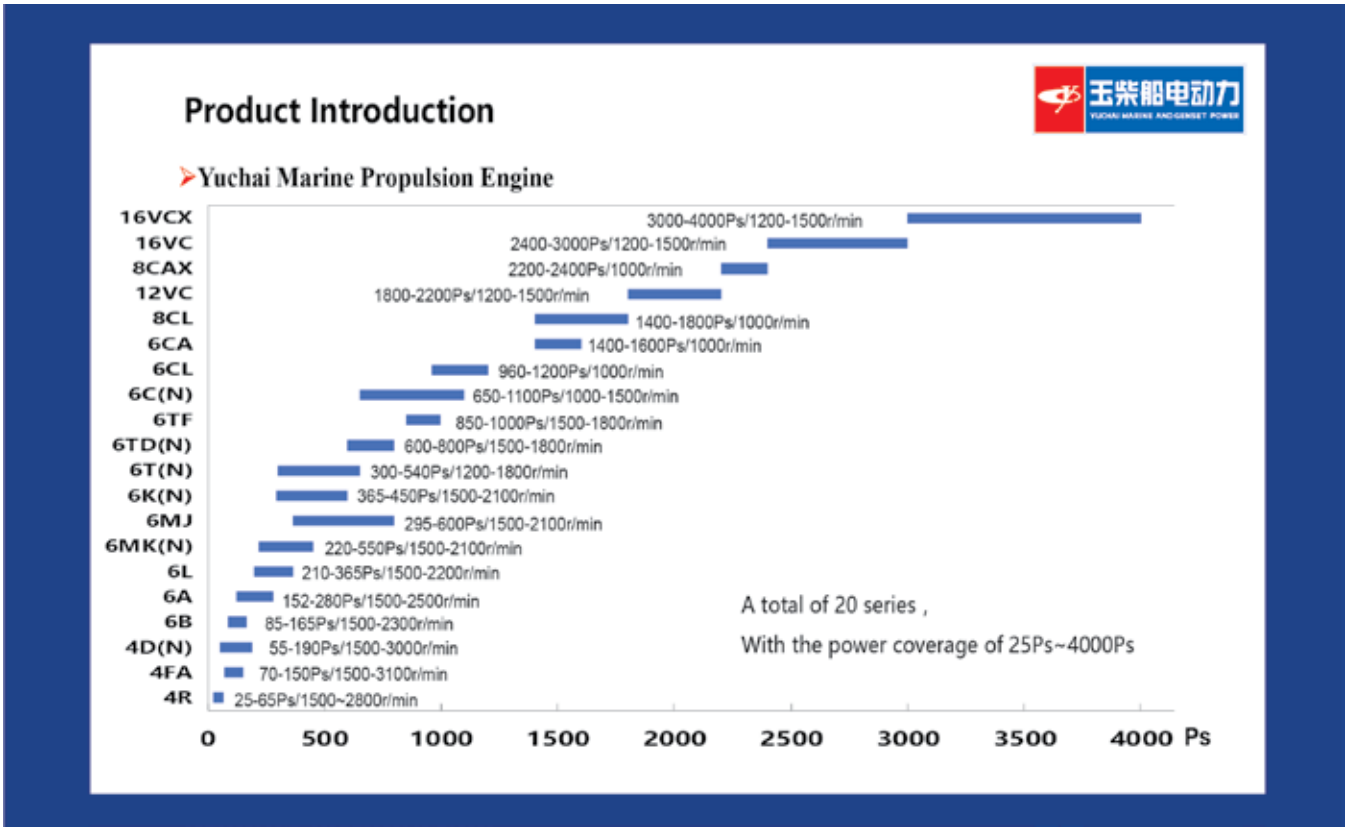
The brand's intelligent power systems now feature dynamic emission monitoring and automatic calibration that ensures compliance with global environmental standards. This technology reduces both operational waste and carbon footprint, particularly in high-demand sectors like shipping and heavy manufacturing.

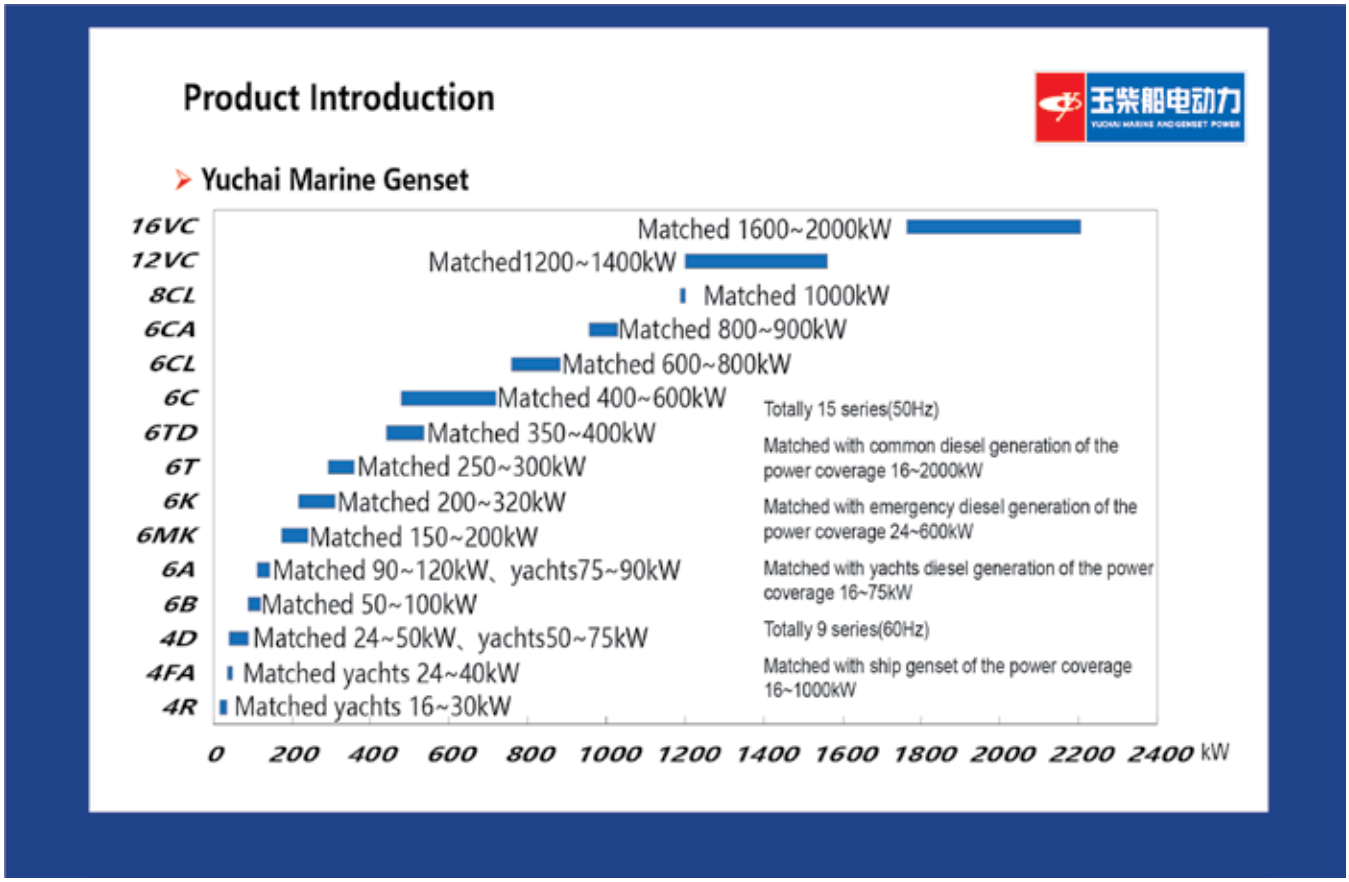
In many ways, YUCHAI is creating a new category: *smart mechanicals* — engines and power systems that sense, analyze, and self-correct. This transformation places the company in a rare position: rooted in heavy industry but agile enough to thrive in the era of automation.

A GLOBAL ENGINE WITH LOCAL INTELLIGENCE

While the company's physical footprint extends across Asia, YUCHAI's technological reach is global. The firm's R&D collaborations with universities and AI labs are pushing boundaries in applied machine learning for industrial contexts. These collaborations are producing smarter algorithms capable of analyzing thousands of operational variables per second, identifying micro-inefficiencies that human monitoring might miss.

At the same time, YUCHAI retains Yuchai's time-tested approach to craftsmanship and customer trust. From local fishing communities in coastal Bangladesh to large-scale cargo operations in the Middle East, its products have become synonymous with reliability. The fusion of traditional mechanical resilience with digital oversight ensures that clients receive engines that are both strong and self-aware — a dual advantage few competitors can claim.





REIMAGINING THE FUTURE OF INDUSTRIAL POWER

What makes YUCHAI's evolution particularly notable is its refusal to discard its roots. Instead of replacing its engineering foundation, the company has built on it — adding layers of intelligence, connectivity, and automation. This hybrid strategy ensures that the firm's future remains tied to the tangible world of metal and motion, even as it ascends into the intangible domain of data and algorithms.

As global markets shift toward electrification and intelligent manufacturing, YUCHAI's adaptive approach could become a blueprint for legacy industries navigating digital transformation. Its integration of AI into diesel and marine propulsion systems signals a larger industrial metamorphosis: one where machines are no longer passive tools but active partners in production and performance.

THE POWER OF CONTINUITY AND CHANGE

In a sector often perceived as resistant to change, YUCHAI demonstrates that innovation doesn't have to come at the cost of identity. Its journey from traditional engine maker to intelligent solutions provider exemplifies how legacy and technology can coexist — and even amplify each other.

As industries around the world race to digitize, YUCHAI stands as proof that the future of power lies not in abandoning the past but in reimagining it through intelligence. In its factories, the hum of diesel engines now harmonizes with the rhythm of data — a symphony of continuity and change, signaling that the age of smart engineering has truly arrived.

COATING THE FUTURE — INSIDE HEMPEL'S MARINE PAINT INNOVATIONS

For more than a century, **Hempel** has been synonymous with protection — of ships, structures, and the oceans they cross. Founded in Denmark in 1915 by J.C. Hempel, the company pioneered ready-made marine paints that redefined maintenance efficiency for vessels worldwide. Today, with cutting-edge R&D centers and a global manufacturing presence, Hempel continues to lead the way in **high-performance coatings engineered for sustainability, fuel efficiency, and corrosion resistance**.

The **Hempel Marine Product Range** is not just about color — it's about **performance chemistry**, **environmental responsibility**, and **engineering precision**. Below, we dive into some of their standout products and systems, as featured in the latest Marine Reference Guide for North America.

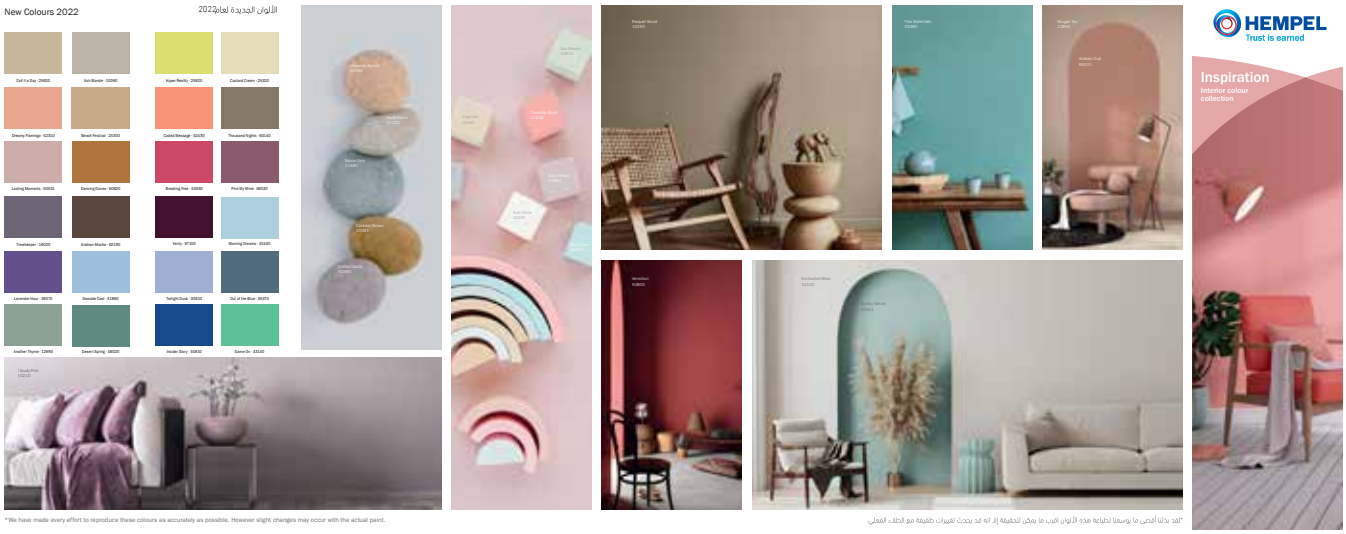
1. FOULING DEFENSE AND FOULING RELEASE SYSTEMS

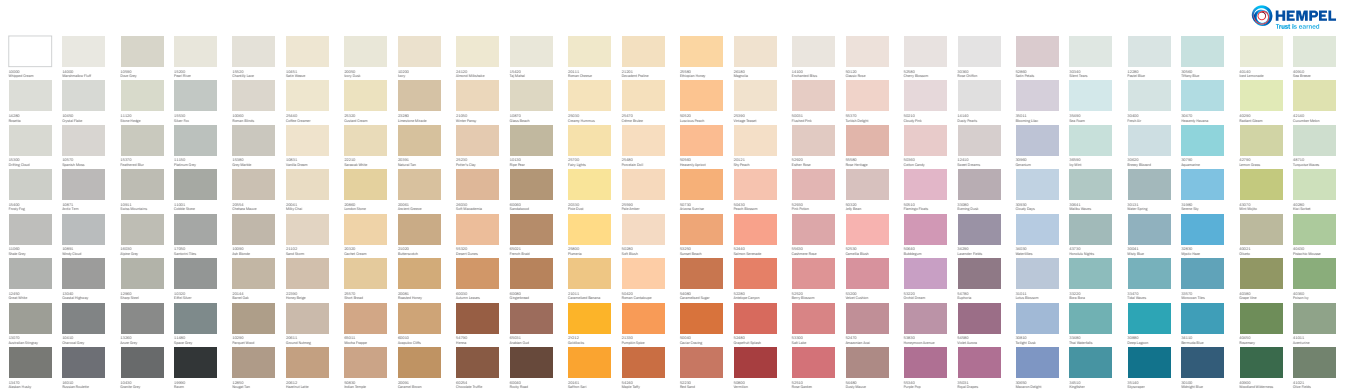
Hero Product: Hempaguard X8 & X7 (Actiguard ® Technology) These flagship coatings combine hydrogel silicone and biocide technologies to prevent biofouling across all trading patterns.

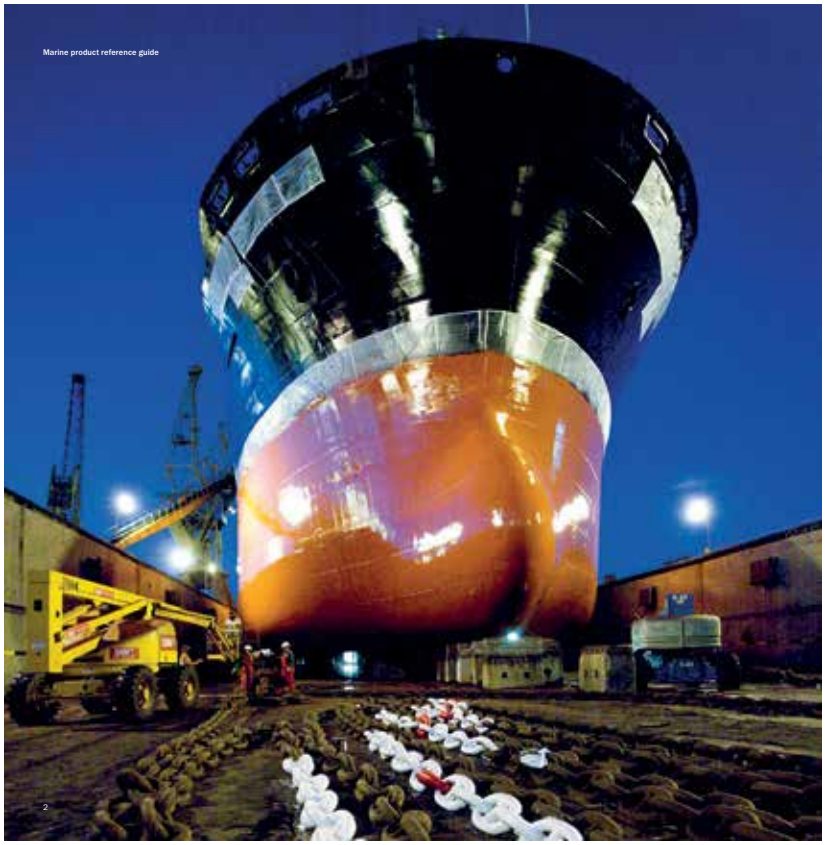
- **Key Benefit:** Up to **90-month service intervals** and **120 idle days** — minimizing drydock time.
- **Performance Edge:** Reduces drag, saving up to 8% in fuel costs annually.
- **Application:** Ideal for ships in global or variable routes, including idle operations.

Also Notable:

Hempasil X3+ — a biocide-free fouling release solution built







on hydrogel innovation.

- *Hempasil Helix 77000* — specialized for propellers and rudders, ensuring smooth rotation and reduced cavitation.

Editorial Verdict: *"Hempaguard has become the benchmark for fuel efficiency coatings. Its hybrid approach — merging silicone flexibility with biocide defense — defines the new generation of eco-conscious marine solutions."*

2. ANTIFOULING SOLUTIONS

Hero Product: Globic 9500 Series (Nano Acrylate SPC) Hempel's *Globic* line uses **Nano Acrylate Technology (NAT)** and **microfiber reinforcement** for low friction and self-smoothing action.

- **Highlights:**
  - Long drydock intervals up to **90 months**.
  - Best-in-class mechanical strength and self-polishing control.
  - Ideal for deep-sea and slow-steaming vessels.
- **Variants:**
  - *Globic 9500 M/S* for mixed and slow trades.
  - *Dynamic 9000/8000* for aggressive trading and fast routes.

Eco Advantage: Tin-free and compliant with international biocide regulations, these coatings reduce environmental impact while maximizing hull smoothness.

Editorial Verdict: *"A masterclass in controlled polishing — Globic's antifouling system embodies the future of sustainable performance without compromise."*

3. ANTI-CORROSIVE AND EPOXY COATINGS

Hero Product: Hempadur Quattro XO 17820 An all-purpose **universal epoxy** with exceptional resistance to seawater and abrasion.

- **VOC:** Just 190 g/L (low-emission formulation).
- **Dry Film Thickness (DFT):** 125 µm — a tough, versatile layer adaptable for multiple ship zones.
- **Applications:** Water ballast tanks, cargo areas, and high-wear surfaces.

Other Highlights:

- *Hempadur Mastic 45880/45881* — surface-tolerant coatings that cure even in humid or low-temperature conditions.
- *Hempadur EM 35740* — an ultra-high solids epoxy for eco-conscious shipyards.

Editorial Verdict: *"Hempadur's toughness is legendary — the coatings resist corrosion in ways that feel over-engineered, yet essential for today's unpredictable seas."*

4. FINISHING COATS AND AESTHETIC LAYERS

Hero Product: Hempathane HS 55610 (High-Build Polyurethane) A direct-to-metal, high-gloss finish that's as practical as it is beautiful.

- **Strength:** Zinc phosphate formulation ensures corrosion resistance.
- **Versatility:** Suitable for hulls, decks, and structural steel.
- **Durability:** Retains gloss and color even under harsh UV and salt exposure.

Other Finishes Worth Noting:

- *Hempatex Enamel 56360* — a semi-gloss acrylic enamel with outstanding gloss retention.
- *Hempaxane Light 55030* — a polysiloxane enamel that withstands severely corrosive atmospheres.

Editorial Verdict: *"Hempel understands that aesthetics are part of performance — a gleaming hull is also a more efficient one."*

5. SPECIALTY COATINGS FOR CARGO, BALLAST & POTABLE TANKS

Hero Product: Hempadur 15500 (Phenolic Epoxy Tank Lining) Designed for **chemical and cargo tanks**, this novolac-based epoxy offers broad chemical resistance and temperature durability up to 205°C.

Complementary Linings:

- *Hempadur Multi-Strength 35530* — NSF/ANSI-certified for potable water tanks.
- *Hempadur GF Epoxy 3587A* — glass-flake reinforced for abrasion-heavy cargo conditions.

Editorial Verdict: *"In a marketplace obsessed with speed, Hempel's tank coatings focus on longevity — protecting the hidden interiors that keep global trade afloat."*

6. DECKS, TOPSIDES & SUPERSTRUCTURES

From heavy-duty epoxies like *Hempadur OBM 47150* to decorative topcoats like *Hempalin Enamel 52140*, Hempel's range ensures durability from deck to mast.

- Anti-skid textures available via *Hempel's Anti-Slint 67500*.
- *Hempadur Mastic* series remains a trusted solution for deck maintenance and repaint cycles.

HEMPEL TODAY: GLOBAL REACH, LOCAL EXPERTISE

Hempel operates through regional offices in the **USA, Canada, and Mexico**, ensuring marine professionals have access to both technical service and rapid product availability. The brand's **Multi-tint® system** allows for color customization across international standards like RAL and British Standard 381C — a signature that blends engineering with aesthetics.

Product Review

RAINBOW PAINT

Description: Marine Synthetic Enamel is a premium quality solvent based finish coat. It is developed by high quality synthetic resin and true pigment. This paint has ultra violet resistance formula and ensures long lasting performance.

AREA OF APPLICATION:

It is used on all iron & steel.

TECHNICAL INFORMATION:

Viscosity : 100 - 120 Seconds/BSB4/30°C

Gloss : High Gloss

Pot Life : 3 Hours approx. (After mixing)

Thinner : Rainbow T-6 Thinner

Thinning Ratio :

10-20 % (Approx. for brush application)

30-40 % (Approx. for spray application)

Coverage : 140-160 Sft / Liters. (On non-absorbent surface)

Recommended DFT : 45-50 Microns / Coat

Flash Point : Above 70° F

DRYING TIME:

Surface Dry : 1 Hours – 1.5 Hours Recoat Ability: 16-18 hrs Full Cure : Less than 24 hours

SHELF LIFE:

One year in sealed container when kept in cool and dry place.

PACK SIZE:

3.64 ltr, 18.2 ltr

SHADE:

RAL Shades

SURFACE PREPARATION:

Surfaces should be clean, dry and free from oil, grease and contaminants before painting. For previously painted surfaces, remove all unstable paint film, loose chalk, dust and foreign matter. Repair any surface defects, clean off and dry. Avoid painting on the substrate with high moisture content. Avoid painting when the environment relative humidity exceeds 85%, or when the surface to be painted is less than 3°C above the dew point.

APPLICATION METHOD:

Brush/ Roller: Thin up 10-20% of thinner is recommended for brush and roller application. Good quality brushes and mohair/ short nap rollers should be used with full strokes. Avoid re-brushing. Additional coats may be required to achieve minimum specified film thickness.

Spray: Thin up 30-40% of thinner for conventional spray application. When airless spray is being used, excessive high tip spraying pressure should be avoided. The minimum pressure at the pump conducive with good atomisation should be used.

Safety Precautions:

• Keep container tightly closed and keep out of reach children or away from food and drink.

• Ensure good Ventilation during application and drying.

• When applying paint, it is advisable to wear eye protection.

• In case of contact with eye, rinse with plenty of water immediately and seek medical advice.

• Remove splashes from skin by using soap or water.

• Paint must always be stored in a cool place.

• When transporting paint, care must be taken. Always keep container in a secure upright position.

• Dispose of any paint waste in accordance with the appropriate Environment Quality Regulations.

Disclaimer: Above information is best to our knowledge. However we do not make any warranty for it. For accuracy please conduct your own trial and tests. For more information please contact our sales person nearest to you.

SMART PORTS: IS BANGLADESH READY?

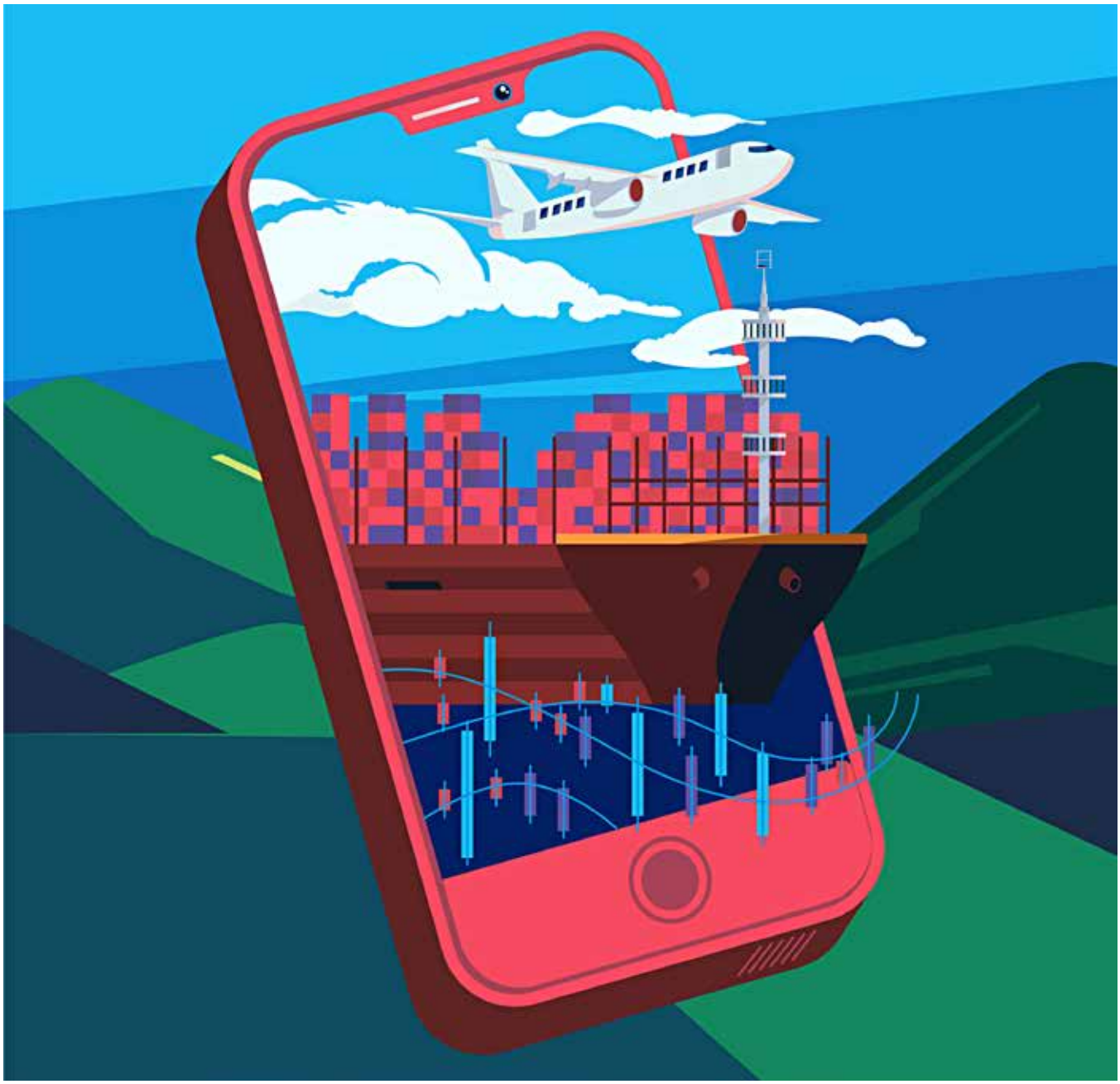


Photo: Internet

As global trade undergoes a digital revolution, ports around the world are transforming into smart, technology-driven logistics hubs. These smart ports offer faster, safer, greener, and more efficient trade facilitation. For Bangladesh, the transformation of its port infrastructure is no longer optional—it's essential. But is the country ready to make the leap?

THE GLOBAL RISE OF SMART PORTS

The maritime industry is at a turning point. With increasing container volumes, tighter environmental regulations, and fierce competition among shipping routes, global ports are rapidly adopting digital technologies. The era of the smart port is here.

A **smart port** is defined by its use of:

- **Automation** (e.g., self-operating cranes and autonomous vehicles)
- **Artificial Intelligence (AI)** for traffic and cargo prediction
- **Internet of Things (IoT)** for real-time tracking and monitoring
- **Big Data analytics** for informed decision-making
- **Blockchain** for secure, transparent transactions
- **Digital twin technologies** for virtual simulation and optimization

These technologies work together to deliver:

- Faster cargo turnaround times
- Reduced operational costs
- Better safety and security
- Lower environmental impact
- Seamless integration among stakeholders (shipping lines, customs, logistics companies)

EXAMPLES OF LEADING GLOBAL SMART PORTS

Port	Country	Key Smart Features
Port of Rotterdam	Netherlands	Digital twin, AI-powered cargo routing, predictive maintenance
Port of Singapore	Singapore	Autonomous vehicles, 5G IoT systems, blockchain documentation
Yangshan Deep Water Port	China	Fully automated terminals, AI for traffic control, high-speed data networks
Hamburg Port	Germany	Smart traffic lights, sensor-based truck routing, drone surveillance

These ports show what's possible when governments and private stakeholders prioritize smart transformation—and the benefits extend well beyond efficiency.

Photo: Internet

WHY SMART PORTS MATTER FOR BANGLADESH

Bangladesh is the world's second-largest exporter of ready-made garments and heavily reliant on maritime trade for both imports and exports. With growing container traffic and a rising economy, **modern, efficient port infrastructure is vital** to sustain growth.

Key Ports of Bangladesh

Port	Annual Throughput (TEUs)	Role
Chattogram Port	~3.3 million	Handles over 90% of the country's trade
Mongla Port	~150,000	Secondary port for southwestern region
Payra Port	Early-stage development	Strategic port for southern connectivity
Matarbari Port	Under construction	Planned deep-sea port with smart design

However, Bangladesh's ports are currently constrained by:

- Congestion and long turnaround times
- Manual paperwork and limited digital systems
- Insufficient integration among port users
- Underdeveloped road and rail connectivity
- Environmental vulnerabilities (flooding, pollution)

Port Performance: Bangladesh vs. Smart Ports

Metric	Chattogram Port	Port of Singapore	Port of Rotterdam
Container Dwell Time (avg.)	4–6 days	<1.5 days	1–2 days
Vessel Turnaround Time	3–4 days	<1 day	<1.5 days
Container Tracking System	Partial	Real-time GPS + IoT	Real-time GPS + IoT
Automated Cranes & Vehicles	Minimal	Widespread	Advanced
Digital Customs & Documentation	Partial (ASYCUDA)	Fully integrated	Fully integrated

The comparison shows a clear gap. Bangladesh must modernize to remain regionally competitive—especially as India, Sri Lanka, and Vietnam move swiftly to smart port models.

SMART PORTS AND THE GREEN TRANSITION

Beyond speed and efficiency, smart ports bring a significant **environmental advantage**—an area increasingly under scrutiny from international regulators and trade partners.

Photo: Internet

How Smart Ports Reduce Emissions

Feature	Impact on Emissions
Automated yard equipment	Less fuel consumption, reduced idling
AI-based cargo handling	Optimized logistics reduce unnecessary movement
Shore power for vessels	Allows ships to plug into the grid, reducing onboard emissions
Smart traffic routing for trucks	Reduces congestion and CO_2 from idling engines
Real-time monitoring systems	Detect leaks, inefficiencies, and energy waste
Renewable energy integration	Solar and wind power for port operations

According to the **World Economic Forum**, smart port technologies can cut port-related greenhouse gas (GHG) emissions by up to **20–30%**.

Bangladesh, a climate-vulnerable nation, has the opportunity to align port development with global environmental commitments, including the **Paris Agreement** and upcoming **EU green trade regulations**.

ONGOING INITIATIVES IN BANGLADESH

While the transformation is still in early stages, several steps have been taken:

1. ASYCUDA World for Customs

The **Automated System for Customs Data (ASYCUDA)** is now used at Chattogram and other major ports to speed up clearance processes. It has reduced paperwork, improved transparency, and enabled partial digitization.

2. Port Community System (PCS)

Bangladesh is developing a **PCS** to digitally connect all port users—shipping lines, customs, freight forwarders, and logistics companies—via a centralized digital platform. Though still under pilot, this could be a major step forward.

3. Matarbari Deep Sea Port

Being built with support from the Japan International Cooperation Agency (JICA), **Matarbari Port** is planned as a smart, deep-sea port with modern digital systems from day one. It is projected to start operations by 2027.

4. Inland Container Depots (ICDs)

Several private inland depots have begun implementing tracking technologies and digital gate-in/gate-out systems to improve efficiency outside the main port areas.

KEY BARRIERS TO SMART PORT DEVELOPMENT

Despite these efforts, serious challenges remain:

1. Infrastructure Gaps

- Limited broadband and fibre-optic networks at ports
- Inadequate power supply for automation systems
- Old equipment incompatible with modern systems

2. Skills Shortage

- Lack of trained professionals in port IT systems
- Limited availability of data scientists and engineers in logistics

3. Regulatory Bottlenecks

- Fragmented policies across ministries (shipping, ICT, trade)
- Resistance to digital change in traditional bureaucracies

4. Investment Constraints

- High capital cost of automation
- Lack of strategic foreign investment in smart logistics

RECOMMENDATIONS: A ROADMAP FOR SMART PORT READINESS

For Bangladesh to join the ranks of smart maritime nations, a coordinated, phased approach is needed.

Short-Term (1–3 years)

- Fully digitize customs and port documentation processes
- Implement PCS across Chattogram and Mongla
- Introduce IoT sensors and tracking on pilot basis
- Begin workforce upskilling in IT, logistics, and automation

Medium-Term (3–7 years)

- Automate key terminals at Chattogram and Mongla
- Develop a data integration platform for cargo and vessel traffic
- Invest in renewable energy for port power supply
- Launch smart logistics zones connected to ports

Long-Term (7–15 years)

- Position Matarbari as a regional smart transshipment hub
- Adopt AI-driven predictive systems across all ports
- Establish Bangladesh as a logistics-tech innovation hub in South Asia
- Achieve 30% reduction in port-related GHG emissions

CONCLUSION: BANGLADESH AT A STRATEGIC CROSSROADS

Smart ports are no longer a luxury—they are a necessity for nations seeking to thrive in the global economy. For Bangladesh, the stakes are high. Without modern, efficient, and environmentally sustainable ports, its export-led growth model will face mounting risks.

But with a clear strategy, targeted investments, and the political will to act, Bangladesh has the potential not only to catch up—but to lead.

The next decade will be crucial. The ships of the future are already arriving. Now, it's time for Bangladesh's ports to be ready to receive them.

Photo: Internet

GREEN PORTS OF THE WORLD: LEADING THE CHARGE TOWARD SUSTAINABLE MARITIME TRADE

As global supply chains grow more complex and climate change intensifies, the world's major ports are undergoing a radical transformation. Once seen as industrial giants powered by diesel and defined by concrete, cranes, and congestion, ports are now emerging as pioneers of environmental stewardship.

WHAT IS A GREEN PORT?

A green port is more than just a clean terminal. It is a holistic system designed to minimize environmental impact, maximize energy efficiency, and harmonize with surrounding ecosystems and communities. Key components of a green port include:

- **Shore power / cold ironing** (allowing ships to plug in at berth and shut down diesel engines)
- **Low-emission fuels and hybrid port equipment**
- **Automated, electric cargo handling systems**
- **Digital traffic management to reduce idle time**
- **Waste management and water conservation**
- **Integration with rail and inland waterways**
- **Carbon monitoring and offsetting programs**

These ports aim not just to reduce carbon emissions, but also to control air pollution, noise, water contamination, and overall ecological disruption.

WHY IT MATTERS NOW

The maritime industry is responsible for nearly 3% of global CO_2 emissions—and that share is growing. With increasing cargo volumes, stricter IMO and EU regulations, and public pressure, ports are under pressure to decarbonize and digitize simultaneously.

A green port is no longer a luxury; it's a necessity. And the world's most forward-thinking ports are responding

accordingly.

LEADING GREEN PORTS AROUND THE WORLD

Let's look at some **pioneering ports** that are redefining the industry:

1. Port of Rotterdam (Netherlands)

Often called the "smartest port in the world," Rotterdam is a benchmark for both digital and environmental transformation. It aims to become carbon neutral by 2050 and is already making significant progress:

- Extensive shore power infrastructure for inland vessels and ferries
- Investments in hydrogen fuel infrastructure
- Partnership with Shell and other companies to build green corridors
- Deployment of autonomous electric barges (such as the "PortLiner" project)

Rotterdam also uses AI and big data for predictive port operations, helping ships avoid long idle periods—saving fuel and cutting emissions.

2. Port of Los Angeles (USA)

As North America's largest container port, Port of LA has been under scrutiny for years due to its high traffic and pollution levels. But it's also become a leader in the green port movement:

- Home to the Clean Truck Program, which aims for a 100% zero-emissions fleet by 2035
- Offers shore power to most container, cruise, and reefer terminals
- Testing hydrogen fuel cell trucks in collaboration with Toyota
- Engaged in green shipping corridors with ports in Shanghai and Singapore

In 2022, it reduced GHG emissions by 19%, a significant drop despite rising cargo volumes.

3. Port of Singapore

Strategically located and hyper-efficient, Singapore is building what may become the world's greenest port terminal: Tuas Mega Port.

- Designed for full automation with electric quay cranes and AGVs (automated guided vehicles)
- Powered largely by solar and LNG
- Centralized port command centre for real-time efficiency optimization
- Host to one of the largest maritime hydrogen R&D projects in Asia

Singapore is also developing green financing models and incentives to encourage sustainable ship calls and retrofitting.

4. Port of Gothenburg (Sweden)

Gothenburg, Scandinavia's largest port, has made sustainability central to its operation. It was one of the first to offer LNG bunkering directly at berth and continues to lead in clean shipping practices:

- Electric rail connections to reduce road traffic
- 100% of the port's electricity comes from renewable sources
- Offers climate rebates for ships using cleaner fuels or arriving with lower emissions
- Goal to become fossil fuel–free by 2030

It's also closely integrated with smart logistics parks, creating a seamless, green supply chain hub.

Photo: Internet

GREEN INITIATIVES BY THE NUMBERS

Here's a snapshot of green port efforts globally:

Initiative	Global Status (2024-2025)
Ports with shore power (cold ironing)	Over 120 ports worldwide
LNG bunkering ports	70+ globally
Ports using electric cargo equipment	90+
Ports with green shipping corridor partnerships	40+ major routes in development
Carbon neutrality targets	2030–2050 (varies by port)

CHALLENGES TO GREENING PORTS

Despite the success stories, going green isn't simple—or cheap. Ports face several major challenges:

- **High upfront costs** for electrification and infrastructure
- **Technology gaps**, especially in developing countries
- **Resistance from legacy fleet operators** unwilling to adopt cleaner fuels
- **Grid limitations** in cities with strained electricity supply
- **Regulatory inconsistencies** across regions

Moreover, coordination is needed between ship owners, terminal operators, customs, logistics companies, and governments—no single stakeholder can drive the change alone.

GREEN PORTS IN THE GLOBAL SOUTH: THE NEXT FRONTIER

While Europe and North America dominate the green port conversation, the Global South is beginning to step in.

- **Port of Colombo (Sri Lanka)** has launched eco-port initiatives with Japanese support.
- **Port of Tanger Med (Morocco)** is adopting smart logistics and solar integration.
- **Chattogram Port (Bangladesh)** has introduced some digital cargo systems and has potential for solar and inland waterway integration.
- **Durban Port (South Africa)** is piloting environmental compliance technologies as part of port revitalization.

However, significant **international funding and technical cooperation** will be essential for ports in South Asia, Africa, and Latin America to fully participate in the green port revolution.

THE ROLE OF TECHNOLOGY AND POLICY

Green ports rely heavily on **technology convergence**:

- **IoT sensors** monitor emissions and equipment status in real time.
- **AI algorithms** optimize ship arrivals and reduce idle fuel burn.
- **Blockchain** streamlines customs and reduces paperwork-related delays (and emissions).
- **Digital twins** simulate port activity to find carbon reduction opportunities.

On the policy side, global organizations like the IMO, UNCTAD, and World Bank are pushing:

- **Green shipping corridors** (low-carbon routes between paired ports)
- **Standardized emissions reporting**
- **Green financing mechanisms** for port upgrades

THE ROAD (AND SEA) AHEAD

The transition to green ports is not just about climate—it's also about competitiveness. Ports that don't adapt risk being bypassed by eco-conscious shippers, penalized under carbon tariffs, or left out of future logistics chains.

In contrast, ports that invest in sustainability today will reap the rewards of:

- Lower operating costs in the long run
- Faster, cleaner cargo handling
- Regulatory resilience
- Positive community and investor relationships

As one port director recently said, *"The greenest port will be the most profitable one in the future."*

CONCLUSION: A BLUEPRINT FOR CHANGE

The green port revolution is here, and it's accelerating. From Rotterdam to Singapore, Gothenburg to Los Angeles, these modern maritime hubs are proving that economic throughput and environmental responsibility can go hand in hand.

For smaller and developing ports, the path may be longer—but with strategic investments, smart partnerships, and bold policymaking, no port has to be left behind.

Because the future of trade doesn't just lie in how much you move—it lies in how cleanly you move it.

WOMEN IN THE MARITIME DOMAIN: THEIR ROLE AND CONTRIBUTION

By Commander Mariam Akter

INTRODUCTION

The maritime domain—spanning naval defense, shipping, logistics, fisheries, and marine research—has historically been one of the most male-dominated sectors in the world. The image of the sea, rough and unforgiving, has long been associated with masculine endurance and leadership.

Yet, over the last few decades, women have broken through this traditional perception and steadily made their mark in every aspect of maritime activity. Their journey from exclusion to inclusion has been transformative. Today, women not only contribute as officers, engineers, and seafarers but also as policy leaders, maritime lawyers, scientists, and innovators. They play a vital role in shaping a more inclusive and sustainable maritime future.

A GLOBAL SHIFT TOWARD INCLUSION

Globally, the maritime industry has witnessed a growing recognition of the importance of gender diversity. Organizations such as the **International Maritime Organization (IMO)** and the **World Maritime University (WMU)** have emphasized women's participation through initiatives like the *Women in Maritime* program. These initiatives aim to eliminate barriers, offer scholarships, and ensure equal access to maritime education and leadership positions.

Women are now commanding vessels, serving as marine engineers, navigating officers, port managers, and even ministers overseeing national maritime policies. Their inclusion brings fresh perspectives to safety, sustainability, and human-centric leadership—values that are increasingly vital in today's interconnected maritime world.

BANGLADESH'S JOURNEY: FROM COAST TO COMMAND

Bangladesh, with its rich maritime heritage and growing blue economy ambitions, has made significant strides in integrating women into its maritime and naval sectors. The landmark year **2000** marked the entry of women into the **Bangladesh Navy**, breaking long-standing traditions and setting a precedent for gender equality in the defense forces.

Since then, women officers and sailors have served with excellence in operations, logistics, medical services, engineering, and education branches. Their success inspired the inclusion of women in the **Bangladesh Coast Guard**, further expanding their footprint in maritime security, rescue operations, and coastal management.

From navigating ships to managing technical divisions, these women have shown that ability at sea depends on **skill, knowledge, and dedication—not gender.** Their service reflects Bangladesh's strong commitment to promoting women's empowerment in fields once dominated by men.

ROLES OF WOMEN IN THE MARITIME SECTOR

Women now play essential roles across naval operations, merchant shipping, port management, research, and education.

1. Naval and Coast Guard Operations

Women now serve in both commanding and operational roles at sea. They navigate naval vessels, oversee engineering systems, and take part in humanitarian and peacekeeping missions. Their professionalism and sound judgment under pressure have strengthened the effectiveness and inclusiveness of naval operations.

2. Merchant Marine and Shipping Industry

In commercial shipping, women are increasingly visible as deck officers, engineers, and maritime administrators. Although still a small percentage of the global seafaring workforce, their numbers are steadily growing. Shipping companies are gradually improving facilities, training, and support systems to promote a culture of respect and equality.

3. Maritime Administration and Port Management

Women hold key positions in maritime administration, customs, and port management. Their leadership in policy formulation, environmental regulation, and international shipping compliance contributes directly to safer and more efficient maritime operations.

4. Marine Science and Research

In marine biology, oceanography, and environmental science, women are leading researchers and educators. Their work addresses climate change, ocean pollution, fisheries sustainability, and biodiversity protection — contributions that are vital for Bangladesh, a country deeply dependent on the Bay of Bengal's resources.

5. Education and Capacity Building

Women are now instructors and administrators in maritime academies and naval training institutes. By sharing their experiences, they inspire younger generations to pursue maritime careers, creating a sustainable talent pipeline that values diversity and competence.

CONTRIBUTION BEYOND THE DECK

Women bring valuable perspectives that enrich maritime organizations in countless ways — empathy, effective communication, crisis management, sustainability, and innovation. Their participation strengthens teamwork, enhances safety, and promotes ethical, responsible governance throughout the maritime sector.

CHALLENGES AND BARRIERS

Despite commendable progress, women in the maritime sector continue to face challenges such as limited representation, work–life balance, and cultural expectations. However, growing institutional support, improved infrastructure, and evolving social attitudes toward inclusivity are creating new opportunities.

With determination and confidence, women are encouraged to step beyond traditional comfort zones, embrace opportunities, and contribute to shaping a more diverse and dynamic maritime future.

EMPOWERMENT THROUGH EDUCATION AND POLICY

Education and policy reform remain the foundation for empowering women in maritime professions. Policies must focus on equipping women with the knowledge, technical skills, and leadership qualities necessary to meet professional challenges with confidence.

Strengthening maritime education, ensuring equal access to training, and promoting merit-based opportunities will help build a more skilled and inclusive maritime workforce in Bangladesh — one capable of meeting both national and global challenges.

CHANGING THE MARITIME CULTURE

Cultural transformation is perhaps the most profound contribution of women at sea. Their presence has redefined leadership, strength, and discipline in maritime life.

Modern leadership now values collaboration, empathy, and emotional intelligence — qualities that women naturally embody. By challenging outdated notions of who "belongs" at sea, they have helped shift maritime culture toward one that values competence, inclusivity, and human connection.

CONCLUSION

Women's participation in the maritime domain represents not only progress but also strategic strength. By engaging women in naval operations, shipping, administration, and marine research, nations harness the full potential of their talent pool — fostering innovation and resilience.

The women serving in the Bangladesh Navy, Coast Guard, and the wider maritime sector stand as symbols of empowerment and national pride, demonstrating that the future of the maritime world is inclusive, capable, and full of promise.

This article is specially contributed to Navigator Bangladesh by Commander Mariam Akter, (E), NUP, psc, BN (P No 1488) Bangladesh Coast Guard

MYSTERIES OF THE SEA

5 STRANGE OCEAN STORMS THAT LEFT EXPERTS STUNNED

The sea is full of secrets — sunken ships, shifting currents, and storms that seem to appear out of nowhere, roaring into life and rewriting the rules of weather. Over the past decade, a handful of ocean storms have puzzled scientists and sailors alike, not just for their power, but for how *unusual* they were. Here are five storms that didn't just make waves — they made *mystery*.

1. CYCLONE KYARR (2019) — ARABIAN SEA'S SURPRISE SUPERSTORM

In 2019, the Arabian Sea — usually quiet compared to the Bay of Bengal — suddenly whipped up one of its strongest storms ever: *Cyclone Kyarr*. Packing winds of 150 mph, it grew into a "super cyclonic storm," something almost never seen in that part of the world.

Even stranger? It appeared alongside another storm, Maha, at the *same time* — a first in recorded history. Two cyclones, one ocean, zero explanations.

2. THE SOUTHERN OCEAN "GHOST CYCLONE" (2022)

In 2022, far down in the icy wilds near Antarctica, a freakishly strong storm formed — so powerful, it may have been the deepest extratropical cyclone ever recorded. Winds howled, pressure dropped rapidly, and satellite trackers struggled to keep up.

It didn't hit any land, caused no damage... and yet it's now a legend among weather watchers. A polar ghost storm that came and went without a trace — except in the data.

3. CYCLONE TEJ (2023) — A STORM WHERE IT SHOULDN'T BE

Cyclones and Yemen don't usually mix. But in 2023, *Cyclone Tej* barrelled into the Arabian Peninsula, marking one of the rare times a full-fledged cyclone struck this arid coastline.

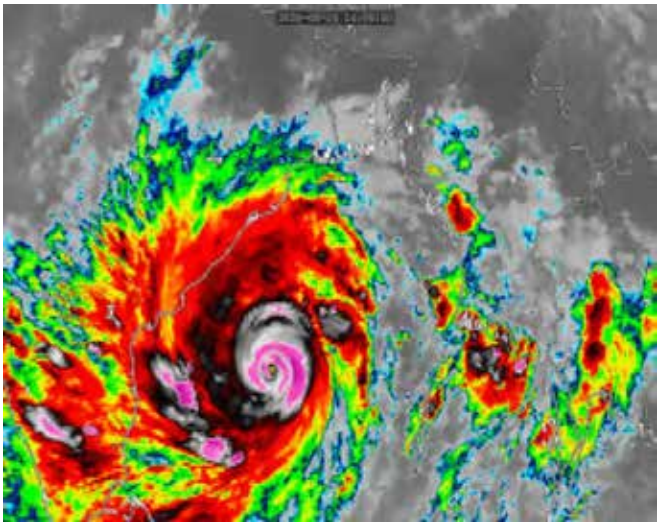
Its sudden turn, unexpected strength, and timing all defied forecasts. Tej didn't just challenge weather models — it reminded us that old storm patterns may not apply in a warming world.

4. CYCLONE BIPARJOY (2023) — THE STORM THAT REFUSED TO QUIT

Biparjoy formed in June 2023 and decided to hang around — for *a really long time*. It zigzagged across the Arabian Sea for days, setting records for distance and duration. Storms in that area don't usually last that long — and they certainly don't mess with the Indian monsoon like this one did. It was a wandering storm that confused everyone, from fishers to forecasters.

5. CYCLONE AMPHAN (2020) — THE LIGHTNING-FAST GIANT

In May 2020, a harmless-looking system in the Bay of Bengal exploded into a monster in under 36 hours. *Cyclone Amphan* didn't just grow — it leapt to Category 5 strength almost overnight.



What triggered such a rapid transformation? Meteorologists still debate the mix of ocean heat, jet stream interaction, and atmospheric "waves" that played a role. It was a terrifying reminder of how quickly things can turn at sea.

LAUGHTER

WHY DON'T SHIPS EVER GET LOST?

Because they always follow their *current* location!

WHAT DO YOU CALL A PIRATE WHO SKIPS CLASS?

Captain Hooky.

WHY WAS THE SHIP ALWAYS CALM DURING STORMS?

Because it knew how to *weather* the situation!

WHAT'S A CARGO SHIP'S FAVORITE TYPE OF MUSIC?

Heavy metal — they love to haul it!

WHY DID THE CONTAINER SHIP BRING A LADDER TO THE PORT?

To *reach* new heights in shipping!

HOW DO SAILORS KEEP THEIR SHIPS SO ORGANIZED?

They always *anchor* down their priorities.

WHY DID THE PORT GET PROMOTED?

Because it's great at *handling* business.

WHAT DO YOU GET WHEN A SHIP TELLS A JOKE?

A *splash* of laughter!

WHY DON'T SUBMARINES EVER TELL SECRETS?

Because they like to keep things *underwater*.

WHY DID THE GLOBAL SHIPPING COMPANY HIRE A COMEDIAN?

To improve their *cargo* of laughs!

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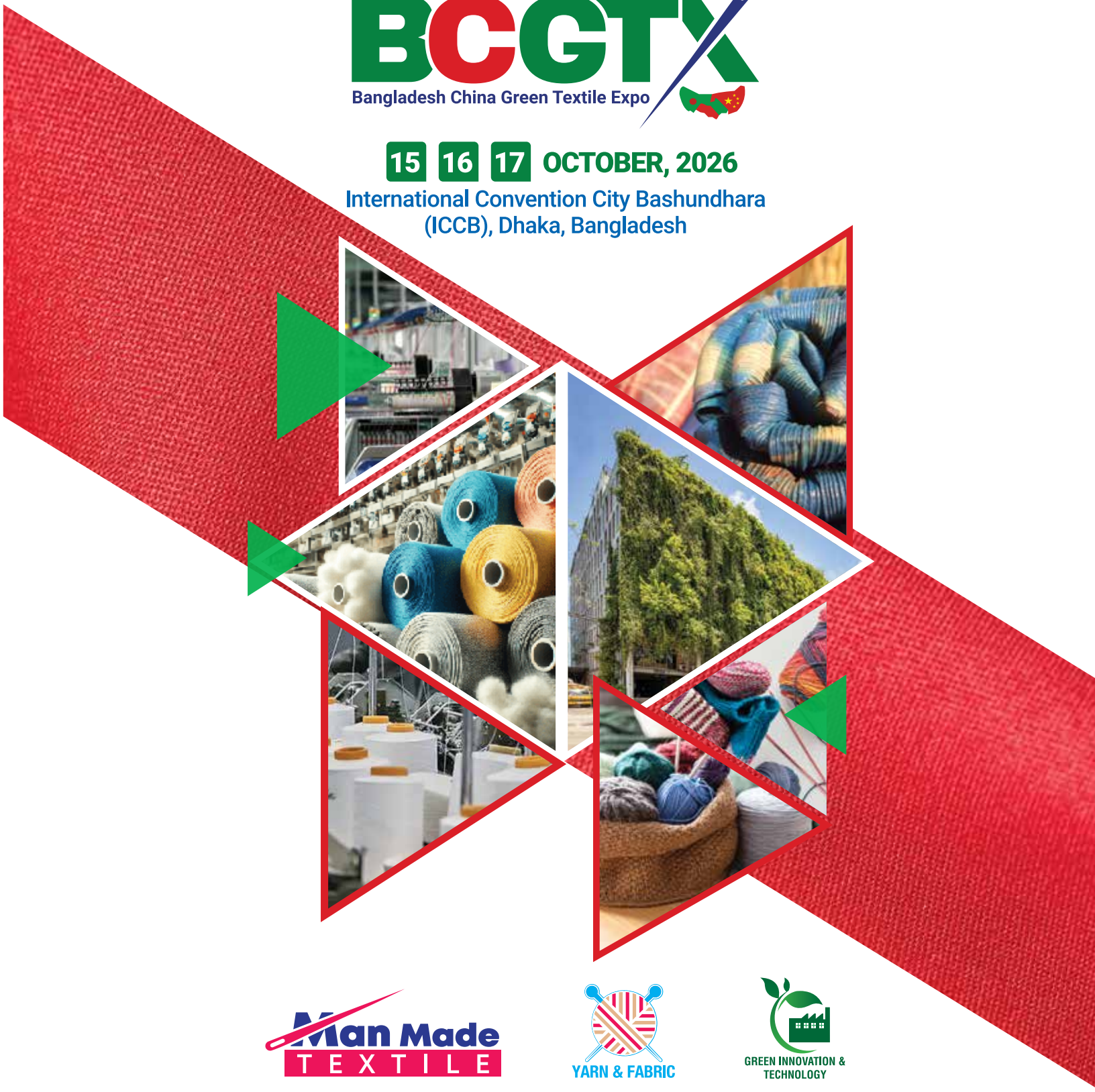

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