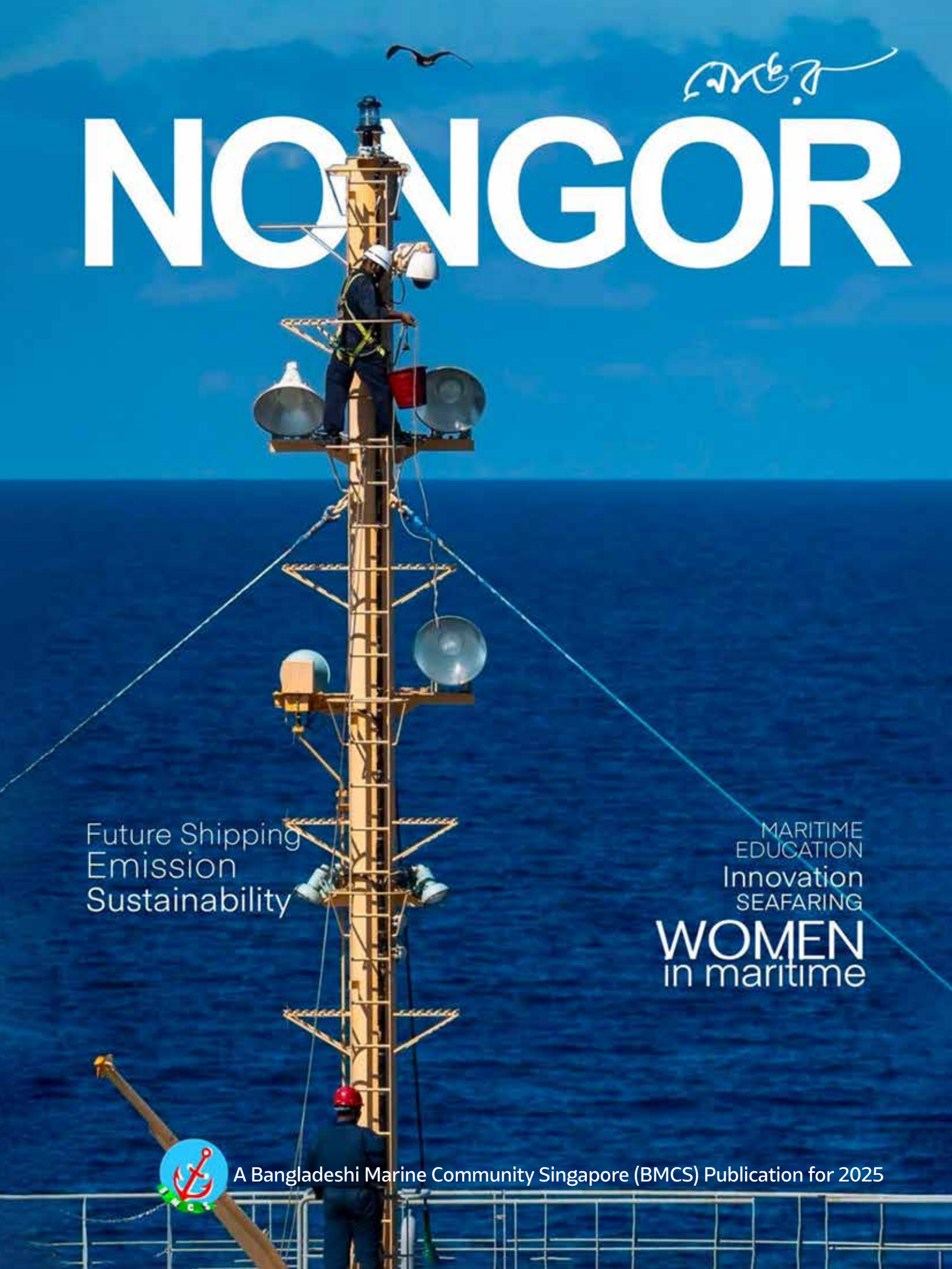

নোঙর
NONGOR
Future Shipping
Emission
Sustainability
MARITIME
EDUCATION
Innovation
SEAFARING
WOMEN
in maritime
A Bangladeshi Marine Community Singapore (BMCS) Publication for 2025

Editorial Team:

Abu Hasan Rony
Ghazi Abu Taher
Md. Imran Kalam Chowdhury
Mohammad Shakhawat Hossain
Shahriar Md Ali Gauhar
Syed Zahangir Alam

Photo Credit
Capt. Abdul Kader, Atiqur Rahman Chowdhury

Contacts of Nongor /BMCS:

Shahriar Md Ali Gauhar
Secretary, BMCS
Mob: +65-9004 9822
E-mail: secretary@bmcs.sg
Website: www.bmcs.sg

Social Media Handles:

Facebook: Bangladeshi Marine Community Singapore. BMCS

Welcome to the 2025 edition of Nongor!

The maritime world is in flux today. Regulators are resetting the course: ships emitted around 124 million tonnes of CO_2 within the EU in 2021 (about 3-4 % of EU emissions) and international shipping produced 1 076 million tonnes of CO_2 in 2018. The IMO's 0.5 % sulphur cap, Europe's Emissions Trading System and FuelEU Maritime signal that carbon is no longer free. Decarbonisation is driving a shift to LNG, ammonia, methanol and electrification. Proactive risk management, not just compliance, is essential; operational, human, environmental and cyber risks demand integrated governance, hazard analysis and a safety culture. A tightening inspection regime and sanctions highlight the need for transparency and anti-bribery frameworks. These pressures intersect with a looming talent crisis: BIMCO/ICS warn of acute officer shortages, while hundreds of thousands of seafarers will need training for new fuels and digital systems by the 2030s.

Bangladesh, with its marine academies and globally recognised seafarers, can supply skilled officers and ratings, yet visa hurdles, welfare concerns and outdated curricula must be addressed.

Nongor's contributors explore how early movers gain market advantage and why compliance can become a competitive strength. Our editorial stance is clear: embrace innovation, invest in people, and uphold ethics. The voyage ahead is uncertain, but by anchoring our community in knowledge and collaboration, we can navigate towards a greener and safer maritime future.

Abu Hasan Rony

Chief Editor
Nongor, 2025.

Contents

Goodwill Message from

DR. VIVIAN BALAKRISHNAN

Minister for Foreign Affairs Government of the Republic of Singapore

Congratulations to the Bangladeshi Marine Community, Singapore (BMCS) on the publication of the 11th iteration of its flagship magazine "NONGOR".

Singapore and Bangladesh's ties are underpinned by history, rich cultural connections, growing economic ties, and strong people-to-people links. The vibrant community of Bangladeshi mariners and their families are a valuable part of our society. BMCS members have forged strong bonds and friendships in Singapore and are respected for your skills, hard work and expertise. Members also actively engage the wider community through welfare and other activities and have earned the community much respect in the maritime sector.

Thank you to BMCS for your contributions. I wish the community success as you continue to flourish and grow.

DR. VIVIAN BALAKRISHNAN
Minister for Foreign Affairs
Government of the Republic of Singapore

Goodwill Message from

MAX MEJIA

President, World Maritime University

On the occasion of the 11th Anniversary of the BMCS.

Dear Distinguished Members of the Bangladeshi Marine Community Singapore.

On behalf of my colleagues at the World Maritime University, it is a genuine pleasure to offer warm congratulations on the 11th anniversary of the Bangladeshi Marine Community Singapore (BMCS). With more than 200 Bangladeshi mariners contributing to Singapore's maritime sector—including many who are proud WMU graduates—your community highlights the significant role Bangladeshis play in the wider shipping industry. Among these is BMCS Ex-President, MarEngr Sanwer Dito, a 1996 WMU graduate (MSc MSA-E), whose leadership is a testament to the global influence of WMU alumni.

Marking this milestone also reminds us of the many challenges that continue to shape the maritime world. From the urgent drive toward decarbonization and digital transformation to the reduction of harmful emissions and the ongoing need to strengthen safety and security at sea, our sector faces a demanding but vital agenda. Meeting these priorities will depend on innovation, collaboration, and the shared commitment of professionals across the globe.

In this regard, BMCS is uniquely positioned to make a difference. The knowledge, experience, and connections within your network provide a strong foundation for contributing to these global efforts. By promoting cooperation, encouraging knowledge exchange, and reinforcing professional bonds, BMCS will contribute to a sustainable and resilient future for our industry.

Let me once again extend sincere congratulations on this 11th anniversary. The spirit of solidarity, professional growth, and dedication that defines your community is a source of inspiration across the maritime industry. I look forward to seeing your community continue to grow in strength and influence in the years to come.

PROFESSOR STEPHEN DE MORA

FRSA FIMarEST CSci CMarSci
President, the IMarEST

As President of the Institute of Marine Engineering, Science and Technology (IMarEST), I am delighted to extend my warmest wishes to the Bangladeshi marine community in Singapore as you gather for your annual dinner. This celebration is a testament to the vital role you play in shaping the global marine industry.

Bangladeshi marine professionals are an integral part of our international network. Your expertise and commitment continue to enrich the sector, and we value every opportunity to engage with your vibrant and forward-thinking community.

The theme of my presidency is championing a multidisciplinary approach to ocean stewardship. Our sector faces unprecedented challenges, from decarbonisation, to crew welfare, biodiversity concerns, and cybersecurity.

The IMarEST is uniquely positioned to convene global experts across engineering, science, and technology to create sustainable solutions. My pledge is to improve cross-sector collaboration that addresses these urgent issues.

To achieve this, we must strengthen our global connections and amplify the IMarEST's technical voice. I invite your community to be part of this journey. Your insights and experience

are essential as we work together to advance marine knowledge and practice.

Together, we are stronger. I encourage you to reach out and share your ideas to help shape the future of our industry and our oceans.

With warm regards,
Professor Stephen de Mora FRSA FIMarEST CSci CMarSci
President, the IMarEST

MOHAMMAD SHAKHAWAT HOSSAIN

CEng CMarEng MIMarEST, MBA, MSc (SMO).
President, Bangladeshi Marine Community Singapore.

Dear Respected Members,

I would like to express my profound gratitude to all those who have played a pivotal role in making all the year-round activities a grand success and to those who laid the foundation in elevating Bangladeshi Marine Community Singapore to its current esteemed position. This milestone achieved serves as a testament of our shared vision, unwavering commitment to the community and marine industry. Welcome everyone to the BMCS 11th Anniversary Gala Night 2025 and let us cherish this fond memory in the coming days.

The publication of annual Magazine Nongor (Anchor) which we unveil today consisting of various insightful articles on marine and technical, represents more than just a magazine, it is an inspiration of our journey, commitment of sharing knowledge and shared vision that has guided us through these eleven remarkable years. My heartfelt appreciation and best wishes to everyone involved in this publication.

As I reflect the initiative undertaken and time given, it is evident that our collective efforts have strengthened our bonds and commitment beyond the community while fostering collaboration and mutual growth.

International shipping is undergoing a transformation with technological change and digitalization to keep pace with the emission target set by IMO within 2050. I wish BMCS members will play their individual part in decarbonization goal by actively engaging themselves in workplace, promote sustainable maritime activities and play a key role in capacity building by KNOWLEDGE sharing, arranging technical seminars, networking with professional bodies like IMarEST, Nautical Institute or similar.

Looking forward with sense of optimism and confidence, I passionately believe that BMCS will reach even greater height by creating shared value and achieve remarkable milestone in the future by professional excellence and talent management.
Stay safe and remain blessed.

Industrial Safety and Risk Analysis:Developing an Integrated Framework: for Proactive Risk Management in High-Risk Industries

Sajid Hussain

High-risk industries remain vulnerable to catastrophic accidents, and reactive safety management is no longer adequate. This article presents an Integrated Proactive Risk Management Framework founded on governance, intelligence, processes, people, and culture. It highlights the shift from compliance-driven safety to predictive, preventive approaches using tools like HAZOP and Bow-Tie Analysis. Sectoral applications show its adaptability, while challenges such as cultural resistance persist. Ultimately, proactive safety is a strategic driver of resilience, innovation, and sustainable competitiveness.

High-risk industries like maritime, oil and gas, nuclear, construction, and mining power modern life but face constant exposure to severe hazards. Past reliance on reactive safety—responding only after accidents—has proven inadequate, especially amid climate change, cyber threats, and global supply-chain risks. This article presents an Integrated Proactive Risk Management Framework based on governance, intelligence, processes, people, and culture. It traces the evolution of industrial safety, explains risk analysis principles, contrasts reactive and proactive methods, and shows applications across sectors, while addressing implementation challenges and offering a roadmap toward safer, more resilient, and sustainable operations.

1. Evolution of Industrial Safety

1.1 Definition and Scope

Industrial safety encompasses structured policies, processes, and technologies designed to safeguard workers, assets, and the environment. It integrates occupational health, process safety, environmental protection, emergency preparedness, and compliance with international regulations.

1.2 Historical Turning Points

The 20th century witnessed an evolution from trial-and-error practices to formalized safety management. Major accidents—including the Bhopal Gas Tragedy (1984), the Piper Alpha Fire (1988), and the Deepwater Horizon Spill (2010)—forced governments and industries to rethink safety cultures and regulatory oversight.

1.3 Regulatory Milestones

- OSHA(USA,1970): Introduced enforceable workplace safety standards, inspections, and whistleblower protections.
- Seveso Directive (EU, 1982): Required hazard identification, emergency planning, and public awareness in chemical industries.
- Health and Safety at Work Act (UK, 1974): Established HSE and a self-regulatory, risk-based approach.
- ISM Code (IMO, 1993): Globalized the Safety Management System approach in shipping, mandating audits, documentation, and accountability.
- ISO 45001 (2018): The first truly international

occupational health and safety management standard, emphasizing leadership, worker participation, and continuous improvement.

These milestones mark a steady transition from fragmented compliance to integrated, preventive safety systems.

2. Principles of Risk Analysis

2.1 Understanding Risk

Risk is traditionally defined as the product of probability and consequence. In high-risk industries, these consequences often involve large-scale human, financial, and environmental costs.

2.2 Key Risk Categories

- Operational risks: Aging equipment, inadequate maintenance, and system failures.
- Human factors: Fatigue, miscommunication, and insufficient training.
- Environmental risks: Floods, storms, seismic activity—intensified by climate change.
- Cyber risks: Growing threats to industrial control systems and supply-chain networks.
- Reputational risks: Safety lapses erode trust, damage brands, and attract legal penalties.

2.3 Tools and Techniques

Risk analysis employs structured methods:

- HAZOP for hazard identification in design stages.
- FMEA to rank potential failures by severity and frequency.
- FTA and ETA to trace causes and model consequences.
- Bow-Tie Analysis as a hybrid visualization of threats, controls, and outcomes.
- Quantitative Risk Assessments (QRA) for probability-based decision-making.

These tools provide a comprehensive view of vulnerabilities, enabling organizations to prioritize mitigation.

3. Reactive vs. Proactive Risk Management

Traditional reactive approaches focus on investigating incidents after they happen—helpful for lessons learned but inadequate for prevention. By contrast, proactive risk management is anticipatory. It integrates early-warning systems, predictive analytics, and safety culture to "design out" hazards before they materialize. This aligns with the concept of Total Safety Culture (TSC), where every employee, from executives to frontline staff, shares responsibility for risk awareness and intervention. Proactive strategies not only reduce accidents but also build resilience and adaptability in rapidly changing environments.

4. Key Components of a Proactive Framework

A proactive framework is dynamic, integrated, and scalable. Its core elements include:

1. Leadership & Safety Culture – Senior management sets a vision of zero harm, encouraging open reporting and a just culture.
2. Hazard Identification & Risk Assessment (HIRA) – Using real-time data, predictive simulations, and digital audits.
3. Integrated Risk Register – A centralized system for prioritizing risks by severity and control effectiveness.
4. Hierarchy of Controls – Focusing first on elimination and substitution before relying on administrative or PPE measures.
5. Competence & Training – Ongoing certification, scenario-based exercises, and VR/AR-enabled simulations.
6. Incident Reporting & Learning – Transforming near-misses into institutional learning.
7. Continuous Improvement – Embedding monitoring metrics (e.g., TRIR, LTIFR) within the Plan-Do-Check-Act cycle.

Together, these components form a "living system" that adapts to new hazards and opportunities.

5. Industry-Specific Applications

Maritime: The ISM Code revolutionized safety management at sea. Yet, challenges like enclosed-space entry accidents remain, requiring strict procedures and training. Digital tools such as e-logbooks and Port State Control analytics now enhance compliance and hazard prediction.

Oil and Gas: Post-Macondo, bow-tie analysis and real-time Blowout Preventer monitoring have become standard. API RP 754 indicators guide organizations toward systemic improvements, shifting focus from lagging to leading indicators.

Nuclear: Probabilistic Safety Assessments (PSA) help anticipate accident scenarios. Post-Chernobyl and Fukushima reforms emphasized

redundancy, passive safety, and containment. The IAEA ensures global harmonization of standards.

Construction: With high accident frequency, construction increasingly uses Building Information Modelling (BIM) for pre-visualizing risks. Real-time dashboards, engineered controls, and fall-prevention technologies reduce on-site fatalities. These sectoral examples demonstrate the adaptability of proactive frameworks while highlighting the diverse challenges across industries.

6. Challenges in Implementation

Despite clear benefits, organizations face obstacles in adopting proactive risk strategies:

- Cultural resistance to change, often due to fear of blame or job security.
- Data silos that fragment information, reducing visibility of systemic risks.
- Skill gaps as new digital tools outpace workforce capabilities.
- Cost perceptions, where safety is misinterpreted as an expense instead of an investment.
- Regulatory mismatches in multinational operations, requiring harmonization through global standards such as ISO 45001.

Overcoming these challenges requires visionary leadership, transparent communication, and investment in people alongside technology.

In today's industrial era, safety is not mere compliance—it is strategic leadership. Reactive practices invite risk, while proactive safety builds resilience, prevents accidents, and strengthens trust. The Integrated Proactive Risk Management Framework—rooted in governance, intelligence, processes, people, and culture—turns safety into a catalyst for innovation and competitiveness. Industries embracing this proactive shift advance toward zero harm, sustainability, and global leadership founded on trust and transparency.

Sajid Hussain is a maritime professional with over 40 years' experience. He served as Chief Engineer at sea and later as Commandant of Bangladesh Marine Academy. He holds an MSc in Maritime Safety (WMU, Sweden) and a DSc (Honoris Causa) in Maritime Education. Author of 26 books and 45 research papers, his latest work Technological Brilliance of Marine Engineering was published by IMarEST in 2025. He has received the WMU Outstanding Alumnus Award (2023) and the IMarEST Award for Outstanding Contribution in Marine Education (2019).

Enhanced Ship Inspection Regime in Dry Bulk Carriers and challenges for the Ship Owners & Managers

Dry bulk shipping inspections are transforming through digitalization, environmental accountability, and stricter charterer demands. Platforms like RightShip now assess not only safety but also ESG performance, crew welfare, and carbon efficiency. Ship owners face rising operational, financial, and compliance pressures, making digital readiness, proactive safety culture, and sustainable practices critical for long-term commercial success.

The dry bulk shipping sector has experienced a significant transformation in recent years, driven by a convergence of regulatory tightening, environmental scrutiny, and evolving expectations from major charterers. These changes are reshaping the inspection landscape for bulk carriers, compelling ship owners and managers to adopt more rigorous compliance strategies. Central to this shift is the increasing reliance on platforms like RightShip, coupled with internal vetting programs launched by some of the world's largest mining and commodity trading companies. As industry moves toward decarbonization and improved operational transparency, inspections are no longer limited to hull and machinery conditions but now extend into digital reporting, crew welfare, ESG compliance, and carbon efficiency. This article explores the evolution and future trajectory of ship inspection regimes in the dry bulk carrier market.

RightShip Platform and Ship Inspection Regime

RightShip, established in 2001 by BHP, Rio Tinto, and Cargill, aims to enhance safety and environmental standards in the dry bulk sector. It has since evolved into the most widely accepted digital vetting platform, providing comprehensive vessel risk assessments based on safety score (1 to 5 stars), PSC history, incident records, and environmental performance. Vessels over 10 years old or with inconsistent performance undergo physical inspections, and most charterers require a minimum score of 3/5. The platform now incorporates the RightShip Safety & Sustainability Index (RSSI)—covering CII, ESG, and crew welfare metrics—and weights PSC deficiencies by severity. Its AI-driven Due Diligence Hub automates checks and document management, while RISK IQ delivers real-time insights into safety, environmental, and operational risks for informed decision-making.

"Revised RightShip inspection age trigger" specifically targets Dry Bulk and General Cargo vessels		
Vessel Age	**Implementation Window**	**Vessel delivered before**
13 years	1st July - 1st October 2025	30-Jun-2012
12 years	1st January - 1st April 2026	31-Dec-2013
11 years	1st April - 1st July 2026	31-Mar-2014
10 years	1st October - 1st January 2027	31-Aug-2016
Note: Vessels failing to undergo the mandatory RightShip inspection under the revised age-trigger regime will have their Safety Score automatically downgraded to 2/5, severely impairing their tradability.		

The push toward digital vetting and sustainability is becoming a central tenet in the inspection landscape

Major Dry Mining Companies and Ship Charter

Major mining and commodity companies are among the largest charterers of bulk carriers worldwide. Companies such as **BHP, Rio Tinto, Fortescue Metals Group (FMG), Vale, Glencore, Anglo American,** and **China Shenhua Energy** heavily rely on Capesize and Panamax vessels to transport iron ore, coal, and other raw materials across global trade routes.

"The inspection regime for dry bulk carriers is undergoing a fundamental transformation, evolving into a multidimensional risk assessment framework incorporating technical, operational, environmental, and human factors."

While BHP, Rio Tinto, and Cargill were instrumental in establishing RightShip, others like Vale and Anglo American have developed their own internal vetting procedures in conjunction with RightShip assessments. These charterers expect high safety and sustainability standards and are increasingly scrutinizing factors beyond technical condition—including emissions profiles, safety culture, and crew management systems.

Bulk Charterer Ship Inspection Regime Overview

Each charterer applies its own interpretation of acceptable risk, often combining RightShip assessments with internal audit criteria:

Future Inspection Requirement by Charterer (2025–2030)

The next decade will see a decisive shift in inspection regimes as digitalization, decarbonization, and transparency drive charterer expectations. Key trends expected across charterers include:

- Integration of CII and EEXI into vetting algorithms, making carbon efficiency a core parameter for employment eligibility.
- Enhanced RightShip 2.0 functionality, including predictive risk profiling, real-time compliance dashboards, and digital emissions logs.
- Crew Welfare Metrics incorporated into inspection regimes, with attention to rest hour compliance, mental health support, and recreational facilities.
- Remote and AI-assisted inspections, reducing port delays and offering real-time verification of ship condition.
- Structured safety engagement programs, such as Master Coach Visits (Rio Tinto), becoming mainstream tools for vetting safety culture onboard.
- Higher rejection rates for vessels older than 15 years that cannot demonstrate emissions or condition compliance.

Charterers are also collaborating with classification societies and tech platforms to standardize digital inspections and reduce redundancy while improving data accuracy.

Challenges for Ship Owners and Managers – Changing Dry Bulk Inspection Regime

These evolving requirements present several challenges for ship owners and technical managers:

1. Inspection Frequency and Redundancy: The need to meet multiple overlapping inspection regimes (RightShip, DOO, Vale Vetting, etc.) increases administrative workload and operational complexity.
2. Cost Implications: Upgrading older ships to meet EEXI/ CII, conducting dry dock inspections, investing in digital platforms, and managing frequent vetting can significantly increase OPEX.
3. Age Discrimination: Vessels over 15 years face routine rejections or demands for costly pre-fixture inspections, reducing commercial flexibility.
4. Digital Transition: Owners must invest in emission tracking tools, digital logbooks, and crew training on digital compliance, often without a clear ROI in the short term.
5. Crew Welfare and ESG Pressures: With crew-related criteria becoming a part of vetting, managers must improve onboard living standards, monitor rest hours digitally, and provide evidence of structured welfare programs.
6. Market Access Inequity: Smaller owners with limited digital infrastructure or older tonnage risk being locked out of premium charter markets, creating a two-tier system.
7. Data Transparency and Consistency: Discrepancies between PSC records, RightShip reports, and internal SMS documentation can trigger red flags in inspections, leading to delays or rejections.

The inspection regime for dry bulk carriers is undergoing a fundamental transformation. What began as a safety compliance tool has evolved into a multidimensional risk

Table: Bulk Charterer Ship Inspection Regime Overview

Company	Origin	Main Products	Charters	Inspection Program / Type	Year Introduced	Mandatory
BHP (Broken Hill Proprietary Group Limited)	Australia	Iron ore, copper, coal, nickel, potash	Capesize, Panamax	RightShip Safety Score / Vetting	~2001 (RightShip co-founder)	✅ Yes
				Pre-fixture inspection (occasionally)	~2010	✅ Yes (case-by-case)
Rio Tinto	UK/Australia	Iron ore, aluminum, copper, diamonds, uranium	Capesize	RightShip + DOO Program	2001 (RightShip), 2019 (DOO)	✅ Yes
				DOO Shipboard Master Coach Visit	2019–2020	✅ Yes (for DOO fleet)
FMG (Fortescue Metals Group)	Australia	Iron ore	Capesize	RightShip Vetting + Internal Safety Review	~2010	✅ Yes
Vale	Brazil	Iron ore	VLOC, Capesize	Vale Vetting System + RightShip	~2008	✅ Yes
				Valemax VLOC Inspection Protocol	~2011	✅ Yes (VLOC)
Glencore	Switzerland	Copper, cobalt, zinc, nickel, coal	Panamax, Supramax	Third-party Vetting / RightShip	~2010	✅ Yes
Anglo American	UK/South Africa	Iron ore, coal, and manganese.	Capesize, Panamax	RightShip + Green Ship Vetting	~2010	✅ Yes
Cargil	USA	Grains, oilseeds, sugar, salt; fertilizer commodities like potash and phosphate	All dry bulk sizes	RightShip Vetting + On-hire Inspection	2001 (RightShip)	✅ Yes
China Shenhua Energy	China	Coal	Capesize, Panamax	Internal Vetting + Safety Review	~2015	✅ Yes
				Domestic Port Vetting	~2017	✅ Yes (domestic fleet)

assessment framework incorporating technical, operational, environmental, and human factors. Platforms like RightShip have been at the center of this evolution, but the proliferation of charterer-specific expectations means ship owners and managers must adopt an integrated, forward-looking approach to compliance. For industry players, the key to navigating these changes lies in early adaptation—digitizing operations, engaging crew in safety culture development, investing in low-carbon readiness, and building relationships with charterers to understand their evolving requirements.

"The future of bulk shipping inspections will reward not just seaworthiness, but sustainability, transparency, and accountability at every level of ship management."

Capt. Abu Jafar Mohammad Sadat, Vetting Manager at Bernhard Schulte Shipmanagement (Singapore), has over 27 years of maritime experience, including 14 years at sea and extensive shore-based roles. With expertise in vetting, loss prevention, audits, and compliance across RightShip, DBMS, SIRE, CDI, PSC, and ISM/ISO, he ensures vessels meet global standards. Since joining BSM in 2012, Capt. Sadat has championed safety, environmental protection, and sustainable performance through strong leadership and continuous improvement.

The Importance of Global Shipping and the Role of the IMO in Establishing and Implementing International Standards

Capt. Kazi A.B.M Shameem

Global shipping underpins over 90% of international trade, sustaining economies and global supply chains. This article explores the vital role of the International Maritime Organization (IMO) in creating and maintaining international maritime standards. It highlights the responsibilities of member states in implementing conventions, ensuring safe, efficient, and environmentally sustainable maritime operations across the world's oceans.

Global shipping represents the backbone of the modern economy, providing the principal means by which goods, raw materials, and energy resources are transported across continents. Over 90 percent of world trade by volume is carried by sea, highlighting its indispensability to globalization and international commerce (UNCTAD, 2023). The maritime sector is not only critical for economic growth but also for food security, energy supply, and global supply chain resilience. However, the inherently transnational nature of shipping necessitates uniform international regulation to ensure safety, security, efficiency, and environmental protection. The International Maritime Organization (IMO), a specialized agency of the United Nations established in 1948, fulfills this role by creating and maintaining a comprehensive system of global maritime standards.

This essay examines the importance of global shipping, the IMO's role in establishing uniform standards, and the responsibilities of member states in implementing international conventions and codes.

The Importance of Global Shipping

The shipping industry functions as the central circulatory system of world trade. It enables the large-scale, cost-efficient, and environmentally favorable transport of commodities compared to other modes of transport (Stopford, 2020). Maritime transport has enabled the development of global value chains, wherein production processes are geographically fragmented yet interconnected. For example, raw materials sourced from Africa may be processed in Asia and assembled in Europe before being marketed worldwide. Without reliable maritime transport, such a globalized economy would be unsustainable.

Moreover, shipping underpins strategic sectors such as energy security, with crude oil, liquefied natural gas, and coal shipped across oceans daily. Similarly, agricultural products and humanitarian relief supplies depend heavily on maritime routes. Given its global reach, shipping also has profound environmental and social implications: the sector contributes to greenhouse gas emissions but also provides employment to over 1.8 million seafarers worldwide (International Labour Organization [ILO], 2022). Thus, shipping is both an enabler of economic development and a field requiring robust governance to manage its risks and externalities.

The Role of the IMO in Establishing Global Standards

The IMO plays a central role in ensuring that shipping remains safe, environmentally responsible, and economically efficient. Unlike most industries regulated at the national level, shipping requires a unified international approach due to the global movement of ships and their multinational crews. If regulation were left to individual states, discrepancies in safety, environmental, and labor standards would likely arise, leading to legal uncertainty, unfair competition, and risks to marine life and human safety (Martínez-Zarzoso & Wilmsmeier, 2010).

> *"Over 90 percent of world trade by volume is carried by sea, highlighting its indispensability to globalization and international commerce."*

To prevent such fragmentation, the IMO develops legally binding conventions and associated codes that set the baseline standards applicable worldwide. Among the most significant are:

- **SOLAS** (International Convention for the Safety of Life at Sea, 1974): The cornerstone convention ensuring the safety of vessels and seafarers.
- **MARPOL** (International Convention for the Prevention of Pollution from Ships, 1973/78): A comprehensive instrument addressing pollution from oil, chemicals, sewage, garbage, and air emissions.
- **STCW** (International Convention on Standards of Training, Certification, and Watchkeeping for Seafarers, 1978): Governs qualifications and competence of seafarers, ensuring uniformity in skills and safety practices.
- **ISM** Code (International Safety Management Code): Mandates safety management systems for shipping companies.
- **ISPS** Code (International Ship and Port Facility Security Code): Provides measures for security of ships and port facilities against terrorism and unlawful acts.

These instruments together form a comprehensive governance framework that touches upon virtually every aspect of maritime activity—safety, environmental stewardship, seafarers' welfare, and maritime security. Importantly, IMO standards are created through consensus among its 175 Member States, ensuring that the resulting framework reflects global interests rather than unilateral preferences (IMO, 2023a).

The Role of Member States in Uniform Implementation

While the IMO develops conventions, the responsibility for their implementation and enforcement lies with Member States. States that ratify IMO conventions must transpose them into national legislation and ensure compliance through effective maritime administration. This process has three critical dimensions:

1. **Flag State Implementation**
   Ships are subject to the jurisdiction of the state whose flag they fly. Thus, flag states must ensure that vessels under their registry comply with international standards by conducting inspections, certification, and enforcement (IMO, 2023b). Failure to do so risks undermining the integrity of the global regime, as substandard ships could exploit weak regulatory environments.
2. **Port State Control (PSC)**
   Member States also act as port states, inspecting foreign vessels calling at their ports to verify compliance with IMO instruments. Regional agreements, such as the Paris Memorandum of Understanding (MoU) on Port State Control in Europe, coordinate these efforts to prevent "port shopping" by substandard vessels (Paris MoU, 2022).
3. **Coastal State Responsibilities**
   As coastal states, members must implement IMO standards regarding navigational safety, pollution prevention, and emergency response in waters under their jurisdiction.

> *"The International Maritime Organization fulfills this role by establishing binding conventions and codes that serve as the backbone of global maritime governance."*

Beyond legal incorporation, effective implementation also requires capacity building, institutional strengthening, and inter-agency coordination. To this end, the IMO's Integrated Technical Cooperation Programme (ITCP) supports developing countries in meeting their obligations, thereby enhancing global uniformity (IMO, 2023c).

Challenges in Uniform Implementation

Despite the IMO's efforts, challenges remain in achieving consistent application across states. Differences in administrative capacity, resources, and political priorities can result in uneven implementation (Özçayir, 2016). Some developing countries face difficulties in meeting technical requirements due to limited infrastructure and expertise. Additionally, enforcement gaps can lead to "flags of convenience," where shipowners register vessels in states with weak oversight. These issues underscore the importance of international cooperation, transparency mechanisms, and IMO's capacity-building initiatives.

Global shipping is indispensable for sustaining international trade and economic growth. However, its inherently transnational character necessitates a coherent and harmonized system of regulation. The International Maritime Organization fulfills this role by establishing binding conventions and codes that serve as the backbone of global maritime governance. Member States, in turn, bear the responsibility of implementing these standards uniformly through flag state control, port state control, and coastal state duties. While challenges persist, particularly in ensuring consistent enforcement across jurisdictions, the IMO's regime remains essential for maintaining a safe, secure, and environmentally sustainable maritime industry. Without such a system, the benefits of global shipping—economic efficiency, connectivity, and development—would be undermined by risks of fragmentation, environmental degradation, and safety failures.

Capt. Kazi A.B.M Shameem is a graduate of Bangladesh Marine Academy and began his career with Bangladesh Shipping Corporation in 1989, attaining command in 2000. An alumnus of the World Maritime University, he earned his MSc with distinction in Maritime Safety and Environmental Administration. He later pursued a career in maritime education, serving as Deputy Commandant of Bangladesh Marine Academy (BMA) and Commandant of the newly established academies in Barishal and Sylhet. Currently, he is Counsellor (Maritime Affairs) at the Bangladesh High Commission in London and the 1st Alternate Permanent Representative of Bangladesh to the IMO.

IMO's secretary general visiting BMA

An Overview of Emission Requirements in Shipping

Md. Alamgir

The IMO, EU, and UK regulations aimed at reducing greenhouse gas emissions have been in place for quite a few years. However, the requirements still remain unclear to many. This article seeks to offer an easy-to-understand overview of the relevant regulatory instruments.

The regulations for emissions are known as IMO DCS & CII, EU MRV, UK MRV, the EU ETS, and FuelEU Maritime. These are further interpreted and supported by various IMO guidance circulars and EU directives.

A clear and concise overview of the regulations are provided below. For detailed implementation procedures, the documents listed at the end of this article shall be consulted.

IMO Data Collection System (DCS) & Carbon Intensity Indicator (CII): It is a fuel consumption and distance-travelled reporting system, from which the attained CII is calculated. Attained annual operational CII of an individual ship is calculated as the ratio of the total mass of CO_2 (M) emitted to the total transport work (W) undertaken in a given calendar year, as follows:

Attained CII = M / W (g CO_2/t·nm).

Where:

- M = Total fuel consumption × Emission factor of the fuel used
- W = C × D
- C = Ship's capacity*
- D = Distance travelled by the ship

*For certain ship types (such as bulk carriers, tankers, container ships, gas carriers, LNG carriers, general cargo ships, refrigerated cargo carriers, and combination carriers), capacity

is deadweight tonnage (DWT). For passenger ships, capacity is taken as Gross Tonnage (GT).

The Attained Annual CII Rating should be lower than, or at least within the defined boundaries4) of the required CII. Accordingly, there are 5 ratings namely A, B, C, D, E. The ratings A, B, C are acceptable. But if the vessel is rated E in a year, or rated D for three consecutive years, corrective action is to be proposed and accepted by Flag Administration or Recognized Organization on behalf of Flag Administration.

"Decarbonization is no longer optional — it defines the competitiveness and credibility of global shipping."

The Required CII7) & 3) is calculated as a specific percentage reduction from the year 2019 Reference Line2), which is defined as a curve representing the median of the attained operational carbon intensity in the year 2019, as a function of ship's Cargo Capacity, based on collected data of individual ships.

EU MRV: Unlike IMO CII requirement, the EU MRV Regulation9) does not impose emission limits, but it requires monitoring, reporting, and verification of greenhouse gases emitted by ships. Until 31st December 2023 only Carbon Dioxide (CO_2) has been monitored. From 1st January 2024, Methane (CH_4) and Nitrous Oxide (N_2O) have been included in the monitoring requirements.

Initially, this regulation applied to cargo or passenger ships of 5,000 GT and above. From January 1, 2025, it also covers general cargo ships between 400 and 5,000 GT and offshore ships of 400 GT and above. This Regulation is applicable for the greenhouse gas emissions released during voyages from last port of call to a port of call under the jurisdiction of a Member State and from a port of call under the jurisdiction of a Member State to their next port of call, as well as within ports of call under the jurisdiction of a Member State9).

This is in fact a method of monitoring fuel consumption and emission factors of the fuels and other relevant data. Data from flow meters linked to CO2 sources (Main Engine, Auxiliary Engine, Gas Turbine, Boiler, and Inert Gas Generators) are used to calculate fuel consumption for the period between two port calls or within a port.

The parameters monitored on voyage basis are: port of departure and port of arrival including the date and hour of departure and arrival; amount and emission factor for each type of fuel consumed in total; greenhouse gas emitted; distance travelled; time spent at sea; cargo carried; transport work.

The parameters monitored on an annual basis are: amount and emission factor for each type of fuel consumed in total; total aggregated greenhouse gas emitted within the scope of this Regulation; aggregated greenhouse gas emissions from all voyages between ports under a Member State's jurisdiction; aggregated greenhouse gas emissions from all voyages which departed from ports under a Member State's jurisdiction; aggregated greenhouse gas emissions from all voyages to ports under a Member State's jurisdiction; greenhouse gas emissions which occurred within ports under a Member State's jurisdiction at berth; total distance travelled; total time spent at sea; total transport work; average energy efficiency.

UK MRV: Generally, the UK MRV10) is the same as the EU MRV, with "EU" replaced by "UK." It applies to vessels over 5,000 GT that call at UK ports.

EU ETS: From 2025 shipowners are to pay for the GHG Emissions reported in Annual Monitoring, Reporting & Verification (MRV) Reporting Period for the preceding calendar year. In accordance with the Article 3gb & 12 of the Directive11), shipping companies shall be liable to surrender allowances (pay for emission) according to the following schedule:

(a) 40 % of verified emissions reported for 2024.

(b) 70 % of verified emissions reported for 2025.

(c) 100 % of verified emissions reported for 2026 and each year thereafter.

The EU ETS applies to cargo and passenger ships over 5000 GT from 2024, and to offshore ships over 5000 GT from 2027. Initially covering carbon dioxide emissions, it will include methane and nitrous oxide from 2026. Offshore and general cargo ships between 400 and 5000 GT may also be included in the EU ETS system at a later stage.

100% emissions on voyages and in ports within the EU/EEA, and 50% emissions on voyages into or out of the EU/EEA, are subject to the EU ETS.

FuelEU: Under the FuelEU Maritime regulation[12], shipowners must pay penalties if their annual average GHG intensity (gCO_2e/MJ) exceeds the regulatory limit. The excess is referred to as a Compliance Balance Deficit, for which the company is required to pay.

"From IMO CII to FuelEU Maritime, the industry is steering toward measurable, accountable, and cleaner operations."

The GHG intensity takes into account emissions across the entire lifecycle of the fuel, from production and transportation to combustion (also known as "well-to-wake"). Although it includes all these stages, the GHG intensity mainly depends on the fuel's CO_2 emission factor. Consequently, this will drive shipowners to seek for low GHG-intensity fuels, encouraging the industry to develop renewable energy sources and innovative fuels with low carbon emission and higher energy concentration.

The requirement applies to 100% energy used on voyages and in ports within the EU/EEA, and 50% of energy used on voyages into or out of the EU/EEA.

The limit values are calculated by applying the percentage reduction from the reference value of 91,16 gCO_2e/MJ. The reference value corresponds to the fleet average GHG

intensity of the energy used on board by ships in 2020, as determined from data collected in EU MRV platform. The limits are shown in the table below:

Year:	2025	2030	2035	2040	2045	2050
Reduction(%):	2	6	14.5	31	62	80
Req. intensity (gCO2e/MJ)	89.3	85.7	77.9	62.9	34.6	18.2

The calculation method is provided in the "Report on Marine Fuels Certification Procedures to Support Implementation of FuelEU Maritime," recently published by the European Sustainable Shipping Forum.

If a shipping company fails to achieve the limit, it must pay a fine to national authorities. However, penalties may be avoided by using compliance mechanisms like: Banking (storing surplus for future use), Borrowing (taking advance credit from the next year, with interest), or Pooling (combining vessels' compliance balances to achieve an average on a fleet level).

Md. Alamgir, BEng (Hons), CEng
Principal Surveyor / Engineer, DATE® Centre Asia, Maritime DNV AS

Md. Alamgir, a Chartered Engineer and Principal Surveyor at DNV, has over 30 years of experience in marine engineering. A graduate of the Marine Academy Bangladesh (22nd batch) and the University of Northumbria, UK, he holds a Class I Marine Engineer certificate. His career includes service with Bangladesh Shipping Corporation, Fleet Superintendent at Abul Khair Group, and Lecturer at the Malaysian Maritime Academy.

Sea Change: Regulations to Control Maritime Emissions for a Cleaner Future

Abu Hasan Rony

This article explores how evolving maritime regulations are reshaping global shipping toward decarbonization. From IMO's sulphur limits and EEXI/CII standards to the EU ETS and FuelEU Maritime, new rules redefine competitiveness and sustainability. It argues that early movers gain clear cost and market advantages, while nations like Bangladesh must embrace innovation to navigate this green transition.

Change is the only constant, and the maritime industry is no exception. For centuries, maritime trade has been the backbone of global prosperity, connecting economies and driving growth. Yet, this progress has come at a cost—burning heavy fuel oil emits carbon dioxide, sulphur, and nitrogen, contributing to climate change and harming human health. The European Commission estimates that shipping emitted around 124 million tonnes of CO_2 within the EU in 2021, about 3 %–4 % of total EU emissions. Worldwide, international shipping released 1 076 million tonnes of CO_2 in 2018, and emissions could rise to 130 % of 2008 levels by 2050 without new measures. These impacts have drawn regulators to act. Over the past quarter-century, rules have evolved from basic fuel limits into comprehensive programmes that reshape ship design, operations and fuel choice. Understanding this journey is crucial for maritime world to sustainably grow and move to a greener future.

The romance of shipping is still there, but now it is mixed with a surge of environmental science. This story of regulatory shifts is as dramatic as any ocean voyage. Decades ago, old-timers would smell sulphur in the sea breeze. Today, you might spot exhaust scrubbers, LNG tanks or an electric shore connection on a cruise ship.

Global Sulphur Emissions Cap-Regulation began in the 1997 Protocol to the MARPOL Convention, which created Annex VI to control air pollution from ships and entered into force in 2005. Early rules introduced a 3.5 % global sulphur cap in 2012. In certain coastal control areas, the limit became 0.10 %. A decisive moment came when the IMO stuck to its plan for a 0.50 % global cap, which took effect on 1 January 2020. The new limit compelled ships to burn cleaner fuel or install exhaust gas cleaning systems. Regional leadership continues to push boundaries: the Mediterranean adopted a 0.10 % sulphur limit from 1 May 2025, and the North-East Atlantic is expected to follow around 2027. Plans are also underway to extend sulphur control to the North-East Atlantic, showing

how regional initiatives inspire global change.

Fuel Efficiency Improvement- Limiting sulphur is not enough to improve emissions, so efficiency standards followed. Amendments in 2011 introduced the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships, tightening design standards and requiring operational plans. The IMO later added rules on NOx and, from 2023, measures for older vessels such as the Energy Efficiency Existing Ship Index (EEXI) and the Carbon Intensity Indicator (CII), extending efficiency controls from newbuilds to the whole fleet. Under this rating system, ships are graded annually from A to E for carbon intensity; those with persistent low grades must submit improvement plans, turning fuel efficiency into a competitive differentiator.

A radical pivot came in July 2023 when the IMO pledged to reach net-zero shipping emissions by 2050. For an industry that often measures progress in decades, this announcement felt like a moonshot. The strategy includes checkpoints, calling for emissions cuts of roughly 20%–30% by 2030 and 70%–80% by 2040. It urges uptake of zero-emission fuels and foreshadows a goal-based fuel standard backed by an economic element like a carbon price. A draft framework, Green Fuel Initiative (GFI) approved in 2025 will, if adopted, enter into force in 2027 and signal that carbon is no longer free. Details remain under negotiation, but the direction is clear: future fuels must be cleaner, and emissions will carry a cost.

While the IMO moves slowly, the European Union is acting now. From 2024 EU Emissions Trading System (ETS) accompanied by FuelEU Maritime Regulation, effective 2025, will impose a declining greenhouse-gas intensity limit and require ships to plug into shore power in EU ports. Together, these measures set a price on pollution and reward investment in cleaner vessels and fuels. Behind the effort lies a revolution in digital operations: companies now use artificial intelligence to choose weather-optimised routes, slow down to match berth availability and report fuel consumption via blockchain. Saving carbon is becoming a logistics game as well as an engineering challenge.

Beyond Europe, other jurisdictions are raising the bar. China has set up Domestic Emission Control Areas (DECAs) along its coast. Ships in these waters must use fuel with sulphur content no higher than 0.5 %, and officials are considering a 0.1 % limit by 2025; open-loop scrubber wash water is banned. In the United States, national ECAs already limit SOx and NOx along the coasts, but California has gone further with its Ocean-Going Vessels At Berth Regulation. Major vessels must plug into shore power or use approved emission controls from 2023, and the rules will extend to more ship types by 2027. Upcoming Mediterranean and North-East Atlantic ECAs show how regional leadership continues to expand. These patchwork rules can complicate operations but also push global standards forward.

"The energy transition is not only a regulatory obligation but also a commercial opportunity—an opportunity early movers are best positioned to seize."

The coming decade will bring tighter rules and new fuels. The IMO's net-zero framework will pair a fuel-intensity standard with an economic instrument, likely a levy or emissions trading, to put a price on carbon. Regional initiatives such as FuelEU Maritime provide a running start by encouraging early adoption of low-carbon energy. Hydrogen, ammonia, methanol, biofuels and electricity are moving from demonstration to deployment as engine builders and fuel suppliers scale up. For the Bangladeshi maritime workforce, these changes bring challenges and opportunities.

Early Movers: Gaining the Advantage

In this new regulatory era, companies that act early will enjoy clear benefits. Compliance is no longer just an obligation—it is becoming a competitive advantage. By adopting cleaner fuels, investing in efficient technologies, and embracing digital tools ahead of deadlines, early movers can secure:

- Cost and Market Advantages- Lower exposure to rising carbon costs under the EU ETS and IMO rules, along with access to green financing, preferential charter rates, and long-term contracts.
- Stronger Market Position- Cargo owners increasingly demand low-carbon shipping. Vessels with strong ratings under CII or FuelEU will stand out and win more business.
- Future-Proof Operations- Investing in dual-fuel engines, hybrid propulsion, and digital optimisation ensures compliance across vessel lifecycles, avoiding stranded assets.
- Reputation and Talent- Leaders in sustainability build trust with stakeholders and attract skilled professionals eager to work in greener shipping.
- The lesson is simple: those who delay will face higher costs, while those who move early will gain lasting rewards in cost savings, contracts, and reputation.

Ultimately, the lesson of maritime regulation is clear: those who wait will pay more, while those who act early will gain. The energy transition is not only a regulatory obligation but also a commercial opportunity—an opportunity early movers are best positioned to seize.

"Bangladesh should chart its own course rather than drift with the tide—bravely forward indeed."

For Bangladesh, these shifts present an opportunity. Bangladesh's yards could evolve into green recycling hubs, design low-carbon inland vessels for the country's rivers. With Singapore investing in hydrogen and ammonia, Bangladeshi owners can learn to adopt those fuels. The energy transition is a voyage of discovery; Bangladesh should chart its own course rather than drift with the tide, bravely forward indeed.

Abu Hasan Rony

Rony is an experienced maritime energy professional with over two decades in the shipping industry, spanning ship operations, energy efficiency, and sustainability. He currently serves as Manager, Emissions at MISC in Singapore, where he leads regulatory compliance for IMO DCS, EU MRV, EU ETS, CII, and FuelEU Maritime, alongside projects on alternative fuels and energy-saving technologies. A former Chief Engineer, Rony holds an MSc in Maritime Energy Management from the World Maritime University, Sweden, and is a Chartered Engineer (UK) as well as a Certified Energy Manager (CEM®). He is pursuing a PhD on zero-carbon shipping pathways at University of Malaysia Terengganu. Beyond his professional role, Rony contributes actively to the Bangladesh Marine Community Singapore (BMCS) as Professional Development Secretary, promoting knowledge-sharing and professional growth among marine professionals.

Navigating Shipping Through a Legal and Compliance Lens

Sayeed-Ul Mursalin

This article explores the vital role of legal and compliance frameworks in modern shipping. As global trade evolves amid complex regulations and ethical expectations, compliance has become a strategic pillar ensuring safety, transparency, and sustainability. It highlights AET's proactive approach to sanctions control, anti-corruption measures, ESG integration, and technology adoption to foster a culture of integrity and responsibility.

Shipping has long been the backbone of global trade, enabling over 80 percent of goods to move seamlessly across the world's oceans. As the industry evolves in response to shifting regulations, geopolitical complexities, and growing expectations around sustainability and ethics, the legal and compliance landscape has never been more challenging - or more critical to business resilience. For shipping companies, compliance is no longer just a protective measure; it has become a strategic enabler of trust, sustainability, and long-term growth.

The Rising Tide of Regulation

The maritime sector operates in one of the most heavily regulated environments in the world. From international conventions under the International Maritime Organisation (IMO) to regional and national regimes, shipping companies must ensure strict adherence across multiple jurisdictions simultaneously. Regulations cover a broad spectrum:

- Environmental standards such as the IMO 2020 sulphur cap, carbon intensity measures (CII), and emissions reporting obligations.
- Safety frameworks including SOLAS, MARPOL, and ballast water management.
- Trade compliance involving sanctions regimes, export controls, and financial crime prevention.
- Corporate governance anchored in anti-bribery, corruption prevention, and responsible business conduct.

What makes compliance particularly complex is the dynamic and fragmented nature of these rules. An operator may comply with IMO standards but still face additional obligations under EU sanctions, U.S. OFAC advisories, or port state control

inspections. Ensuring compliance means building systems that can adapt rapidly to regulatory change while maintaining operational efficiency.

Sanctions and Trade Controls - Navigating Geopolitical Currents

Perhaps the most pressing compliance challenge in recent years has been the tightening web of trade sanctions and financial restrictions. From restrictions on energy cargoes to measures targeting the so-called "shadow fleet," companies are under increasing scrutiny to ensure vessels, cargoes, and counterparties remain clear of sanctioned links.

For shipping companies, this requires far more than a routine check. It calls for:

- Enhanced due diligence to verify the legitimacy of counterparties and cargo origins.
- Monitoring vessel activity to detect red flags such as ship-to-ship transfers in high-risk areas.
- Robust screening systems to track evolving lists of sanctioned individuals, entities, and flag states.

Failure to comply can result not only in significant penalties but also reputational damage. For companies like AET, the focus is on embedding a culture of compliance where employees, partners, and stakeholders recognise the importance of diligence and integrity at every stage of the voyage.

Anti-Bribery and Corruption - Maintaining Integrity at the Ports

Shipping is global by nature, and vessels call at ports with diverse practices and governance standards. Unfortunately, this also exposes operators to risks of solicitation, facilitation payments, and corrupt demands. With increasing global emphasis on transparency, anti-bribery and corruption (ABC) compliance has become a non-negotiable.

Best practice involves:

- Clear policies and training to ensure employees understand what is acceptable and what is not.
- Whistleblowing and reporting mechanisms to empower crew and staff to raise concerns without fear.
- Zero-tolerance approaches communicated to third parties and port agents.

At AET, integrity is not viewed as a "compliance exercise" but as a business value. By prioritising ethical decision-making and equipping our people to stand firm against undue demands, we safeguard both our operations and our reputation.

ESG and Human Rights - Expanding the Compliance Horizon

Beyond traditional legal frameworks, the shipping industry is increasingly being measured against **environmental, social, and governance (ESG)** standards. Investors, regulators, and customers are paying closer attention to how companies address climate impact, crew welfare, and human rights risks in their supply chains.

"Compliance is not a box-ticking exercise but a reflection of who we are and how we conduct our business."

Human rights due diligence in shipping goes beyond compliance - it reflects a moral responsibility. Issues such as seafarer welfare during long voyages, fair treatment of migrant workers, and working conditions across the maritime value chain are central concerns. Incorporating human rights into compliance frameworks requires a proactive approach, including:

- Supplier and charterer due diligence on human rights risks.
- Transparent grievance mechanisms for seafarers and workers.
- Alignment with international frameworks such as the UN Guiding Principles on Business and Human Rights.

For AET, compliance means more than meeting the letter of the law. It means striving to be a responsible stakeholder in the maritime community by embedding sustainability and ethics into the very fabric of operations.

Building a Culture of Compliance

While policies and processes are important, true compliance success comes from culture. A company may have the most comprehensive manuals, but without engaged employees who believe in the values of compliance, gaps will inevitably surface.

Embedding compliance culture requires:

- **Tone** from the top - leaders who set expectations through action, not only words.
- Continuous training and awareness - ensuring employees across offices, vessels, and functions stay up to date.
- Cross-functional collaboration - integrating compliance into commercial, operational, and technical decision-making.

At AET, compliance is viewed as everyone's responsibility, not just the remit of the legal or compliance department. By fostering open communication and encouraging staff to raise concerns early, we create an environment of psychological safety where compliance is seen as integral to performance.

Technology as an Enabler

Modern compliance also benefits from technology. With increasing demands for due diligence, monitoring, and reporting, digital tools play a vital role in strengthening oversight. Examples include:

- Automated screening systems for sanctions and third-party risks. · Vessel tracking and analytics to identify unusual trading patterns. · E-learning platforms to deliver compliance training globally.

Leveraging these solutions helps companies stay ahead of regulatory expectations while making compliance more efficient and scalable.

"The legal and compliance function in shipping is now a strategic enabler of trust, sustainability, and resilience."

Looking Ahead - Compliance as a Competitive Advantage

As shipping navigates through decarbonisation, digitalisation, and geopolitical uncertainties, the legal and compliance function will only grow in strategic importance. Stakeholders - from regulators to customers - will increasingly expect shipping companies to demonstrate transparency, ethical conduct, and resilience.

For AET, compliance is not a box-ticking exercise but a reflection of who we are and how we conduct our business. By prioritising integrity, diligence, and responsibility, we build not only compliance resilience but also trust with our partners, regulators, and the communities we serve.

Sayeed-Ul Mursalin is a Legal and Compliance Executive at AET Tankers Pte Ltd (AET), where he supports the company's global compliance and integrity agenda with a focus on anti-bribery, ethics, sanctions and corporate governance to name a few. Prior to joining AET, he gained extensive experience in legal and compliance roles across various organisations including but not limited to law firms and regulated financial institutions, strengthening his expertise in regulatory compliance, risk management, and ethical business conduct. His professional work reflects a strong commitment to upholding integrity, transparency, and accountability within the corporate environment.

The global seafarer market today, in short-term and long-term outlook

Captain Rahat Suman

The maritime industry is undergoing rapid change as decarbonization, digitalization, and automation reshape the seafarer workforce. This article examines global trends, highlighting officer shortages, training gaps, and mental health challenges. Citing BIMCO/ICS and Clarksons data, it stresses the urgent need for governments, shipowners, and training bodies to upskill crews and ensure a sustainable, technology-driven future.

Shipping is in the middle of a structural shift. Freight markets and vessel orders have swung from boom to moderation, while an industry-wide decarbonization drive, new ship types (LNG/ammonia/methanol-capable tonnage), and geopolitical risk have changed what owners need from seafarers. Those forces — plus long-standing issues (ageing crews, training bottlenecks, pay/conditions and mental-health stresses) — will shape supply and demand for officers and ratings over the next 5 years and the next 15–20 years.

Snapshot right now (mid-2025)

- Industry bodies warn that office shortages are already significant and building. BIMCO/ICS and other analysts highlight gaps in technically experienced officers, especially at the

management level and in some specialized sectors.

- Newbuilding activity surged in 2023–24 (and some segments remain at record orderbook levels), but contracting softened in H1-2025 with fewer orders than 2024; deliveries remain high in 2025–2027 in some segments. Clarksons shows a large orderbook for LNG, containerships and many alternative-fuel capable vessels.
- Decarbonization will require mass retraining: independent reporting estimates hundreds of thousands of seafarers will need additional training to handle new fuels and technologies (e.g., ~450,000 by 2030 and up to ~800,000 by the mid-2030s in some media summaries of industry modelling). This is a major immediate skills need.
- Operational threats (Red Sea attacks, ship abandonment, mental-health strain) are already reducing crew willingness to serve in certain trades and adding to retention problems.

Short-term outlook — next 5 years (2025–2030)

Demand drivers

- Fleet deliveries and replacements. Clarksons and other data providers expect continued high annual delivery volumes in the immediate years ahead (peak deliveries for containership capacity around 2026–2028 and a very large LNG orderbook destined for deliveries mid-decade). That sustains demand for officers/ratings to man the ships.
- Decarbonization retrofits / dual-fuel vessels. Many newbuilds are "alt-fuel capable"; those ships require crews trained in gas handling, fuel switching and new engine/plant safety protocols. Training demand will spike quickly.
- Operational disruptions. Geopolitical hotspots and insurance/willingness-to-sail issues (e.g., Red Sea security) can temporarily divert crew supply, increasing short-term pressure on rosters.

"Decarbonization will require hundreds of thousands of seafarers to be retrained by the mid-2030s — a challenge that defines the decade ahead."

Supply picture

- Recruitment pipelines recovered after COVID but remain fragile: cadet throughput, regional training capacity (academies, simulators), and certification capacity are the bottlenecks. Industry surveys indicate that recruitment is underway, but the number of experienced officers remains tight.

- Net effect (5 years)- Expect acute officer shortages in specific segments (see below), intermittent localized crewing crises driven by security/abandonment events, and large training demand for fuel/green skills. The short window 2026–2028 could be the most pressured because of clustered deliveries in the container and LNG sectors.

Long-term outlook — 15 to 20 years (2035–2045)

Structural changes

- Automation and digitalization will reduce some routine tasks, but technical and supervisory roles (senior officers, engineers, systems specialists) will still be essential — many tasks will shift toward highly trained technical seafarers.
- Green fuels and new ship systems (ammonia, hydrogen, advanced fuel cells, battery hybrids, more complex cargo systems) will permanently change training curricula and create specialized roles. Reuters and industry analysis suggest substantial re-skilling needs and new occupational profiles.

Workforce shape

- The industry will require fewer but more highly skilled seafarers per ship in some segments (automation + digital monitoring), but more seafarers overall if fleet growth is sustained; the balance depends on order volumes and the pace of autonomous operations. Clarksons' long-run ordering projections point to sustained high build activity into the 2030s, which implies continued demand for trained crew.

Shipping segments that are most likely to face qualified-crew shortages:

1) Tankers (chemical/product/tanker officers with gas and cargo competence) — historically and repeatedly flagged as suffering shortages of technically experienced officers. BIMCO/ICS and industry press have called this out.
2) LNG and gas carriers — large newbuilding programmes and specialised cargo handling create acute demand for gas-trained officers/engineers. The LNG orderbook is large and deliveries are concentrated mid-decade.
3) Offshore (FPSO/rig support / specialized units) — complex operations and a smaller talent pool make recruitment and retention harder; offshore often needs different certifications and experience.
4) Containerships (senior bridge/engine officers) — while ratings shortages can be less segment-specific, rapid expansion of mega-containerships and the challenges of route changes increase demand for experienced senior officers. Security issues (Red Sea) further reduce supply for affected trades.
5) Cruise and passenger — specialist hospitality and safety training plus higher labour expectations mean cruise may compete for certain officer/crew talent (though cruise employment has strong pay/benefits in many markets).

How many ships are expected to be built — a practical estimate

- Near-term (next 5 years): Industry sources reported very high contracting in 2023–24 and a moderation in 2025: rough mid-2025 snapshots show hundreds of ships ordered in the first half of 2025 (e.g., ~647 ships in H1-2025) and orderbook totals of several thousand vessels (orderbook figures vary by GT vs dwt).
- Medium-term forecast projects ~2,200 new ship orders per year across 2024–2034 on average (the exact annual number will vary by year and segment). Over a 5-year window, that suggests 10,000–11,000 new ship contracts.
- Long-term (15–20 years): Longer-run projection (average ~2,200 pa into the 2030s) is indicative, 33,000–44,000 new ships could be ordered/constructed over 15–20 years — but large uncertainty exists because of policy, trade growth scenarios and ship-life extension or scrapping decisions.

Main challenges in getting a qualified crew:

1) Training capacity lag: academies, cadet berths, simulators and technical instructors need rapid expansion — particularly for green-fuel training (ammonia, hydrogen, methanol, battery safety).
2) Retention and well-being: lengthy tours, mental-health stress, and security risks (war zones, pirate attacks) reduce retention and willingness to sail on some trades. Ship abandonment and unpaid wages also damage the profession's appeal.
3) Geographic concentration of seafarer supply: heavy reliance on a few labour pools (Philippines, India, China, Eastern Europe) risks bottlenecks and wage escalations.
4) Competition from shoreside tech jobs and alternative employers for younger talent who may prefer land-based tech roles over life at sea.
5) Regulatory and certification delays: updating STCW syllabi and national certification frameworks to include new fuels and systems takes time — this slows deployment of trained seafarers.

"Automation will change seafaring roles, but never eliminate the need for skilled, adaptive, and human expertise at sea."

How to overcome the challenges — practical actions (industry + flag states + companies)

- Scale up cadet pipelines and sponsorships: Expand cadet sponsorships, public-private training partnerships, and guaranteed cadet-to-job pathways. Target underrepresented talent pools. BIMCO/ICS work and industry surveys highlight the need for cadet expansion.
- Fast-track green-fuel competency programs: Create modular, competency-based courses for ammonia/methanol/LNG safety that can be delivered in concentrated bursts (simulator + shore-based practicals). Support from flag states and IMO guidance will be needed. Reuters and IMO-related initiatives already call for mass retraining.
- Improve pay, contracts and welfare: Better wages, shorter tours where possible, clear mental-health support, and robust anti-abandonment protections will improve retention and attract talent. Recent reporting on abandonment and trauma underscores urgency.
- Use technology to reduce low-value manning while

upskilling remaining crew: Smart automation can reduce routine workloads; remaining crew should be upskilled to supervise automated systems rather than replace seafarers outright. This reduces headcount pressure while improving safety and efficiency.

- Diversify recruitment geography & promote maritime careers: Proactive recruitment in under-tapped regions, targeted scholarships for women (EU skills forums are pushing gender diversity), and maritime career campaigns to compete with shore jobs.
- Industry coordination and data: Use industry surveys (BIMCO/ICS Seafarer Workforce Surveys) and Clarksons orderbook signals to match training output with projected demand by segment and year. Better forecasting allows target capacity expansion.

Bottom line

Short term (next 5 years) - Plan for concentrated training ramps (green fuels + LNG skills), expect acute shortages in tankers, LNG and offshore, and prepare for localized retention shocks (security/ abandonment). Match segment-wise cadet intake and consider crew welfare and targeted incentives for critical ranks.

Long term (15–20 years) - Expect the workforce to be smaller in numbers per ship in some trades, but far more technically trained. Invest early in lifelong learning, simulator capacity, and shore-side career options to retain talent. Automation will change roles, not eliminate the need for highly skilled seafarers.

Captain Rahat Suman is a Master Mariner and Fleet Personnel Manager with over 27 years of maritime experience. He holds an MSc in Maritime Studies from NTU, Singapore and a PG Diploma in Executive Maritime Management, with further studies at WMU. At Bernhard Schulte Shipmanagement (Singapore), he manages crewing for over 100 Tankers, ensuring compliance with global standards such as STCW, MLC, and ILO. Captain Rahat is recognized for his integrity, leadership, and collaborative style. He has worked closely with key industry bodies and is an active member of the INTERTANKO Chemical Tanker Committee. His dedication to safety, training, and operational excellence has earned him a strong reputation as a reliable and respected maritime professional, both at sea and ashore.

Seafarers and just transition in the maritime industry: Implications for Bangladesh

Md. Manjurul Kabir

The use of new and emerging technologies in the maritime industry could have a profound impact on the seafaring profession. As such, this paper examines and suggests the urgent need by Bangladesh for proactive and comprehensive strategies to ensure that seafarers are not left behind; it is just and equitable for them.

1. Introduction

In recent years, IMO has been intensifying its efforts in environmental legislations. Although, global shipping is responsible for only 3% of the total global Green House Gas (GHG) emissions, stringent policy measures are already adopted by IMO to de-carbonize maritime sector. As such, the maritime industry stands at a pivotal moment. The push for decarbonization and the adoption of new technologies are reshaping the maritime landscape. While these changes promise a more sustainable future, they also present significant challenges, particularly for the seafarers who are the backbone of the shipping industry.

Seafarers are the heart of shipping. They navigate in the seas, and ensure the smooth flow of global trade. As the maritime industry is in transition to a greener, more technologically advanced industry, it is imperative that the industry recognize the vital role seafarers play and ensure that this transition is just and equitable for them.

With regard to the impact on Bangladeshi seafarers' due to this transition, the country needs to provide early access to training and skills development of the seafarers in zero-emission technologies and fuels aligning with IMO targets to ensure fair career paths. In fact, considering the importance of the contribution of seafarers in the economy of the country, Bangladesh needs multi-faceted approach to address just transition in the maritime industry.

2. Mobilization of resources for financing a just transition in the maritime sector

Bangladesh is one of the most vulnerable countries in the world to the effects of climate change. Presently, the country is adopting a two-fold strategy against climate change impacts. The main focus of Bangladesh's activities is on increasing resilience to the impacts of climate change. At the same time, the country is also working to achieve lower Green House Gases (GHG) emissions, as well as more resilient development.

Bangladesh has been internationally recognized for its pioneering work in climate adaptation finance through domestic funds, climate-smart budgeting, blended public–private partnerships, and also funding from development partners.

As such, these lessons can be translated into financing a just transition of the maritime sector of the country, so as to ensure that the seafarers challenges are adequately addressed.

- Establish a Maritime Just Transition Facility (MJTF) supported by national budget allocations. Investing in infrastructure and technology will be essential to support the shift to green fuels and energy-efficient ships, creating opportunities for skilled jobs in this area;
- Integrate climate budgeting which can be extended to climate fiscal framework to the maritime sector including investment in modernization of merchant fleet. This will implement climate budget tagging for port, maritime transport, and blue economy expenditures. Also publish an annual maritime climate budget statement to enhance investor confidence and transparency;
- Develop a Port and Shipping Transition Plan 2050 with rolling 5-year projects aligning with the Delta Plan 2100; and
- Form a Maritime Transition Delivery Unit for policy framing and overseeing the seafarers' welfare.

"A just and equitable transition of seafarers can be considered equivalent to the transition of the maritime ecosystem."

3. Shipowners and governments collaboration to ensure fair wages, decent working conditions, and mental health support

Ensuring fair wages, decent working conditions, and mental health support during the maritime industry's transition i.e., decarbonization, digitalization, and automation requires joint action between shipowners and government. Here's how they can collaborate effectively:

- To align with international labor and safety frameworks in line with Maritime Labour Convention, 2006 and related legal instrument;
- Governments, shipowners, and seafarer unions may establish Tripartite Wage Boards to review wage levels regularly;
- Government may provide grants or subsidies for safety and technical training on zero/low-emission fuels and digital systems;
- Governments may prescribe mental health support protocols for shipping companies as part of their safety management system and may also form maritime tripartite forums to address grievances.

4. Adherence to International Frameworks and Strengthening International Collaboration and Standards

International frameworks like IMO's decarbonization strategy helps to set clear, predictable standards which allows government, shipowners and training institutes to plan investments and workforce development with confidence. Therefore, adherence to international frameworks and international collaboration might be beneficial for Bangladesh.

- Government may create access to finance and technology with the support of Green Climate Fund, that can channel grant funding for green port infrastructure, cleaner fuels, maritime training and resilience projects;
- Government may establish Technical Co-operation Programmes under IMO that may provide expertise, training curricula, and technology transfer; and
- Bangladesh may seek international cooperation for upgrading its merchant fleet, green fuel bunkering infrastructure, electrifying ports, and supporting seafarers and port workers training during the transition.

5. Mechanisms for seafarers reskilling, upskilling, or alternative livelihood opportunities

Several policies are emerging to support seafarers during the shipping industry's transition to greener practices.

- Development of National Action Plan (NAP) for Green Shipping. In April 2025, Bangladesh launched the development of a National Action Plan to reduce greenhouse gas (GHG) emissions from shipping, with support from the IMO's GreenVoyage2050 Programme. The initiative has identified "enhancing training for seafarers and port managers" as a priority action. Therefore, a comprehensive maritime training policy aligning with the global standard should be included in the national action plan;
- Implementation of Hong Kong Convention (HKC)

for Ship Recycling. To green the ship-breaking industry, Bangladesh ratified the HKC in 2023, setting a compliance deadline for June 2025. Several shipyards have already received green certification, which often includes improved wages and safer working conditions. Efforts to be continued to bring other breaking yards into compliance;

- To establish a dedicated national fund for a "Just Transition" to finance comprehensive reskilling, upskilling, and alternative livelihood programs for seafarers; and
- To develop social dialogue and partnership in consultation with all stakeholders i.e., government agencies, ship owners, and specially trade unions.

"Bangladesh must ensure its seafarers are not left behind in the global race toward a zero-carbon future."

6. Governments and training institutions collaboration to align maritime education with the challenges of technological innovation and decarbonization

Governments may align its maritime education with the challenges of technological innovation and decarbonization by the government mandating curriculum reform, investing in modern infrastructure and facilities, and fostering international collaborations and public-private partnerships.

- Government may enact policies to revise and update maritime curricula to incorporate new technologies, such as Artificial Intelligence (AI);
- Government may promote Public-Private Partnerships to forecast workforce needs and align educational programs with actual industry demands;
- Industry-Academia Partnerships can be strengthened to develop high-quality training programs, conduct joint research, and provide practical training opportunities for seafarers and port workers.
- Training Institutes may develop specialized courses and research projects focused on sustainable maritime practices, green technologies, and renewable energy solutions for the shipping industry.

Seafarers are an important part of global shipping industry. As long as oceans exist, the trade and commerce will keep flowing and connecting economies around the world, which cannot be done without the assistance of the seafarers. This group, which works hard in transporting goods against deadlines, has evolved as the indispensable part of the shipping industry. Therefore, a just and equitable transition of seafarers can be considered equivalent to the transition of the maritime ecosystem.

In Bangladesh, several policies are emerging to support seafarers during the shipping industry's transition to greener practices, though significant gaps and challenges remain. Bangladesh need to ensure that seafarers are not left behind as we move towards a zero-carbon future. It means Banglaadesh need to provide them with the necessary training and skills to operate new, low-emission vessels and technologies, protecting their livelihoods and ensuring their well-being throughout this transformation.

Md. Manjurul Kabir is presently serving as Commandant of Marine Academy Chattogram, Bangladesh. He previously worked at the department of shipping Bangladesh as Chief Engineer and Ship Surveyor. He obtained Master of Science in Maritime Affairs (Maritime Education and Training specialization) from World Maritime University, Malmo, Sweden. He graduated from Bangladesh Marine Academy, Chattogram in 1992, and from 27th Batch.

QUALITY GUARANTEED
Q Food
A SINGTRADE PRODUCT

Q Food by Singtrade

Where Quality Meets Sweet & Savoury Taste.

SINGTRADE

Cookies

Juices

Healthy Treats

Spices & Masala

Chanachur

Puffed Rice

Pickle

Toast & Dry Cake

Edible Oil

Telephone: +65-96373764

www.singmartrade.com

Bangladeshi Seafarers: Opportunities to mitigate global Seafarers shortages.

Arifur Rahman Khan

BMCS ran an industry pulse survey (Aug–Sep 2025) among shipowners, managers and technical leaders based in Singapore. Respondents include fleet managers, superintendents, marine/technical managers and senior crewing leaders across bulk, tanker and mixed fleets.

The verdict is clear: Bangladesh can play a decisive role in easing the global officer shortage—but only if visa barriers are removed and training quality, English proficiency and placement systems are upgraded. Companies value Bangladeshi seafarers for commitment, technical strength and cost-competitiveness, yet hesitate when faced with immigration hurdles and uneven training standards

The maritime industry faces a growing shortage of qualified officers and seafarers, driven by fleet expansion, early retirements, limited new recruitment, and the lure of shore jobs. Seafarers are the company's most valuable asset and as company representatives, must demonstrate leadership, teamwork, and uphold safety, health and environmental standards through professionalism, fairness, communication, and on-going training.

The Marine Profession in Bangladesh

In Bangladesh, a seafaring career is appealing due to high foreign-currency wages, global travel, and a distinctive lifestyle. After 12 years of schooling (HSC/A-Level), young people can enrol as cadets in English-language training programs, meeting IMO STCW standards. Bangladesh is maintaining position in the IMO Whitelist since 2000. Bangladeshi seafarers are known for their extended service at sea till the senior positions such as Master or Chief Engineer. Family structure and culture of Bangladesh also assist the seafarers to serve longer in the sea.

- Highly competitive wages, often surpassing those of comparable shore-based professions
- Strong global demand ensures long-term employment and expanding training opportunities.
- Internationally recognized qualifications to open doors for global careers.
- Seafarers support both national income and global trade.

IDEAS FROM EMPLOYERS (ACTIONABLE THEMES)

- Targeted outreach: BMCS & High Commission to visit owners/ managers with a short capability video and consolidated placement deck.
- Align cadet intake to market demand: plan national intake by forecasted vacancies.
- One-stop window like MPA: simplify documentation, CoC verification and crew services into a single digital portal.
- Market the brand 'Bangladesh Seafarer': coordinated branding to counter negative perceptions and highlight success stories.
- National re-skilling push: English & soft-skills bootcamps; simulator time; tanker/gas endorsements; contemporary curricula (AI, data, GHG).
- Wages & CBA alignment: stay competitive with regional suppliers to support retention.

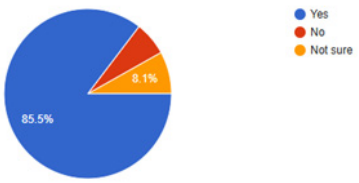
- ❖ Flexible career paths and job security benefit young, English-speaking Bangladeshis.
- ❖ Work aboard ships promotes cultural exchange and future career prospects ashore.
- ❖ Transferable skills are valuable in ship management and related industries.
- ❖ Rapid advancement is possible, with opportunities to become Captain or Chief Engineer.
- ❖ Global travel appeals to adventurous youth.
- ❖ Generous leave allows seafarers to balance work with family life.

The Bangladesh Marine Academy in Chattogram, along with other state-run academies at Pabna, Barisal, Rangpur, Sylhet, BMFA (Chattogram) and several private academies, produces around 660 well-trained Deck & Engine cadets annually including approximately 30 female cadets. These cadets undergo regimental, residential training programs delivered in English, ensuring they meet the competency standards set by the IMO STCW Convention. The IMO-recognized National Maritime Institutes and several private institutes provide pre-sea training for around 520 ship ratings (Deck, Engine, Electrical, Cook and Saloon crew), focusing on English proficiency.

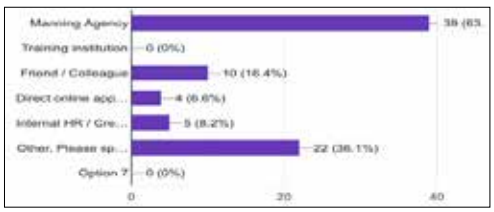
"Bangladeshi seafarers offer a valuable solution to the global shortage of maritime professionals."

Survey Findings: BMCS Members' Perspectives

The Bangladesh Marine Community Singapore (BMCS) conducted a survey to assess the role of Bangladeshi seafarers in mitigating global seafarer shortages and related recruitment issues. 85.5% of the respondents believe Bangladeshi seafarers can significantly help address the shortage.

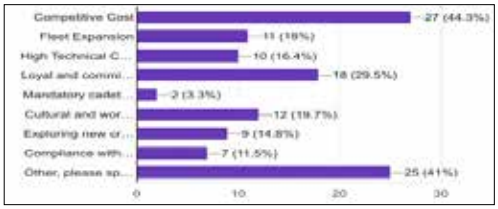


This strong consensus among members highlights the perceived value and capability of Bangladeshi seafarers within the international maritime workforce.



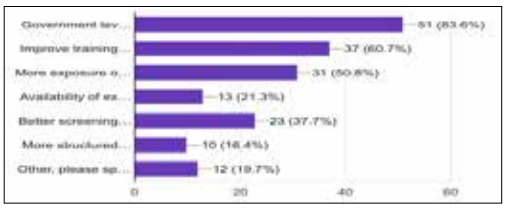
Probable Sources to recruit Bangladeshi Seafarers.

Most members recommend recruiting skilled Bangladeshi seafarers from reputable sources to support the international maritime industry to boosts global shipping operations' effectiveness

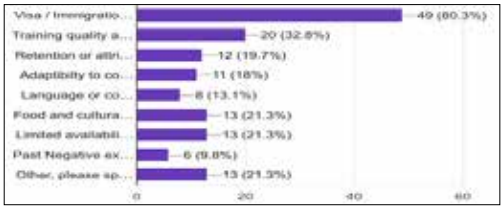


Encourage companies to recruit Bangladeshi Seafarers

A significant majority of members believe that Bangladeshi seafarers possess the necessary skills and capabilities to help mitigate the global shortage of qualified maritime personnel as valuable assets to the global maritime workforce.



Members' Views on Promoting Recruitment of Bangladeshi Seafarers



Most members suggest that motivating shipping companies requires increased government support, training and recruitment to ensure access to qualified maritime professional to strengthens the overall effectiveness of global shipping operation.
Top Barriers:

Challenges in recruiting Bangladeshi Seafarers

Participants identified several ongoing challenges: resolving visa matters, updating training align with

marine industry trends, recruiting sources, crew motivation, adoption of company culture, and improving retention rates.

BMCS Participant Members' Suggestions

- Visa challenges for Bangladeshi seafarers at foreign ports highlight to those countries regularly and address the visa issue in international forums such as the IMO, Facilitation Committee (FAL).
- Increase government support and sign MOUs to improve placement of Bangladeshi seafarers.
- Launch global campaigns, participate in global maritime exhibitions and job fairs to promote Bangladeshi seafarers' skills and affordability.
- Modernize training, rebrand seafarers, and update cadet curriculum with new technologies.
- Maritime Training institutes may partner with shipowners to tailor cadet training for specific vessel needs.
- Pursue emerging markets such as Chemical Tankers and Cruise Ships.
- Implement commercial incentives and build stronger collaborations with foreign shipowners to encourage the employment of Bangladeshi seafarers.
- Conduct regular seminars with seafarers to emphasize the importance of job continuation, retention rates, and the serious effects of desertion.
- Conduct comprehensive job market surveys before annual cadet recruitment.
- Expand capabilities in ship ownership and management.
- Enforce stringent quality control standards for recruitment agencies and digitalise recruitment.
- Enhance mental health, family welfare, insurance, medical support for the seafarers.

Visa Issues Impacting Employment

Securing jobs with international shipowners is often complicated by visa delays for Bangladeshi seafarers. Bangladesh could address sign-on, sign-off, and shore leave challenges by raising them at the IMO Facilitation Committee (FAL) and seek support from friendly nations to ease visa processes. IMO may streamline the process by submitting documents following IMO guidelines for Seafarer's Special Transit visa and following MLC requirements.

WHAT COMPANIES VALUE

- Loyal, committed workforce and strong fit with multicultural onboard environments.
- Technical competence (especially among experienced officers)—many managers explicitly rated Bangladeshis as "high technical competency."
- Cost competitiveness and readiness to explore new nationalities to meet crew demand.
- A sizable number already employ double-digit cohorts of Bangladeshi officers, engineers and ratings across fleets.

Bangladesh Embassies and high commission could regularly coordinate with relevant countries and propose practical solutions to facilitate seafarer transit. For example, Bangladesh may request that Singapore may consider granting Bangladeshi seafarers access to the Visa-Free Transit Facility (VFTF) with properly endorsed documents.

"Learning from the Philippines' seafarer-friendly policies, Bangladesh can boost support through counselling, welfare schemes and better access to insurance and medical benefits."

Promoting the Bangladesh Flag

Bangladesh can encourage foreign shipowners, especially those with regular port calls, to register their vessels under the Bangladesh Flag, boosting national tonnage and ensuring at least 70% Bangladeshi crew. This supports local jobs, cadet training, and workforce development. Building global partnerships and attending international maritime events can expand job opportunities. Bangladeshi seafarers could pursue roles in sectors like chemical tankers and cruise ships.

Strengthening domestic ship ownership and management capabilities will create more job opportunities and strengthen the maritime industry. Bangladesh might have a promising opportunity to venture into local shipping in certain countries like Singapore, UAE to open new avenues for our business and expand the maritime industry.

Maritime Training Institutions

Maritime training institutions in Bangladesh should collaborate with shipping companies to tailor cadet training programs with industry needs. Updating training standards and curriculum will enhance global competitiveness. Having experienced mariners as guest lecturers and conducting job market surveys prior to recruitment can help address cadet employment challenges.

WHAT WOULD MAKE COMPANIES RECRUIT MORE BANGLADESHIS (TOP ASKS)

- Government-level facilitation: MoUs, G2G agreements, embassy support and streamlined sign-on/off processes.
- Improve training standards & certification: modern simulators, updated syllabi (digitalization, decarbonization, gas cargo safety), rigorous assessments.
- Greater international exposure for cadets: structured sea-time pathways, exchange programs, transparent placement.
- Better screening & quality control of manning agents: ethical recruitment and single-window verification of COCs/sea-time.
- Availability of experienced crew: targeted upskilling and conversion programs (e.g., chemical/gas).
- Structured onboarding/orientation: company culture, safety leadership, mental health and resilience.

Digitalization of Recruitment Processes

Enforcing strict quality checks for recruitment agencies and digitalising recruitment will build foreign employers' trust and easier hiring Bangladeshi crews. A centralised online platform and updated seafarer database will improve transparency and efficiency.

Bangladeshi seafarers offer a valuable solution to the global shortage of maritime professionals.

Regular seminars to promote job security, retention and the risks of desertion, while policy reforms can improve seafarers' well-being and employability. Learning from the Philippines' seafarer-friendly policies, Bangladesh can boost support through counselling, welfare schemes and better access to insurance and medical benefits. Addressing visa issues, enhancing training and fostering cooperation with both local and foreign shipowners, Bangladesh's role as maritime workforce and ensure ongoing contributions to both national and global maritime industries.

The roadblocks (ranked by frequency)

- Visa & immigration constraints — repeatedly cited as the single biggest reason offers stall.
- Training quality & competency gaps — variation between academies; need modern simulators, practical exposure and clear benchmarking.
- Availability of experienced officers — demand exceeds supply in some vessel classes (e.g., gas/chemical).
- English language & soft skills — speaking confidence, communication onboard and cross-cultural readiness.
- Retention/attrition & professionalism — need structured onboarding, career pathways and ethical recruitment.
- Cultural/food compatibility — emphasis on adaptability and respect for diverse habits onboard.

"Everyone talks about opportunity; few talk about training quality… We must align institutes to real ship needs and benchmark competency." — GM, Talent Development

"Bangladeshi passed-out cadets are by far the best… Government collaboration and MoUs can ease the barrier." — Senior Marine Superintendent, Singapore

Arifur Rahman Khan (24th Batch Engineering, BMA) has over 35 years of experience in the maritime industry, including 18 years at sea and seven years as Chief Engineer. He holds an MSc in Maritime Studies from NTU and a Class 1 (Motor) CoC from Singapore. Currently Manager (Crew Quality & Training) at Equatorial Maritime Services, he previously managed crews at Ocean Tankers. His expertise spans technical operations, recruitment, and training across multi-national crews. He is a member of SMOU, BMCS R&D Committee, and SSA's Manning Subcommittee (2021–2023).

KEY MESSAGE TO THE GOVERNMENT OF BANGLADESH

Make Bangladesh a top-tier, trusted crewing hub by 2027. This requires decisive, coordinated reforms across foreign affairs, shipping administration, education and labour.

1) Secure mobility: visas, MoUs, G2G Negotiate crew-specific visa corridors and standardized sign-on/off processes with major port and transit states. Deploy embassies/high commissions as active placement facilitators.

2) Lift training to global benchmarks

Accredit and upgrade academies; mandate Maritime English & soft-skills proficiency; establish a National Competency Benchmark mapped to STCW plus industry add-ons (GHG, digital ship, IGF fuels).

3) Build a transparent placement ecosystem

Create a single-window digital portal; license and rate manning agencies; launch a National Cadet Placement Cell with guaranteed berths via G2G and owner partnerships.

4) Target high-demand niches

Prioritize chemical and gas tanker upskilling; fund type-specific endorsements and bridge programs.

5) Brand & diplomacy

Run a global marketing campaign—"Bangladesh Delivers"; invite owners for familiarization visits; sign recognition & cooperation MoUs.

6) Welfare & professionalism

Promote retention with fair contracts and family services; enforce zero-cost recruitment and ethical standards.

CREW MANAGEMENT SERVICES

Reliable Skilled Global

At Reliance Shipping Services, we specialize in delivering end-to-end crew management solutions for shipowners, managers, and operators worldwide. With a strong global network and years of experience, we ensure that every vessel is manned by competent, safety-driven, and motivated seafarers who meet international compliance standard.

- **Strong pool of skilled seafarers across all ranks**
- **Tailored Solutions: recruitment, training & crew rotation**
- **Adherence to international maritime standards (MLC, STCW)**
- **Cost-effective, reliable solutions**
- **24/7 operational and HR assistance**

Chittagong Office
Nur Chamber, 34 Agrabad C/A,
Chittagong 4100
Tel: +880 2333321469
M : +880 16 7373 4850
Tel: +88 031 716623, 720216,
Fax: +88 031 2521469

Dhaka Office
House - 13,
Road - 27, Block - J, Banani,
Dhaka 1213
Tel : +880 241081886
M : +880 18 5876 4970
Email: crew@reliancebd.com
Web: www.reliancebd.com
Facebook: reliance shipping services

- High Retention
- Integrated Crewing + Training ecosystem under one management.
- Continous Seafarer training and development under our pool
- Long term cadetship programs with Retention promise
- Mental health, discipline, and environmental awareness embedded in training culture.
- Shore welfare support for seafarers and families during leave.

MAS MARINE

Training & Crewing

www.mascrew.com
www.academy.masgroupbd.com

PREPARING THE NEXT GENERATION FOR MARINE TRAINING AT BANGLADESH MARINE ACADEMY

Md. Adiluzzaman

The Bangladesh Marine Academy, the nation's leading maritime institute since 1962, must modernize to meet global shipping's evolving needs. With the IMO's decarbonization goals and the shift to methanol, LNG, ammonia, and dual-fuel engines, upgrading cadet training is essential. Without reforms in curriculum, simulators, and fuel-handling facilities, Bangladeshi seafarers risk losing competitiveness. Investments in advanced labs, faculty development, and global collaboration, supported by strong government policy, will ensure employability, national fleet growth, and Bangladesh's prominence in the global maritime sector.

Bangladesh Marine Academy, the country's premier maritime training institute, first opened its doors in 1962. For more than six decades, it has been the backbone of our seafarer training and has supplied skilled officers to both local and international shipping fleets. However, the world of shipping has changed dramatically over the years. The Academy's training system has not yet been fully modernized to keep up with the demands of today's competitive global maritime industry.

Right now, the maritime world is standing at a critical crossroads. The push for decarbonization and environmental protection is reshaping how ships are designed, operated and maintained. The

International Maritime Organization (IMO) has already introduced a greenhouse gas (GHG) reduction strategy that sets strict targets for the coming decades. To meet these targets, the global shipping fleet is rapidly moving towards alternative fuels such as methanol, liquefied natural gas (LNG) and ammonia. Many vessels are also being fitted with dual-fuel engines that can switch between conventional fuels and greener options.

For Bangladesh, a country with a fast-growing blue economy and an expanding merchant fleet, this global transition is both a challenge and an opportunity. If we can adapt quickly, Bangladesh can strengthen its position in the global shipping industry and ensure long-term employment for its seafarers. But if we fail to act, our officers may fall behind in skills, making them less competitive in the international job market.

This article argues that it is time for Bangladesh Marine Academy (BMA) to take bold steps in upgrading its training facilities and curriculum. The focus must be on alternative fuel handling, dual-fuel engine operations, digital shipboard systems, and compliance with new global rules. Without these improvements, our cadets risk being unprepared for the future of global shipping.

Emerging Maritime Regulations and the Need for New Competencies:-

The IMO has set a clear goal is to achieve net-zero emissions from shipping by around 2050. This means that by the end of the current decade, most new ships will be designed with engines capable of using low- or zero-carbon fuels. Methanol and LNG are being used as transitional fuels, while green ammonia and hydrogen are expected to become more common in the long term.

These fuels are very different from traditional marine diesel oil. For example:

- Methanol is toxic and requires careful handling, especially in enclosed spaces.
- LNG is stored at extremely low (cryogenic) temperatures and needs specialized storage tanks and pipes.
- Ammonia and hydrogen, though promising are highly flammable and hazardous.

Operating these systems requires seafarers to learn new skills. They must be trained in fuel-specific bunkering procedures, leak detection, firefighting and emergency management.

In addition, dual-fuel engines are far more complex than conventional engines. They involve advanced computerized controls, multiple fuel injection systems, and strict safety protocols. An officer who has only trained on conventional diesel engines will not be able to confidently operate such systems.

Recognizing this, the STCW Convention (Standards of Training, Certification and Watchkeeping for Seafarers) is being revised. From around 2026 onwards, new modules on alternative fuels and dual-fuel operations are expected to become mandatory. If Bangladesh does not prepare its cadets now, our certificates of competency may lose international recognition, affecting the careers of thousands of seafarers.

Present Gaps in Training Infrastructure:-

Over the past decade the IMO has introduced several landmark regulations to cut pollution from ships. These include:

- IMO 2020 Sulphur Cap, which limits sulphur in marine fuel.
- Energy Efficiency Design Index (EEDI) and Energy Efficiency Existing Ship Index (EEXI), which set efficiency standards for ships.
- Carbon Intensity Indicator (CII), which measures and grades ships based on their emissions.
- IMO GHG Strategy 2023, which lays out a roadmap to reach net-zero emissions by 2050.

Shipowners worldwide are already responding by investing in LNG-fueled ships, methanol-powered vessels, biofuels, and hydrogen projects. New ships are being built with dual-fuel engines that allow operators to switch between traditional and alternative fuels.

In countries such as Singapore, Norway, and South Korea, maritime academies are already updating their training systems. They are setting up simulators, labs for alternative fuels, and recruiting faculty with expertise in new technologies.

Unfortunately, in South Asia and especially in Bangladesh, training academies are lagging behind. At present, most cadet training still focuses on conventional oil-based systems. While this was sufficient in the past, it is no longer enough to meet the demands of today or tomorrow.

Key Training Areas That Need

Modernization:-

1. Alternative Fuel Training

Cadets must become familiar with the unique properties of methanol, LNG, ammonia and hydrogen. Training should include:

- How to safely bunker and transfer these fuels.
- Recognizing leaks and responding to fuel-related emergencies.
- Firefighting techniques specific to cryogenic and toxic fuels.

2. Dual-Fuel Engine Operation

Cadets should learn how dual-fuel engines operate, including:

- Switching smoothly between different fuels.
- Monitoring advanced emission control systems such as SCR (Selective Catalytic Reduction) and EGR (Exhaust Gas Recirculation).
- Maintenance practices for hybrid propulsion systems.

3. Regulatory Knowledge and Compliance

Future officers must understand not only what the rules are, but why they exist. They should be trained in:

- MARPOL Annex VI (air pollution prevention).
- Carbon Intensity Indicator (CII) calculations.
- Energy efficiency measures and onboard monitoring tools.

By teaching both the technical and regulatory aspects, cadets will become more confident in applying global standards in real ship operations.

Infrastructure Needs at Bangladesh Marine Academy

To provide such modern training, the Academy requires significant investment in infrastructure. Four key areas stand out:

1. Advanced Simulators: Engine room simulators that can mimic methanol, LNG, and dual-fuel systems. These simulators must include emergency drills, fault diagnosis, and bunkering station modules.
2. Fuel Laboratories: Labs that allow cadets to practice fuel handling in a controlled environment. This includes cryogenic storage (for LNG), pressurized tanks (for methanol and ammonia), and gas detection systems.
3. Curriculum and Faculty Development: The syllabus must be updated to reflect IMO's decarbonization goals. Faculty members also need international training programs to stay up to date.
4. International Collaboration – Partnerships with leading maritime academies in Europe and East Asia will help with curriculum design, simulator development and faculty exchange programs.

Government Assistance:-

Upgrading the Academy is not just an educational issue. It is a national strategic priority.

- For Seafarers' Careers: Many shipping companies now prefer officers trained in alternative fuels. Without modern training, Bangladeshi cadets may struggle to secure jobs on future vessels.
- For the National Fleet: As Bangladesh aims to grow its merchant fleet, we need skilled officers who can operate advanced ships safely and efficiently.
- For Regional Leadership: With the right facilities, Bangladesh could attract cadets from neighboring countries, earning both revenue and international prestige.
- For IMO Recognition: Regular IMO audits ensure that our certificates remain valid. Without investment, there is a real risk of losing credibility.

The shipping industry is entering a new era. If Marine Academy Bangladesh continues with its outdated training model, our cadets will not be ready for the future. It would be like training pilots for propeller planes while the world has already moved to jets.

To prepare the next generation we must:

- Introduce training on methanol, LNG and dual-fuel systems.
- Invest in modern simulators and labs.
- Update the syllabus and training faculties.
- Build partnerships with advanced maritime nations.

The government has a vital role to play. By supporting this transformation, Bangladesh can safeguard the future of its seafarers, strengthen its blue economy and secure its place in global shipping.

"Tomorrow's vessels will sail on today's training. Let us not let the future pass us by."

Md. Adiluzzaman – Senior Principal Surveyor & Operations-in-Charge (Australia & New Zealand)

Md. Adiluzzaman, a 25th Batch graduate of the Marine Academy Chittagong, began his maritime career in 1990 as an Engine Cadet and rose to Chief Engineer, with 19 years of marine engineering experience, including 8 as Chief Engineer. He holds a UK Class 1 CoC and an MBA from the USA.

Before joining ABS, he served as a Technical Superintendent. At ABS, he progressed from Marine Surveyor and Auditor to his current role as Senior Principal Surveyor and Operations-in-Charge for Australia & New Zealand, leading teams, ensuring compliance, and maintaining strong relations with AMSA and MNZ.

Empowering the Next Wave: Preparing Bangladesh Marine Academy for Digital & Green Shipping

Captain Mohammad Feroz Mostafa

The shipping industry is being reshaped by digitalization and decarbonization, requiring seafarers with advanced technical and green competencies. Bangladesh Marine Academy (BMA), however, faces pressing challenges: declining cadet intake quality due to inadequate entry standards, shortages of professional instructors with current industry expertise, and difficulties retaining faculty because of uncompetitive remuneration. At the same time, the Academy's training infrastructure lags behind global benchmarks for digital and low-carbon technologies. This article proposes a roadmap for reform, emphasizing stricter cadet selection, faculty development and retention policies, and investment in modern training facilities. By drawing on international best practices, BMA can transform itself from a national training provider into a regional leader preparing officers for the future of sustainable shipping.

The maritime industry is entering an era defined by two transformative forces: digitalization—the integration of smart navigation systems, AI-assisted decision-making, and automated shipboard operations—and decarbonization—the global drive to meet IMO targets for greenhouse gas reduction, alternative fuel adoption, and sustainable shipping practices (IAMU, 2022). For Bangladesh


PLORE THE WORLD
EMON

Marine Academy (BMA), the nation's premier maritime training institution, these developments present both opportunity and urgency.

BMA has a proud history of producing competent officers who have served with distinction on vessels across the globe. However, sustaining and enhancing this legacy in the face of rapid technological change requires targeted capacity development strategies. This means ensuring that cadets are academically and professionally prepared for a complex syllabus shaped by evolving maritime technologies, that professional instructors possess current industry knowledge to bridge theory and practice, and that the institution can retain such talent despite global competition. Unless these challenges are addressed with urgency, BMA risks producing graduates ill-prepared for the realities of the digitalized and low-carbon shipping era.

Strengthening Cadet Intake Standards to Meet Emerging Industry Competencies

The first step in capacity development is ensuring that incoming cadets have the academic foundation and professional potential to succeed in a technology-driven maritime curriculum. At present, BMA's conventional MCQ-based entry examination is inadequate for assessing the analytical and problem-solving skills essential for mastering subjects such as navigation automation, marine engineering systems, and alternative fuel technologies.

The current combined average pass mark system—where Physics, Mathematics, English, and General Knowledge scores are averaged—creates a misleading picture of a candidate's competence. Weakness in a critical subject like Mathematics or Physics can be masked by higher scores in other areas, undermining the Academy's ability to select candidates who can cope with the rigorous technical syllabus required for digital ship operations and emissions-compliant engineering systems.

Capacity development strategy:

Introduce a minimum pass mark of 40% in each intake exam subject—Physics, Mathematics, English, and General Knowledge—to ensure candidates demonstrate balanced competence across all areas. Additionally, upgrade intake exam formats to include scenario-based and applied problem-solving questions to test conceptual understanding—critical for operating modern ships and alternative propulsion systems.

The maritime industry is entering an era defined by two transformative forces: digitalization—the integration of smart navigation systems, AI-assisted decision-making, and automated shipboard operations—and decarbonization—the global drive to meet IMO targets for greenhouse gas reduction, alternative fuel adoption, and sustainable shipping practices.

Beyond academics, physical and psychological readiness is crucial. Medical and fitness examinations should be centralized in a single nationally recognized facility known for integrity, ensuring consistent standards. Moreover, psychological testing should be added to evaluate decision-making under stress, adaptability to automation, teamwork capacity, and leadership potentials (Makarowski, 2020).

BMA's representation at every stage of the recruitment process is essential, and for credibility, exam paper setting and evaluation could be outsourced to reputable third parties such as BUET, with the Academy involved in oversight.

Expanding and Updating Instructor Capacity for Digitalized and Low-Carbon Training

In maritime capacity building, instructors are the cornerstone. However, BMA faces a shrinking and aging professional faculty, with no new permanent appointments for professional instructors since 2018 and a significant portion of current professional instructors are due to retire in the next five years. Without timely recruitment of professional instructors, the Academy risks losing both instructional continuity and the specialized expertise required for teaching advanced systems such as integrated bridge management, LNG/LPG propulsion, and shipboard emission monitoring.

Moreover, keeping professional instructors aligned with evolving ship technologies is critical. This requires structured sea service rotations for faculty to refresh their hands-on skills with modern digital navigation systems, energy-efficient propulsion, and smart engine monitoring tools. Such updates enable instructors to integrate the latest industry practices into classroom and simulator-based training.

Capacity development strategy:

Recruitment of professional instructors must prioritize candidates who meet IMO and STCW standards for supervisors, instructors, and assessors, with proven sea-going backgrounds relevant to officer in charge of navigational watch (STCW A-II/1) and engineering watch (STCW A-III/1) competencies. Adherence to IMO Model Courses 7.03 and 7.04 should be enforced to ensure faculty have both academic and operational credibility.

Retention Through Competitive Remuneration and Policy Reform

Capacity development is unsustainable without talent retention. In the past five years, changes in government policy have withdrawn special allowances that once attracted marine professionals to join BMA as professional instructors. Because of this, experienced faculty members are leaving for foreign maritime institutes in the UK, Canada, and other countries where salary and benefits are more competitive.

When compared to active onboard officers—who earn substantial salaries reflecting the demands and responsibilities of their roles—the gap is clear. If the Academy is to compete for these professionals, it must offer remuneration that reflects both market rates and the specialized nature of maritime instruction.

Capacity development strategy:

Reinstate and protect special allowances for maritime professional instructors, ensuring they remain untouched by future changes to national pay scales. This sector should be recognized as special within the government structure, given the scarcity of qualified instructors and their critical role in producing a globally competitive officer workforce.

Infrastructure and Logistic Development for Digitalization and Decarbonization Training

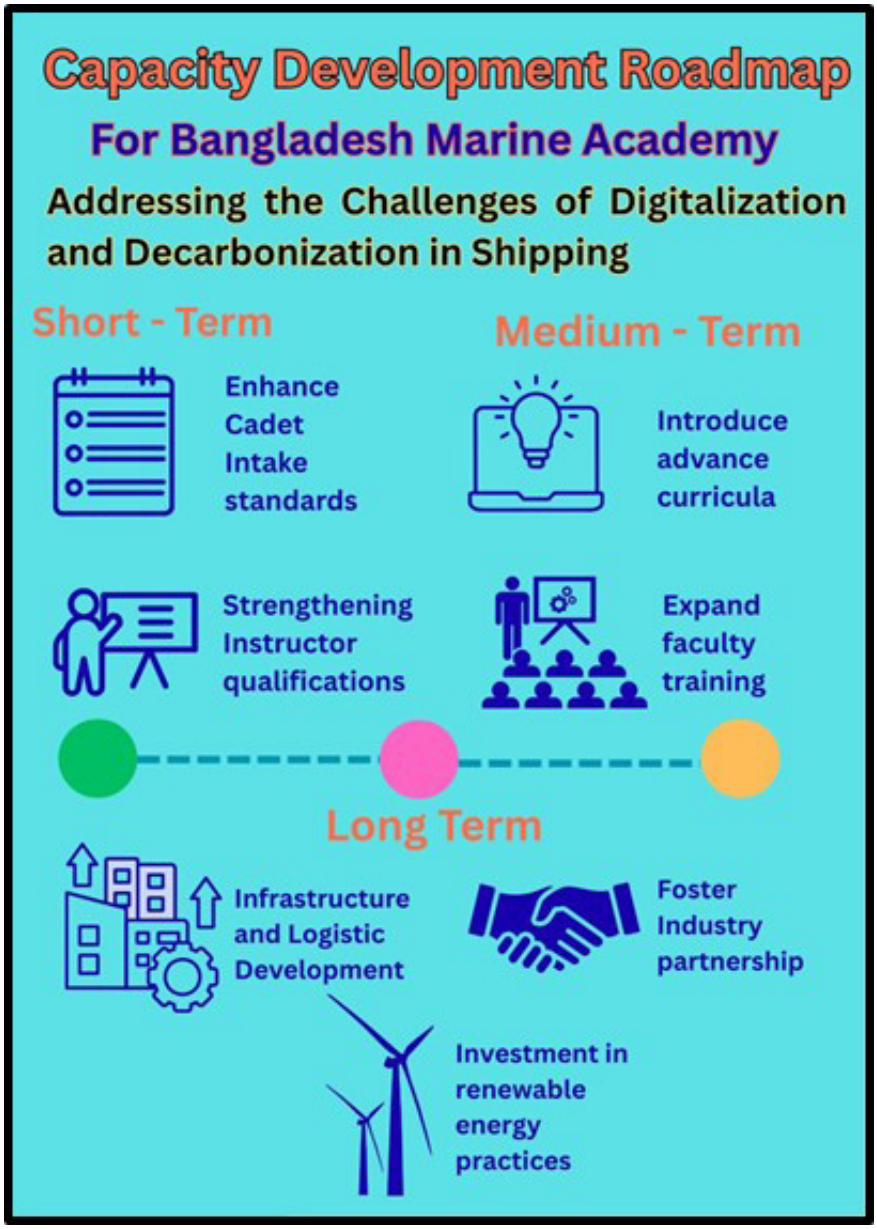
The technological transformation of the shipping industry demands that maritime training facilities evolve accordingly. While BMA has traditionally provided strong simulator-based and classroom instruction, it must now integrate advanced infrastructure capable of delivering training on digital technologies, decarbonization strategies, and green ship operations (Bakouni, 2025).
Key priorities include:

- Dual-fuel ship bunkering simulator for training in the handling and transfer of LNG, methanol, and other alternative fuels safely and efficiently.
- Integrated bridge model replicating modern vessel navigation and control systems, enabling cadets to practice in a fully digitalized operational environment.
- Computer and cybersecurity lab to train cadets in protecting shipboard networks, managing digital navigation systems securely, and responding to cyber threats.
- Energy efficiency and emissions monitoring systems to familiarize cadets with technologies and practices that support IMO's decarbonization goals.

Investments in such infrastructure will not only modernize BMA's training capacity but also position it as a regional leader in maritime education.

Insights from Global Maritime Training Practices

Singapore's Maritime Academy maintains subject-specific entry pass marks, integrates psychometric testing, and ensures cadet sponsorship by shipping companies prior to



admission—creating a strong linkage between training and employment (MPA, 2018). The UK's Warsash Maritime School offers competitive salaries indexed to active officer pay and funds annual instructor sea service to maintain relevance (University, n.d.).

BMA risks producing graduates ill-prepared for the realities of the digitalized and low-carbon shipping era.

Adopting a Bangladesh-specific hybrid model—drawing from these global practices while accommodating local economic and regulatory realities—can significantly strengthen BMA's position.

Supporting Measures to Enhance Global Employability

While the core of capacity development lies in intake, instruction, and retention, external factors also influence the Academy's success in preparing cadets for the digitalized, low-carbon shipping market.

One urgent issue is visa facilitation for Bangladeshi seafarers. Delays or denials in key shipping hubs such as Singapore, Dubai, and Hong Kong can limit placement opportunities. The Ministry of Foreign Affairs should prioritize diplomatic agreements to secure streamlined visa processes for Bangladeshi officers and crew.

Future Directions

Digitalization and decarbonization are reshaping shipping today, demanding that Bangladesh Marine Academy (BMA) evolve strategically. Raising cadet intake standards, enhancing professional faculty expertise, and ensuring retention through competitive policies are essential steps.

Alongside internal reforms, external diplomatic and marketing efforts can elevate BMA from a national institution to a regional leader in training officers for the digitalized, low-carbon era—provided decisive action is taken now.

Captain Mohammad Feroz Mostafa holds a B.Sc. in Nautical Science from Chattogram University (1992) and an M.Sc. in Maritime Affairs specializing in Ocean Sustainability Governance from the World Maritime University, Sweden (2017). Beginning his sea career in 1993, he served on ocean-going vessels from Cadet to Master with both national and international shipping companies. He later worked as Marine Superintendent at Nobpac Ship Management Ltd (2008–2012). Beyond sailing, he has contributed to academia and maritime safety as an Adjunct Faculty at Chattogram University, Flag Safety and MLC Inspector for Barbados, and Flag State Inspector for Panama and Antigua & Barbuda. Currently, he serves as Chief of Nautical Studies at Bangladesh Marine Academy, Chattogram, fostering the next generation of maritime professionals.

Skilled Hands, Safer Voyages: Upgrading Maritime Education and Trainings for Ratings in the digital era

Mohammad Shahid Ullah

The maritime sector is rapidly transforming through automation, digital navigation, and alternative fuel technologies. This evolution demands new competencies among seafarers, especially ratings who perform vital operational duties. Current Maritime Education and Training (MET) for ratings is insufficient to meet these technological challenges. A global upgrade in MET is essential, emphasizing digital literacy, simulator training, cybersecurity, and modern engine systems.

The global shipping industry is facing interconnected challenges, ranging from stricter regulations to rapid digitalization and workforce diversity. These problems include strict standards, fast digital transformation both inside and outside the company and issues with having a more diverse workforce. The marine business needs trained and competent maritime workers to do well and stay in business, which is why these problems exist. The worldwide shipping industry is going through a technological transformation right now. Advanced navigation systems, automated equipment, digital communication platforms and environmentally friendly advancements are all changing the skills that all seafarers need to have. To make sure that travels are safe and efficient, maritime education and training (MET) for ratings must not only meet but also anticipate the needs of modern technologies. The change is now necessary for safety.

Navigating the Technological Sea: Modern Demands on Ratings

Today, ratings personnel operate on ships that are quite different from the ones they used to work on. Both engineering and steering are now controlled by technology. Ratings now function as system monitors, supporting Integrated Bridge Systems (IBS) and assisting in real-time navigational adjustments using ECDIS, radar, and GPS. So, they need to be able to read data and aid make safe route adjustments by using ECDIS, radar, and GPS well. People who operate in the engine room with automated control systems or electronic engine or dual fuel using engine need to know what to do and how to do more than just regular maintenance. They need to know how to keep an eye on things, evaluate diagnostics, and correct simple problems. Environmental compliance tools like exhaust gas scrubbers and ballast water treatment facilities under IMO 2020 need to be operated by people who are well-trained and get regular maintenance.

Using modern firefighting and life-saving tools that can automatically identify and put out fires is now part of safety duties. As ships become more networked, ratings are needed to gather and exchange operational data for predictive repair and performance improvement. But they need to follow fundamental cybersecurity guidelines to keep vital ship systems safe. These include keeping tools safe, making sure logins are safe, and keeping an eye out for strange behavior.

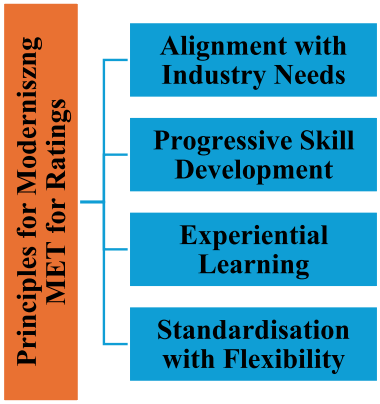
Applications for Emerging Immersive Technologies (Mallam et al., 2019)

Gaps in Current Training

Outdated STCW-Based Curriculum Limited relevance to evolving industry needs and specialization. Training quality inconsistent across institutions. Difficulties in updating content in line with technological advancements.	Insufficient Exposure to Modern Shipboard Systems Training equipment often lags behind current onboard technologies. Systems like ECDIS, IBS, and automation are introduced late, increasing operationa l risk.	Lack of Digital and Environmental Training Minimal emphasis on digital tools, electronic records, and reporting systems. Limited instruction on scrubbers, ballast water treatment, and alternative fuels, hindering regulatory compliance.	Inadequate Simulation and Scenario-Based Learning Simulations are basic, lacking realism and complexity. Critical situations like autopilot failure or hybrid system issues are rarely practiced, affecting decisionmaking skills.

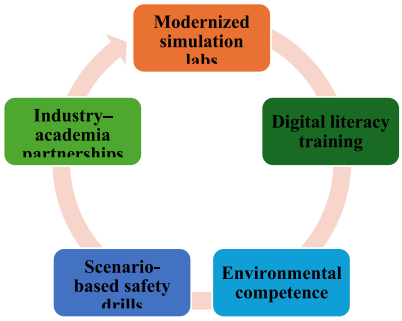
Principles for Modernizing MET for Ratings

To enhance Maritime Education and Training (MET) for ratings, instructors must transition from a merely task-oriented framework to a competency-based model that integrates technology. The following tenets can help this transition happen:



- **Alignment with Industry** – Curriculum should match modern vessel technology through ongoing MET–industry collaboration.
- **Progressive Skills** – Use modular training to advance ratings from basic to expert competencies.
- **Experiential Learning** – Combine simulation, onboard practice, and VR for stronger skill retention.
- **Standardized yet Flexible** – Maintain global standards while adapting to regional vessel types and operations.
- **Introduction to Smart Ship Systems** – Basic familiarization with integrated bridge systems, automation, digital monitoring, smart sensors monitor machinery works, cargo, and navigation.
- **Data Logging and Digital Reporting** – Helping officers with digital record-keeping (log books).

Upgrading Maritime Education for Improvement



To improve maritime education for ratings, it is important to set up contemporary simulation labs that

can properly mimic real-world failure scenarios for bridge, engine, cargo, and environmental systems. Digital literacy is an important part of basic training. They need to know how to secure software use, protection against cyber threats, and proactive troubleshooting of onboard digital systems. Engine ratings must acquire knowledge of ME Engine (Electronic Engine) technology, as these systems use electronic control units instead of conventional mechanical systems.

Specialized training on Dual Fuel Engines is essential for engine ratings to adapt to future fuel technologies.

In such engines, fuel injection and exhaust valve timing are digitally controlled, ensuring higher efficiency and lower emissions.

Therefore, ratings need to develop competence in handling and maintaining advanced technologies. Moreover, the use of Dual Fuel Engines (HFO + LNG) is increasing in modern vessels due to environmental and economic benefits.

Hence, specialized training on Dual Fuel Engines is essential for engine ratings to adapt to future fuel technologies.

Enhancing maritime education for ratings is not merely about keeping pace with technology—it is a strategic investment in global safety, sustainability, and efficiency. Crew members on modern ships must be able to combine conventional seamanship with problem-solving, digital and environmental stewardship abilities. International cooperation between the IMO, marine companies, labor unions and academic institutions is essential to achieving this. The outcomes of skilled ratings include a maritime sector that is prepared to confront the challenges of the twenty-first century, fewer mishaps and safer journeys.

Mohammad Shahid Ullah
Principal (In-Charge), National Maritime Institute Madaripur

Mohammad Shahid Ullah is a Marine Engineer Officer Class 1 (Singapore) with 21 years of sea service (1999–2020) on various vessels under leading global shipping companies. An ex-cadet of the 33rd Batch of Bangladesh Marine Academy, he holds an MSc in Environmental Science, an EMBA in HRM, and is a MIMarEST member.

Since 2020, he has been involved in Maritime Education and Training, including serving as Project Director for the modernization of Bangladesh Marine Academy, Chattogram. He currently leads the National Maritime Institute, Madaripur as Principal (In-Charge).

From She Towards The Sea : Journey Of Bangladeshi Female Seafarers'

Atiya Sayeda

This article chronicles the inspiring journey of Bangladeshi female seafarers who broke through societal barriers to claim their place at sea. Since the Bangladesh Marine Academy opened to women in 2012, these pioneers have faced challenges ranging from social prejudice and inadequate facilities to limited job opportunities. Despite early struggles, partnerships with international companies like Hafnia, Oldendorff, and Express Feeder have opened new horizons. Today, Bangladeshi women are sailing across oceans, contributing to global trade and national pride. Their story reflects courage, resilience, and determination, proving that gender should never limit ambition. It calls for stronger institutional support to ensure equal opportunities and a more inclusive maritime future.

Bangladesh is a country where, even in the 21st century, women have to focus more on overcoming social norms and barriers than pursuing their own qualifications and aspirations for their life mapping. If the profession they choose is one that no woman has ever pursued before, the journey becomes even more challenging than navigating through a stormy ocean. In such a situation a group of young females courage to dream to set their sail towards the sea against all the barriers, and it's going on.

How The New Era Started

Until 2012, women in Bangladesh contributed significantly to education, healthcare, garments, banking, administration, law, media, and defense. Seafaring however remained exclusively male-dominated. In response to the IMO's "Women in Maritime" Program Bangladesh formally opened the door of Bangladesh Marine Academy for female in 2012 .

Life At Bangladesh Marine Academy

Despite gender, all cadets undergo the same buildup process designed to develop discipline, resilience, and professional competence. This equal training framework ensure the same level of competence, confidence, and readiness to serve at sea.

Challenges

When a journey belongs to a woman in a male-dominated society, challenges intensify several times over, testing both her resilience and determination. Challenges in every aspect are discussed below.

Social and Family challenges Before Starting Academic Life:

In 2012,our society, culture, and religious mindset were not aligned to view this positively. While admission to BMA was highly welcomed and prestigious for males, for females most of the time it was considered shameful and a violation of social norms.

Daily challenges in academic life:

Ratio of female cadets: the number of female cadets in the academy still significantly low Compared to male, this often results in a higher level of discrimination irrespective of study, class, games and other activities.

Prevailing academic culture and environment: The prevailing academic culture and environment were not supportive towards females. Mariners, non-mariners and staffs had struggled to accept the existence of a female in a 50-year-old male surrounded environment. But the strong young girls were like the wave of blue ocean that no one can restrict.

Accommodation challenge for pre sea female cadet: Prior joining, the governing body didn't build any accommodation for female cadets. From 2012 to 2015 arrangements were made in the old dispensary, where environment was insufficient, unorganized and unhealthy. In 2015, female Cadet Block was constructed . However, there were only nine rooms available for 36 cadets. Where every year total of 40 were planned to conduct training.

Accommodation Challenges for Female Ex-cadets inside the Academy:
Till now, no separate accommodation or dining facilities have been arranged for female ex-cadets. From 2015 to 2024 they were permitted to stay in the Female cadet Block, where the capacity was not sufficient for pre-sea cadets. From 2025, despite arranging accommodation, the authority forced female ex-cadets to stay outside the academy. Infect for 7th and 8th semester ex cadet there is no washroom and restroom to take a break in a day long academic schedule.

Challenges to put Step Onboard:

Only shipping company that agreed to give a training opportunity to a female:

Till 2018 BSC was the only organization that gave work opportunities to female. Although from 2020 its become very hard to be employed in BSC as a female cadet and officer.

Salary, agreement and discrimination:

Although in the dark time BSC was the only hope, but it was under agreement of without salary from 2014-2018. where before 2014 all employment was under paid. This dark period ended with the addition of 6 new ships to the BSC fleet in 2018. From then on, BSC began paying salaries .Although with huge discrimination between male and female seafarers' salaries and promotion.

Rejection by Bangladeshi Private Shipping Companies:

Female cadets approached Bangladeshi private shipping companies, but every time they had been refused. From the governing body there was rarely any initiative to introduce more work opportunities for female seafarers.

A New History Started With The Approach Of Foreign Shipping Companies

When, due to the shortage of ships and jobs, unemployment was at its peak, Foreign shipping companies appeared like the moon in their fate.

- In 2018, " ASP ship management" recruited two engine cadets after that stopped recruiting .
- In 2020, "Excelerate Energy" recruited only one female cadet.
- At 2022 , CE Hanif Dewan driven by own responsibility, established liaison between the global shipping company Hafnia and the female seafarers . Hafnia started to recruit Bangladeshi female seafarers and became the only company which continuously recruits female seafarers from Bangladesh.
- Following HAFNIA, later a few other foreign shipping companies like OLENDORFF and EXPRESS FEEDR also stepped forward.

Through patience, skills, professionalism, and hard work, Bangladeshi female seafarers are successfully working in those foreign companies, bringing honor and foreign currency to Bangladesh.

Following the BMA female ex-cadets, female ex-cadets of the BMFA and a few male seafarers also recruited in HAFNIA and OLDENDORFF, which was rarely possible before.

Current Number And Employment Status

Batch of BMA	Passed Out Cadet	Continue Sailing	Heigher Study	Other Job/ Business	Home Maker
48	16	5	1	4	6
49	19	5	3	10	1
50	13	7	1	4	2
51	6	0	0	2	3
52	0	0	0	0	0
53	07	4	0	2	1
54	06	3	0	1	0
55	06	3	0	0	1
56	12	10	0	0	0
57	10	8	0	0	1
58	29	15	0	0	0

from BMA total passed out female 129 , 60 are still sailing that is 46.5% of total number.

And in BMA 59th and 60th batch total 32 cadets are under pre sea training . From BMFA total 27 cadets passed out under (36-43) batch. among them 7 females are sailing in foreign companies. And in 44th and 45th batch 33 cadets are under pre sea training.

Balance In Social, Personal And Family Life

A female seafarer often faces the challenge of balancing her demanding career with societal expectations surrounding family life. At work, she may encounter bias from colleagues who underestimate her because of her gender, forcing her to work harder to prove her competence. Also traditional views of family roles may subject her to criticism for spending extended periods away from home. This dual pressure is creating psychological strain. Despite these, female seafarers using resilience and determination to break barriers and set examples for future.

Expectation From The Governing Body

As the profession is increasingly prosperous for women worldwide, it's essential to break gender stereotypes by inviting more foreign shipping companies to recruit female seafarers. Also making policy for Bangladesh shipping corporations and other private shipping companies.

Expectations From Shipping Companies

Shipping companies can support female seafarers by ensuring

- Gender equality onboard.
- Increasing the number of female seafarer
- Flexible contract options for mothers balance work and childcare without sacrificing their professional growth.
- providing onboard facilities or policies that allow for safe breastfeeding and maternity-related needs can further ease their return to duty.
- Companies should also establish clear re-entry programs, offering refresher training and skill-updating courses to help return mothers regain confidence and remain competitive in the industry.

Bangladeshi female seafarers have honed their skills significantly between 2012 and 2025, building on a 13-year trend of development. They are as calm as nature, as fierce as the ocean, as limitless as the sky. They have the power to overcome all obstacles. Under the patronage of the Bangladesh Ministry of Shipping, they are expected to thrive and enhance the honor and remittance rate of Bangladesh . look forward to a future of flying colors for Bangladeshi seafarers to reach its apex in the maritime sector worldwide.

Atiya Sayeda
Ex-Cadet, BMA 49th Batch
Atiya Sayeda is a dedicated maritime professional currently serving as a Third Mate with Oldendorff Carriers. She previously sailed as Third Mate and Junior Officer with Hafnia and began her sea career as a Deck Cadet with Bangladesh Shipping Corporation.
Navigating a profession marked by challenges, especially for women, she remains committed to overcoming barriers alongside her fellow female seafarers. Aspiring to become a Captain, Atiya is equally passionate about promoting seafarers' wellbeing and mental health within the industry.

The Rise of Bangladeshi Women at Sea

Ms. Tania Begum

The maritime industry has been a male-dominated sector for decades, where women have occupied only a small portion of the workforce. However, over the past century, women have slowly begun to carve out their place. This paper examines the history, challenges, and experiences of women seafarers, focusing on the Bangladeshi Female Seafarers and the necessary steps for empowering women in the maritime industry.

Our national poet Kazi Nazrul Islam mentioned in his famous poem named "Nari" – "In the world, whatever great creations are eternally beneficial, half of them have been made by women, half by men."

From space to land, sky to sea, they are playing significant roles, which were previously under the control of only males. BIMCO/ICS 2021 shows women are acting small minority in the marine sector—roughly 1.2% of the global workforce. In 2012 Bangladesh included the first batch of female cadets at the Bangladesh Marine Academy. This paper explores their journey, the challenges and strategies to strengthen female inclusion.

2. Women in the Global Maritime Industry

History witnessed many wonderful and courageous women who initiated their careers with heroic challenges. Captain Anna Schetinina, the first female captain in 1935 from Russia, participated in WW2 with bravery. Victoria Drummond from UK was the first female ship engineer in 1922, was awarded bravery during World War II. India's Captain Radhika Menon became the first female Master and won international recognition for saving fishermen during a storm in 2015. Similar pioneers from China, Ghana, Australia, and Philippines etc. demonstrate that women have excelled despite barriers. These examples inspire new generations of seafarers, including Bangladesh.

3. Historical Evaluation in the Bangladesh Maritime Industry:

BMA commenced its effort to recruit female Cadets in 1996. The decision was made in a meeting at the Ministry of Shipping in January 2012, where the Ex-Shipping Minister, Mr. Shajahan Khan advised by the Ex-Prime Minister Sheikh Hasina, initiated the bold step of recruiting females in the 2012-2013 session.

The Ex-Commandant Dr. Sajid Hussain of BMA had been entrusted with the responsibility of the unique task. The Pioneer Batch completed their 24 months' Phase I (pre-sea training) and passed out in December 2013 with academic, physical and professional training. According to the academic record total number has increased to 117 over 13 years.

4. Barriers that are pulling down the Female Seafarers

4.1 Insufficient knowledge about career paths: As Bangladeshi female seafarers have newly experienced the profession, they have faced misguidance issues as they don't have sufficient knowledge of it. The charts below highlight steady enrollment, but also reveal high dropout rates—about 58% of female cadets discontinue their careers, mostly due to family and social pressures.

"Go to sea — go to sea together — to get HER into the sea!"

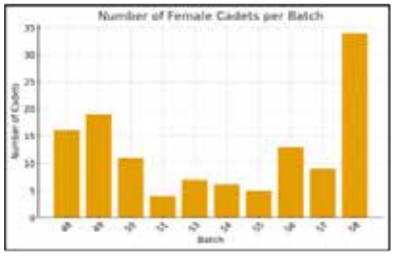


Fig: Age Group of Women Seafarers Respondents [Field Study by Azirh, 2014

4.2 On-board Acceptance, Harassment and discrimination: Once employed, women seafarers face lower pay, even though they are doing work equivalent to that of their male colleagues; they have been denied the facilities or equipment available to male workers, which is a form of discrimination.

4.3 Work & personal life balancing: For an imbalance between personal and professional life, most of the females have left the profession after marriage or giving birth.

As indicated in this table, female seafarers perceive this profession as a threat to their families and home life.

Fig: Status of Woman Seafarers in Bangladesh (2012 - 2025)

4.4 Promotion and job opportunities: While interviewing Beauty Akhter, she said she has applied to many companies and shipping agencies for a job. But the disappointing thing is that some agencies did not even allow her to enter the office, mentioning that they would rather keep a man with double salary but would not hire a girl." Not only Beauty Akhter, but it's a common phenomenon that also happens with almost every female seafarer of Bangladesh.

Age	Region	Marital Status	Number of Children	Rank	Social Class	Number of Years at Sea
54	Europe	Divorced	Nil	Captain	Upper Class	12 years
52	Europe	Divorced	One	Captain	Upper Class	11 years
35	Asia	Married	Nil	Captain	Upper Class	8 years
38	Asia	Single	Nil	Captain	Upper Class	8 years
25	West Africa	Single	Nil	Cadet	Lower Class	4 months
32	West Africa	Single	Nil	4th Officer	Middle Class	13 months
58	West Africa	Divorced	Three	Captain	Upper Class	15 years
24	West Africa	Single	Nil	Cadet	Lower Class	6 months
28	West Africa	Single	Nil	4th Engineer	Middle Class	2 years
26	Other Parts of Africa	Single	Nil	Cadet	Lower Class	6 months

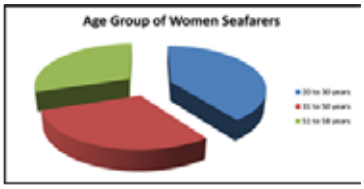
Fig: Social Class of Women Seafarers' Respondents [Field Study by Azirh, 2014]

And these visuals underscore that while opportunities exist, sustaining a long-term career at sea remains a challenge.

Age group	Frequency	Percentage
20 to 30 years	4	40
31 to 50 years	3	30
51 to 58 years	3	30
Total	10	100

5. Strategies to enhance the recruitment and retention of Women seafarers:

5.1 Onboard Support Systems and Improving typical obstacles: Numerous surveys show, 17% female seafarers said they had been the victim of sexual harassment while on board, 40% said they could not find sanitary products on board. Shipowners are now concerned about sanitary measures and should also create strict policies to prevent sexual harassment and ensure that complaints are addressed effectively.



5.2 Education and Training: The Academy should arrange some campaign programs to aware male cadets on how to deal with female colleagues.

5.3 Family & Public Awareness and Role Models: Promoting and highlighting successful female seafarers as role models can counteract societal stereotypes and demonstrate that women can thrive in seafaring professions.

5.4 International Strengthen organizations:
Women in Maritime Association, Asia (WIMA Asia), January 2010, whose mission is to promote Regional integration, support, and cooperation of women in national maritime associations for the promotion of greater and active participation in SDGs.

WISTA International is a networking organization with a mission to attract and support women at the management level in maritime, trading and logistics sectors. WISTA Bangladesh joins as the 48th National WISTA Association (NWA).

International Transport Workers' Federation (ITF) published an article "For women working at sea can be a positive and rewarding career," mentioning the women's contribution to sea, their potential, workforce complexity and further improvement.

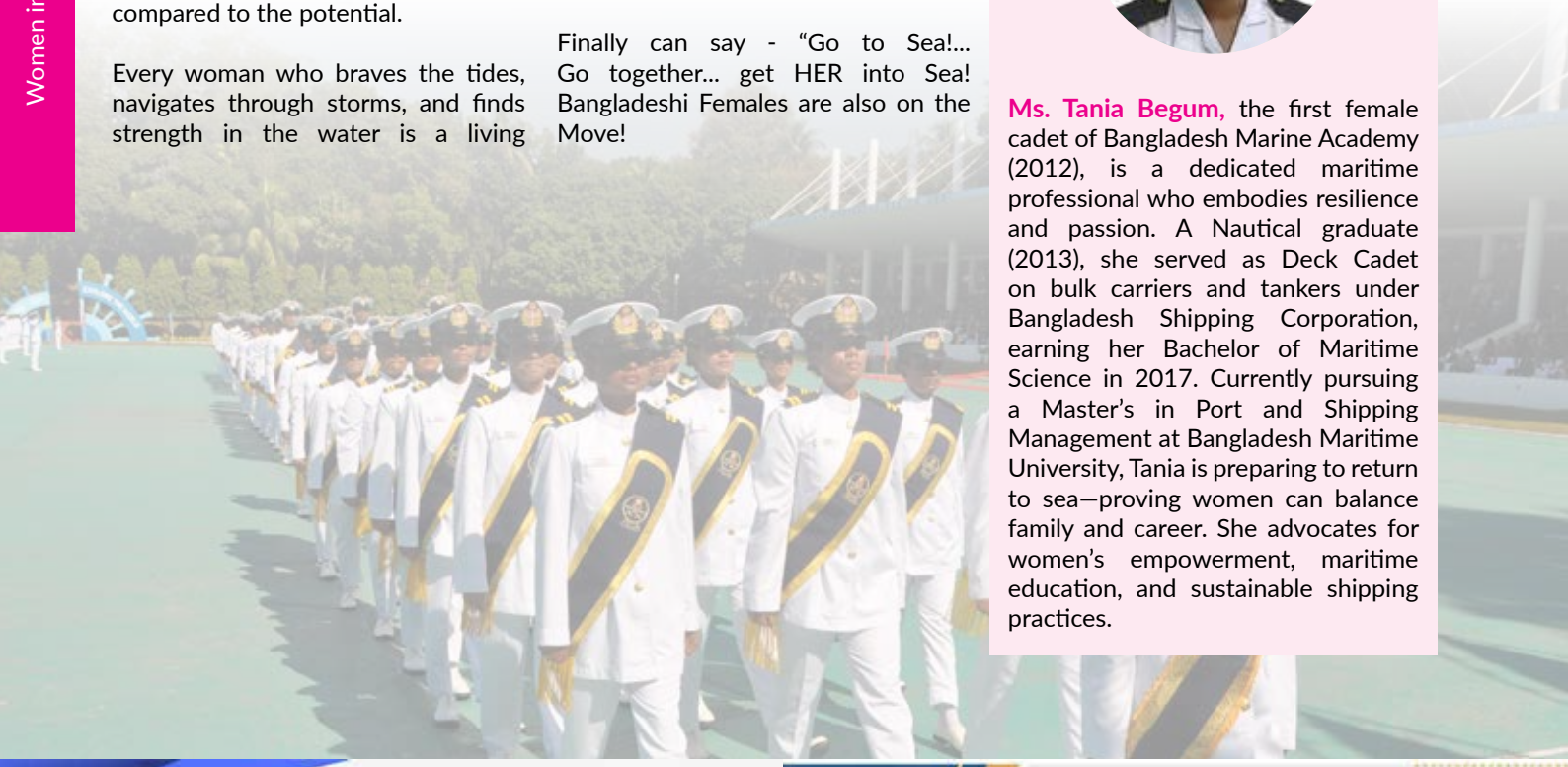
Bangladesh Merchant Marine Officers' Association: BMMOA was reorganized in 1982 by the officers and engineers dedicated to Bangladeshi Mariners is volunteer for the well-being of the community.

"These pioneering women are not just sailing ships; they are steering the course of gender equality across the tides of time."

Multinational shipping Companies: Bangladeshi female seafarers are slowly gaining ground. Bangladesh Shipping Corporation and international operators – Hafnia, OSM Thome, and Oldendorff are beginning to provide opportunities, though the employment numbers remain low compared to the potential.

Every woman who braves the tides, navigates through storms, and finds strength in the water is a living example of overcoming obstacles, navigating beyond skepticism, and blazing a path for future generations. Being a female seafarer is not just about navigating oceans; it's about navigating a world that once said, "You don't belong here" — and proving it wrong with every voyage.

Finally can say - "Go to Sea!... Go together... get HER into Sea! Bangladeshi Females are also on the Move!



Ms. Tania Begum, the first female cadet of Bangladesh Marine Academy (2012), is a dedicated maritime professional who embodies resilience and passion. A Nautical graduate (2013), she served as Deck Cadet on bulk carriers and tankers under Bangladesh Shipping Corporation, earning her Bachelor of Maritime Science in 2017. Currently pursuing a Master's in Port and Shipping Management at Bangladesh Maritime University, Tania is preparing to return to sea—proving women can balance family and career. She advocates for women's empowerment, maritime education, and sustainable shipping practices.

Navigating the Future: Innovations Shaping the Maritime World

Fariha Munir Prity

The maritime industry's evolution from ancient sailing crafts to autonomous and eco-friendly vessels marks one of humanity's greatest journeys of innovation. Each technological breakthrough — from the compass and steam engine to AI, automation, and green propulsion — has reshaped how the world trades and connects. This article explores the transformative milestones that have driven maritime progress through history, emphasizing the current shift toward smart technologies, digitalization, and sustainability. As the industry navigates the age of automation and decarbonization, it stands as a symbol of human creativity and resilience. The story of maritime innovation is, at its heart, the story of humanity's unending quest to master the seas responsibly.

The maritime world has always mirrored human progress — evolving with every tide of innovation. From the earliest wooden rafts to today's AI-powered autonomous vessels, each advancement reflects the spirit of exploration and the need for safer, faster, and greener trade. These innovations not only revolutionized global commerce but also strengthened humanity's connection to the ocean. As the industry stands on the brink of a new digital and sustainable age, the story of maritime innovation continues — a story defined by courage, creativity, and the relentless pursuit of a better tomorrow.

The Early Days: When It All Began

The journey of maritime innovation began millennia ago, when early civilizations first discovered how to float and travel across water. The Ancient Egyptians crafted reed boats to navigate the Nile, while the Phoenicians, master sailors of the Mediterranean, built wooden ships powered by oars and sails. Though primitive, these vessels marked the beginning of global exploration and commerce.

As centuries passed, technology evolved. The Chinese invention of the compass enabled navigation even under overcast skies. The Greeks and Romans constructed larger ships with improved sails and introduced maritime maps, enhancing long-distance travel and trade.

While these tools may appear rudimentary today, they were groundbreaking in their era. Collectively, these early innovations laid the essential groundwork for the modern world of maritime navigation and global shipping.

The Age of Steam and Steel

The Industrial Revolution brought a wave of transformation to the maritime world. One of the greatest breakthroughs was the steam engine. Ships no longer depended on wind—they could travel faster and more reliably using steam power. This gave rise to the steamship era, which changed global trade forever. Steam-powered ships soon became the preferred choice for transporting goods and passengers, reshaping global trade routes and enhancing economic growth.

Around the same time, shipbuilders

began using iron and steel instead of wood. Iron and steel offered superior strength and durability compared to wood, making vessels more resilient to the harsh conditions of the sea.
Passenger liners like the Titanic and Lusitania were symbols of pride, progress, and engineering marvel.

These innovations turned oceans into highways and connected the world in ways never seen before.

Modern Era: The Rise of Technology (20th Century Onwards)

The 20th century was defined by groundbreaking scientific discoveries, which fuelled rapid advancements in marine technology. The invention of the diesel engine significantly improved fuel efficiency in ships, while radar and sonar systems enhanced safety by enabling vessels to detect obstacles and navigate in low-visibility conditions. The arrival of GPS technology revolutionized navigation, offering precise positioning and making global travel faster and more secure.

One of the most transformative innovations was the container revolution. The adoption of standardized containers streamlined the transfer of goods between ships, trains, and trucks—dramatically reducing costs and transit times, and laying the foundation for modern global trade.

This era also saw the emergence of specialized vessel types such as oil tankers, submarines, and cruise ships, each designed for distinct roles: transporting energy resources, exploring the ocean's depths, or delivering luxurious travel experiences.

Present Day: Smart and Sustainable Seas

Today's maritime industry is undergoing a profound transformation driven by digitalization, automation, and sustainable practices. Modern ships and ports now use smart sensors, artificial intelligence, and secure digital systems to track fuel consumption, engine performance, and cargo movement in real time. These technologies help improve efficiency, increase safety, and ensure that operations follow international regulations and standards.

Smart ports now integrate big data analytics, digital twins, and automated logistics. These technologies optimize vessel traffic, streamline cargo handling, reduce delays, and cut emissions.

Another important trend is sustainability. With growing concern over marine pollution and climate change, the industry is shifting towards green technology. Ships now use cleaner fuels like LNG (liquefied natural gas) and hydrogen. Wind-assisted propulsion, solar panels, and battery-electric systems are also being tested.

These innovations not only reduce cost but also protect the marine environment.

Future Innovations: What Lies Ahead

The next chapter in maritime innovation is being written today, with autonomous ships, AI-powered navigation, and green propulsion technologies leading the way. Looking ahead, we see even more exciting possibilities. Autonomous ships—vessels that sail without a crew—are being developed and tested around the world. These ships could reduce human error and make shipping more efficient and safe.

Artificial Intelligence (AI) will play a bigger role in navigation, cargo handling, and route planning.

Robotics is now transforming maritime work by taking over risky and difficult tasks. Drones are now used to inspect ship hulls and offshore structures, helping to spot problems early. Underwater robots like ROVs and AUVs can explore deep-sea areas without putting divers in danger. As robotic technology improves, maritime operations will become safer, smarter, and more efficient.

Climate-resilient designs are also on the rise. Ships of the future will be built to withstand extreme weather, and many will be fully electric or hybrid-powered.

New communication systems, including space-based internet, may allow real-time data sharing from ship to shore, even in remote oceans.

The Journey Continues

From wooden vessels to digitally equipped ships, the evolution of maritime innovation is a testament to courage, ingenuity, and lifelong learning. Every generation of mariners has played a vital role in this journey—embracing new technologies, overcoming fresh challenges, and charting a course toward a brighter future.
As we enter a new era, the mariner's role remains as essential as ever. While technology continues to transform how we navigate the seas, the soul of maritime life still relies on skilled hands, keen intellect, and an enduring reverence for the ocean.

Innovation is not just about machines—it is about vision, responsibility, and the will to explore the unknown. And as long as there are waves to cross, the maritime world will keep evolving, guided by the spirit of innovation.

Fariha Munir Prity
Fariha Munir Prity, from Chittagong, is pursuing her Honours in English Language and Literature at the University of Chittagong. A passionate writer and avid reader, she draws inspiration from both classic and modern works. Her interests extend to technology and art, where she expresses herself through painting and drawing. Curious and creative, Fariha continues to explore new ideas and voices as a young emerging writer.

Smart Port Management – UK's approach in meeting the challenges of change.

Capt. Forkanul Quader

The UK port industry, the second largest in Europe, handles around 500 million tonnes of freight and 60 million passengers annually, contributing significantly to the national economy. This article compares smart port management principles with the governance of major UK port groups, focusing on transformation, integration, sustainability, and customer orientation. Findings reveal strong alignment between smart port functions and UK port management practices, suggesting that UK ports, through their efficiency, innovation, and adaptability, effectively embody the characteristics of modern smart ports.

To improve its port operations, Bangladesh should embrace the smart-port model by investing in modern infrastructure, automation and digital systems, while cultivating skilled management committed to sustainability and customer satisfaction. Taking a cue from the UK's experience, authorities need to integrate isolated terminals, adopt Electronic Data Interchange and foster public-private partnerships that enable mergers and corporate structures for efficient, networked logistics. Finally, aligning governance with international best practices—emphasizing safety, environmental stewardship and community engagement—will help Bangladesh transform its ports into smart hubs comparable to leading UK examples.

The article examines how the UK's major port groups have transformed into "smart ports" through deregulation, private investment, and innovative management. As defined in the European Transport Research Review, a smart port is connected, sustainable, and automated—driven by advanced infrastructure, skilled people, and efficient management. The UK, with Europe's second-largest port industry, handles nearly 500 million tonnes of freight and 60 million passengers annually, managing over 95% of trade without subsidies. The study compares smart-port functions with UK port governance, highlighting integration, connectivity, sustainability, and community engagement that align UK ports with global smart port standards.

In an article published in the `European Transport Research Review' (2023), smart port is defined as "the smart port is a connected, sustainable, safe and automated port, which relies on smart infrastructure and equipment, skilled personnel and smart managerial practices, to ensure customer satisfaction, environmental protection and a better quality of life for the citizen." Being second largest in Europe UK port industry handles almost 500 million tonnes of freight each year, apart from handling over 60 million passengers (international and domestic). Deregulation process has changed the sector significantly over the last twenty years. It is a fact that over 95% of UK imports and exports are moved through the island nation's (UK) ports; apart from revenue earnings of over £35 billion and supporting over 100,000 jobs across the UK. With freedom to operate free from excessive government regulations, UK ports are among the most efficient and

diverse in the world in terms of their size, geographic location, ownership, function, and services. UK ports are self-sustaining and do not receive state subsidy, unlike some around the globe. That is an impressive narrative; no matter how that is looked at. Port Industry has indeed been a major contributor to the UK national economy. Most major UK ports such as Felixstowe, Hull (& Grimsby), Southampton, Liverpool, Belfast – all are comparable to `smart port' definition and specifically in terms of smart management practices. During a visit to the port of Felixstowe former Secretary General of the IMO once stated that "there is a critical importance of 'joined-up' maritime development across all sectors, both from a policy and a practical perspective. The benefits of a free and efficient flow of goods and trade extend far beyond the ships and ports themselves,"

What is the success story?

Integrated approach - From the early 1980s UK realised the need of connectivity and modernisation of ports and transport sector. It was the time when the demand for containerised finished goods took off at full swing. In the UK both public and private sector realised the need for a rapid change to port and transport infrastructure. Sustainable smart management practices demanded rapid structural changes to the infrastructure and integration of related elements such as isolated terminal units, VTS and support services.

The European Transport Research Review defines a smart port as "a connected, sustainable, safe and automated port, which relies on smart infrastructure and equipment, skilled personnel and smart managerial practices, to ensure customer satisfaction, environmental protection and a better quality of life for the citizen.

Merger and Grouping: Faced with the challenges of change, UK government encouraged greater private sector investment at ports sector. That paved the way to the development of a sustainable infrastructure and logistic chains. Smart infrastructure changes lead to automation and connectivity to networking. Thus, the corporate structures such as Associated British Ports, Peel Ports and Forth Ports etc. emerged. Smaller ports joined hands with lager ports as part of a corporate/ group structure. Isolated terminals became part of large port. With tug, VTS, stevedoring and related services becoming part of large port, creating a smart network web. Such merger entailed a sustainable growth strategy embedded within the structure.

Smart net-working – One element that became integral to the smart port management was the networking of logistical elements. Introduction of Electronic Data Interchange (EDI) brought the shipping world closer together as the daily business workflows required the exchange of various documents. Overnight, many exchangeable shipping documents were transformed into electronic documents. UK's port sectors very much embraced the move towards smart communication. Research and development thrived under such compatible environment.

ports starte d to specialise in leisure and recreational sector.

Ports & Community - Ports in the UK have always played a role in supporting the local community, enhancing the living standards, and promoting local tourism.

Health, Safety, Environment and Accountability - While modernisation process took off in full swing and made significant headway, there was shortcomings in the areas of health and safety. In 1996 port sector woke up to see the environmental impact when 72,000 tonnes of crude oil were spilled from tanker `Sea Empress' around the coasts of South Wales. The clean-up operation took almost 5 years with the cost as high as £60 million. Since then, the regulatory arms of the government have built and nurtured a matured relationship between partners in the maritime sector, especially the port sector. The outcome of the collaborative work resulted in the introduction of non-mandatory Port Marine safety Code (PMSC). The Port Marine Safety Code, with its associated Guide to Good Practice, provided an industry-agreed guidance on every aspect of port marine safety. "The Code has been developed to improve safety in the port marine environment and to enable organisations to manage their marine operations to nationally agreed standards. It provides a measure by which organisations can be accountable for discharging their statutory powers and duties to run harbours or facilities safely and effectively. It also provides a standard against which the policies, procedures and performance of organisations can be measured" (PMSC). To comply with the Code harbour authorities were to consider the following measures:

- Identification of a Duty Holder (collective or individual) who will have overall responsibility.
- Identification of an independent `Designated Person';
- Periodical review of the Legislation (Port Bye Laws, Harbour Act 1964, Docks & Harbour Act 1972 etc.) under which port operates;
- Review of its' Duties and Powers.
- Develop and maintain a Marine Safety Management System (MSMS);
- MSMS must be reviewed and audited regularly;
- Identification of all hazards, risk assess those and apply controls to reduce risk to as low as reasonably practicable (ALARP);
- Employment of appropriately qualified and competent people in key roles (i.e Harbour Masters, Pilots, VTS operators etc.);
- Production of and publication of a Marine Safety Plan (3 years) in order to measure its performance against this plan;

- Review of port's Aids to Navigation (buoys, lights, beacons &marks) in line with the requirements.

The foregoing ten points set out in the PMSC may not all be applicable to all ports. It recommends as a minimum that ports are fully aware of their Duties and Powers; carry out Risk Assessments for Marine activities and operate a MSMS. The MSMS lies at the heart of any PMSC. It is the system that defines safe marine operations and identifies hazards that apply in a particular port. A full scale of review of national port policy in 2000 further accelerated the way to the creation of a smartly managed independent port industry in the UK.

Audit reports, risk register, annual report, three yearly plan and customer feedback all can be used as indicators to measure a port's performance & ,in drawing up KPIs. Group of people or an individual managing such smart port must keep a close watch on those, apart from being visionary. The top team should be able to provide strategic direction to achieve organisational goal. The idea is to take everyone/sector along. Sustainable growth, diversification, zero accident/ accident, customer (internal and external) care and people-centred approach should be central to such strategic plan. He/she/they must lead the organisation and face up to the challenges of change and market volatility with dynamism.

The study finds "remarkable co-relations between the defined smart port management functions and the governance of UK major port groups.

Captain Forkanul Quader, MSc, Cert Ed/M, FNI, is a distinguished Master Mariner and maritime educator with over five decades of experience at sea and ashore. A graduate of the Bangladesh Marine Academy, he later earned a Master's degree in Maritime Education & Training from the World Maritime University, Sweden. He served with the UK Maritime and Coastguard Agency (MCA) as Port Liaison Policy Manager, Surveyor, and Examiner of Masters and Mates, contributing to maritime standards and regulatory excellence. Captain Quader has also played a vital role in mentoring seafarers and enhancing maritime education across several countries.

Marine Pollution: A rising crisis in our oceans

Salma Nawer Binte Gafur Sadia

Marine pollution poses severe threats to biodiversity, human health, and global economies. This study highlights its sources, impacts, and the need for global collaboration, innovation, and sustainable waste management to mitigate its effects.

Marine pollution is the introduction of harmful substances and energy into the ocean, causing severe damage to marine ecosystems, biodiversity, and human health. Around 80% of marine pollution comes from land-based sources such as industrial waste, agricultural runoff, and mismanaged plastics (UNEP, 2021). Rapid population growth and industrialization have worsened the problem, with 19–23 million tonnes of plastic entering oceans each year—equivalent to a garbage truck every minute. The consequences extend beyond environmental harm to economic losses in fisheries, tourism, and coastal livelihoods, as well as health risks from contaminated seafood and microplastics. Addressing this crisis demands a global approach involving effective regulation, innovation, and cooperation. This article explores the key sources, impacts, and solutions for tackling marine pollution to protect ocean health and human prosperity.

Types & Sources of Marine Pollution:

Marine pollution is a multifaceted issue that arises from diverse sources, both land-based and ocean-based. Understanding these sources is essential for targeted mitigation strategies.

1. Plastic Pollution

Plastic pollution is perhaps the most visible and well-documented form of marine contamination. It encompasses macroplastics (items larger than 5 mm, such as bottles, bags, and fishing gear) and microplastics (particles smaller than 5 mm). The durability of plastic, once a benefit for manufacturing, now poses an ecological hazard as these materials persist for centuries in the marine environment. Mismanaged waste, stormwater runoff, and illegal dumping are primary contributors. It is estimated that 19–23 million tonnes of plastic enter aquatic ecosystems annually, with significant portions accumulating in gyres, such as the Great Pacific Garbage Patch (UNEP, 2021). Microplastics, generated through the breakdown of larger items or released directly from products like synthetic textiles, have been detected in seafood, table salt, and even human blood (Leslie et al., 2022)

2. Chemical Pollution

Chemical pollutants such as heavy metals, pesticides, POPs, and oil spills enter oceans through rivers, air, and accidents, causing habitat damage, reproductive harm, and toxin buildup that threatens marine life and human health.

3. Sewage and Nutrient Pollution

Untreated sewage and fertilizer runoff add pathogens and excess nutrients, triggering eutrophication and oxygen-

depleted "dead zones." The Gulf of Mexico zone, driven by Mississippi River runoff, can exceed 15,000 km² each summer (Rabalais et al., 2018).

"Over 80% of marine pollution originates from land, making prevention onshore as vital as cleanup at sea."

4. Noise Pollution

Underwater noise from ships, industry, and sonar disrupts communication, navigation, and breeding of whales and dolphins, causing stress, strandings, and migration changes (Erbe et al., 2019).

5. Thermal Pollution

Heated discharges from power and industrial plants alter species distribution, accelerate coral bleaching, and disrupt marine reproduction (Talley et al., 2011).

Environmental & Economic Impacts

Marine pollution damages ecosystems, biodiversity, and coastal economies. Over 800 species suffer from debris entanglement or ingestion (Gall & Thompson, 2015), while microplastics and toxins accumulate through food webs. Hypoxia, chemical pollution, and noise degrade habitats and impair marine life. Economically, plastic pollution costs USD 6–19 billion annually, while major spills like Deepwater Horizon exceeded USD 60 billion in losses (UNEP, 2021; NOAA, 2020). Pollution weakens fisheries, tourism, and the ocean's ability to regulate climate and sustain livelihoods.

Case Studies of Major Marine Pollution Events:

Examining specific instances of marine pollution provides valuable insights into the scale, causes, and consequences of such events. Two notable examples are the Great Pacific Garbage Patch and the Deepwater Horizon oil spill.

The Great Pacific Garbage Patch

The Great Pacific Garbage Patch, located between Hawaii and California, spans about 1.6 million km²—three times France's size—and contains 1.8 trillion plastic pieces weighing 79,000 tonnes. Mostly made up of fishing nets and large debris, it threatens marine life through entanglement and ingestion. Projects like The Ocean Cleanup target major debris, but prevention at the source remains the best solution.

The Deepwater Horizon Oil Spill

In April 2010, the Deepwater Horizon explosion in the Gulf of Mexico released 4.9 million barrels of oil, causing catastrophic losses to marine ecosystems and Gulf economies. Cleanup and legal costs exceeded USD 60 billion, with long-term contamination still affecting marine life.

Human Health & Pollution

Microplastics—found in seafood, salt, and water—carry harmful chemicals linked to hormonal, immune, and inflammatory disorders. Untreated sewage introduces pathogens that cause widespread foodborne diseases, especially in poorer regions.

"Protecting the health of our oceans is not merely an environmental priority; it is a necessity for human survival."

Global Action & Solutions

In 2022, the UN began negotiating a treaty to end plastic pollution by 2040. Global frameworks like MARPOL and the Basel Convention regulate marine waste, while nations enforce bans on single-use plastics and promote recycling. Transitioning to a circular economy, advancing cleanup technologies, and raising public awareness remain key. Local efforts—beach cleanups, community recycling, and education—continue to prove that collective action can restore ocean health.

Marine pollution is a growing global threat endangering biodiversity, human health, and ocean-based economies. Driven mainly by land activities, pollutants like plastics, chemicals, and sewage are damaging ecosystems at alarming rates. Disasters such as the Great Pacific Garbage Patch and Deepwater Horizon spill reveal its vast ecological and economic toll. Urgent, coordinated action—through treaties, better waste management, innovation, and community efforts—is essential. Protecting our oceans is not optional; it is vital for humanity's survival and future sustainability.

Salma Nawer Binte Gafur Sadia is a Computer Science and Engineering graduate from Rangamati Science and Technology University (RMSTU), where she earned her BSc with distinction. Passionate about technology and the environment, she developed a long-range weather-forecasting drone with advanced air-quality monitoring. Now a dedicated teacher, she has mentored over 150 students and focuses on integrating innovative technology with environmental research to promote sustainable solutions for a greener future.

LR FOUNDATION- AN OVERVIEW AND ACTIVITIES IN BANGLADESH.

Mohammed Jahidul Kamal

Lloyd's Register Foundation, established in 2012, drives global maritime safety and sustainability through research, education, and innovation. It funds projects improving safety, resilient infrastructure, and workforce skills. Through initiatives like the Maritime Decarbonisation Hub, it advances safer, cleaner, and more sustainable maritime operations worldwide.

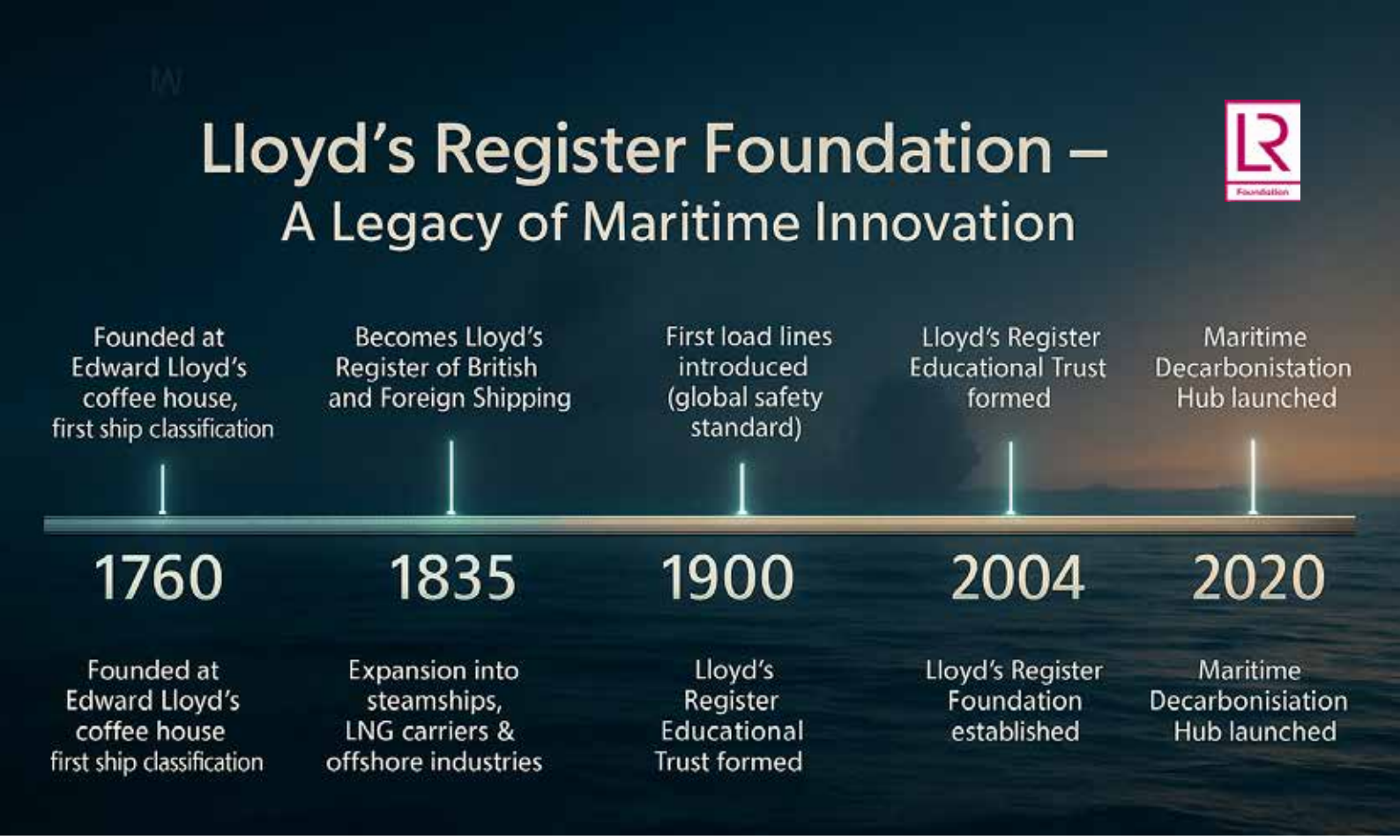
Lloyd's Register Foundation (LRF) is a globally recognized independent charity established in 2012 with a mission to engineer a safer world. The Foundation addresses critical global safety challenges through strategic investments in research, innovation, education, and partnerships. Its work spans maritime systems, sustainable infrastructure, and engineering skills development.

Lloyd's Register Foundation – Strategic Priorities (2024–2029)

Lloyd's Register Foundation (LRF) is driving global safety, sustainability, and skills development through three key focus areas:

1. Safer Maritime Systems

Championing decarbonisation, digitalisation, and climate resilience, LRF leads initiatives like the Maritime Just Transition Taskforce and collaborates with UCL and the International Maritime Rescue Federation to ensure safer, cleaner seas.



2. Safer Sustainable Infrastructure

LRF advances resilient, data-driven, and future-ready infrastructure, supporting autonomous systems, clean ocean energy, and climate adaptation through a whole-systems approach.

3. Skilled People for Safer Engineering

To bridge global skill gaps, LRF promotes diversity and inclusion in engineering through programmes such as Engineering X – Skills for Safety, the WMU Fellowship Programme, and SEASEP across Southeast Asia.

Collaboration with Lloyd's Register

Lloyd's Register Foundation (LRF) and Lloyd's Register (LR) work together to strengthen the global ocean economy through safer, more sustainable, and equitable practices. Their partnership enhances seafarer skills, promotes community resilience, and supports the transition to zero-carbon fuels.

A key initiative, the Maritime Decarbonisation Hub, unites both organisations' expertise to accelerate shipping's energy transition. The Hub's Impact Report showcases its influence in advancing safe and inclusive decarbonisation. LRF and LR also collaborate on research like Maritime Trends 2050, providing foresight into challenges and risks shaping the industry's future.

What the Foundation funds

- Strategic grant making: Lloyd's Register Foundation offers grants aligned with its strategy, with priority themes such as occupational safety, resilience, risk perception, and waste.
- Small Grants Programme: Grants up to ~£10,000 for organisations to initiate pilot projects, build partnerships, or test innovative ideas in line with the Foundation's charitable mission.
- Large / Thematic calls: Competitive calls for proposals, especially for more complex or large-scale work. These include safety evidence, decarbonisation, skills/education, maritime safety, etc.
- Global reach: Projects span many countries; the Foundation supports academic institutions, NGOs, social enterprises, and universities.

Lloyd's Register Foundation (LRF) is a globally recognized independent charity established in 2012 with a mission to engineer a safer world

Why These Investments Matter

LRF's funding saves lives and builds safer systems. By supporting innovation, capacity building, and equitable access, it ensures safety advancements reach communities and industries everywhere — not just the most developed nations.

Building a Safer Future: Lloyd's Register Foundation's Global Impact

The Global Safety Evidence Centre (GSEC)

Invested over 10 years to establish the Global Safety Evidence Centre.

Evidence is critical to improving the safety of people and property – but often does not yet exist or is not

easily accessible.

The work of Lloyd's Register Foundation has always been underpinned by a commitment to using robust evidence to better understand the complex factors that affect safety. That is why we are investing £15 million over 10 years to establish the Global Safety Evidence Centre, a hub for anyone who needs to know 'what works' to make people safer.

By funding research, knowledge sharing, and training, the Foundation helps prevent accidents, improve workplace safety, reduce risks in infrastructure, and make maritime operations safer

The Centre collates, creates and communicates the best available safety evidence from the Foundation, our partners and other sources on both the nature and scale of global safety challenges, and what works to address them. It works with partners and practitioners to identify and fill gaps in the evidence, and to use the evidence for action.

Submit funding proposal through: https://www.lrfoundation.org.uk/evidence-library

Heritage & Education Centre (HEC)

At 71 Fenchurch Street, London, the Heritage & Education Centre (HEC) preserves over 1.25 million ship plans, 1.1 million documents, and 59,000 library items chronicling more than 250 years of maritime innovation.

Open to the public, the Centre serves as a vital archive of marine engineering, history, and education—connecting the past to future ocean sustainability. It also funds heritage and research projects to promote public education in maritime and STEM fields.

Discover more at: Heritage & Education Centre | Lloyd's Register Foundation

Recent Impact Highlights

- Global Fisheries Safety: A £160,000 grant to the UN Food and Agriculture Organisation produced new international guidelines for small-scale fisheries and vessel insurance.
- Ice Navigation Research: Foundation - supported research improving ship safety in icy waters received international recognition in the Senior Researchers Competition.
- Vietnam Fishing Safety Project: Fisher training has transformed offshore safety culture—routine safety checks and protective gear use are now the norm.
- Bangladesh fishSAFE 2025: In partnership with the FISH Safety Foundation, this initiative trains local fishermen in safe practices and equipment use, fostering a self-sustaining safety culture and community resilience.

ONGOING PROJECTS WHERE FUNDINGS ARE AVAILABLE FOR APPLICATION:

1. Maritime Connected (19 Aug 2025 – 6 Feb 2026)

Grants from £2,000 to £60,000 to connect maritime organisations tackling safety challenges. Includes promotional support for funded projects.Apply via Flexigrant Portal: Maritime Connected Funding Offer

2. Small Grants Scheme (1 Sept – 24 Nov 2025)

Up to £10,000 to pilot ideas, strengthen partnerships, or test innovative concepts in maritime, heritage, and public safety sectors. Theme: "A little can go a long way."

3. Ocean Centres Initiative (Launched June 2025)

A global network of Ocean Centres established with the UN Global Compact to advance ocean safety and sustainability in Brazil, Ghana, Kenya, India, Bangladesh, Indonesia, and the Philippines.
The Bangladesh Ocean Centre focuses on:
1. Fishing & Aquaculture 2. Shipping & Ports 3. Offshore Renewables 4. Finance & Investment

Expected outcomes include safer fisheries, cleaner ports, renewable energy growth, and sustainable coastal economies. (https://www.oceancentres.com/bangladesh)

Through its mission, strategic priorities, grant programmes and global partnerships, Lloyd's Register Foundation is engineering safer maritime futures. Its work supports decarbonisation, resilient infrastructure, skill development and evidence-based policy, contributing to inclusive growth, environmental sustainability and climate resilience. For Bangladesh, the Foundation's initiatives offer opportunities to improve fishing safety, modernize ports and foster innovation, underscoring the importance of collaborative efforts to create a safer world for seafarers and coastal communities.

Mohammed Jahidul Kamal, a Fellow and Chartered Marine Engineer of the Institute of Marine Engineering, Science and Technology (UK) and Chartered Engineer of the Engineering Council (UK), serves as Technical Key Account Manager at Lloyd's Register Singapore and was formerly Country Manager of Lloyd's Register Bangladesh. He began his sea career in 1997, sailing with leading global companies and retiring as Chief Engineer in 2016. He also served as Engineering Instructor at Bangladesh Marine Academy and Plant Manager at Baraka Power Limited.

Ship Chartering: The backbone of global trade.

Capt. Mohammed Imran Kalam Chowdhury

Ship chartering forms the cornerstone of global maritime trade, linking shipowners and charterers through complex contractual, operational, and financial arrangements. This article explores the three main charter types—voyage, time, and bareboat—highlighting their commercial and operational differences. It examines the vital role of shipbrokers, the importance of the Charter Party contract, and the operational processes from planning to voyage completion. By outlining key terms such as freight, hire, demurrage, and laytime, the article underscores how chartering ensures flexibility, cost efficiency, and reliability in cargo transportation. Ultimately, it emphasizes that without this structured and dynamic system, the global supply chain would face serious disruption.

Chartering represents an intricate collaboration between those who possess ships and those who require the transportation of goods. It's a sophisticated interplay of contractual agreements, nuanced negotiations, and strategic foresight, all designed to ensure the seamless movement of cargo across the planet.

Fundamentally, ship chartering is the act of engaging a vessel for use. This arrangement empowers individuals, corporations, or governmental bodies – collectively known as "charterers" – to utilize a ship owned by another entity, the "shipowner," for either a defined duration or a specific journey. This mechanism offers extraordinary adaptability, facilitating the efficient delivery of everything from crude oil and raw materials like iron ore to advanced consumer electronics and automobiles, to their intended destinations. Without this dynamic system, the global supply chain, as we currently know it, would inevitably falter.

The practice of ship chartering primarily encompasses three distinct categories, each meticulously tailored to address varying logistical and operational demands:

> *"The Charter Party is the backbone of every shipping transaction, defining the responsibilities and expectations of all parties involved."*

1. Voyage Charter: This is arguably the most straight forward form. Under a voyage charter, the shipowner commits to transporting a specified consignment from a loading port to a discharge port for an agreed-upon price, termed "freight." The shipowner maintains complete operational authority over the vessel, including crew management, maintenance, and fuel expenses. The charterer's responsibility is limited to paying for the cargo space and the transit itself. This model is ideal for shippers with isolated cargo transport needs, providing cost predictability and minimal operational burdens.

2. Time Charter: In a time charter, the vessel is leased for a predetermined period, perhaps six months or a year. The charterer assumes commercial control of the ship, dictating its routes and the types of cargo it carries, always within the vessel's inherent capabilities. While the shipowner retains responsibility for the crew and technical operations, the charterer covers variable expenditures such as fuel (bunkers), port charges, and canal transit fees. This arrangement suits charterers with consistent, ongoing shipping requirements, offering enhanced flexibility in scheduling and routing.

3. Bareboat Charter (or Demise Charter): Representing the most extensive form of chartering, this arrangement closely mirrors a long-term lease or even a precursor to outright ownership. Under a bareboat charter, the shipowner provides the vessel devoid of crew, provisions, or supplies – essentially an unequipped "bare boat." The charterer assumes full operational and commercial command, becoming accountable for crewing, maintenance, insurance, and all running costs.

The shipowner is the entity that possesses the vessel and makes it available for hire. The charterer is the party that engages the vessel to transport their commodities. Bridging the gap between these two are shipbrokers, who function as vital intermediaries. They leverage their profound market insight and extensive networks to identify suitable vessels for charterers and available cargo for shipowners.

Central to any charter agreement is a specialized contract known as a Charter Party. This legally binding document meticulously details all terms and conditions, from the vessel's technical specifications and the cargo to be transported, to the agreed freight rate, payment schedules, and the precise responsibilities of each involved party.

Several crucial terms regularly feature in chartering discourse:

- Freight: The remuneration paid by the charterer to the shipowner for the conveyance of goods under a voyage charter.
- Hire: The payment rendered by the charterer to the shipowner for the utilization of the vessel under a time charter or bareboat charter, typically disbursed at regular intervals (e.g., daily or monthly).
- Laytime: In the context of a voyage charter, this refers to the agreed-upon period allotted to the charterer for the loading and unloading of cargo without incurring additional charges.
- Demurrage: A financial penalty levied upon the charterer by the shipowner if the loading or unloading operations extend beyond the stipulated laytime. This compensates the shipowner for lost earnings due to the delay.
- Despatch: Conversely, should the charterer complete the loading and unloading within less than the allocated laytime, the shipowner may issue a bonus known as despatch, thereby incentivizing rapid vessel turnaround.
- Bill of Lading (B/L): A document issued by the carrier (the shipowner or their authorized agent) to the shipper, serving as an official acknowledgment of receipt of the cargo for shipment.

The Operational Journey: From Agreement to Delivery

Once a charter party is formally executed, the substantive work of cargo transportation commences. This involves a meticulously planned and executed sequence of operational steps, all aimed at ensuring the voyage is efficient, compliant, and ultimately successful.

1. Pre-Voyage Planning and Due Diligence: Before a vessel even contemplates departure, extensive preparatory planning is paramount. This initial phase requires the shipowner (or the charterer, in the case of a time or bareboat charter) to confirm the vessel's optimal operational status, adequate crewing, and sufficient provisioning for the impending journey. Strategic considerations also include sourcing bunkers (fuel) at the most economically advantageous ports and conducting preliminary route assessments. Due diligence is of utmost importance, particularly for the charterer. This entails rigorously verifying the vessel's suitability for the specific cargo, scrutinizing port-specific restrictions, and confirming that all vessel certifications and insurance policies are current and appropriate for the intended voyage and cargo. For the transportation of hazardous materials, strict adherence to international maritime regulations (such as the IMDG Code) constitutes an indispensable element of this due diligence.

"Ship chartering provides operational flexibility and economic efficiency, sustaining the rhythm of international trade."

2. Voyage Planning: Comprehensive voyage planning is meticulously carried out by the vessel's master and navigating officers, often in close collaboration with shore-based operations teams. It encompasses a thorough evaluation of prevailing weather patterns, ocean currents, potential navigational hazards, and identified zones of piracy. Sophisticated optimal routing software is frequently employed to determine the most fuel-efficient and secure passage, carefully considering the vessel's speed, fuel consumption estimated times of arrival (ETAs) at various intermediate waypoints and the final destination port, information that is critically important for port authorities and cargo recipients.

3. Cargo Documentation: Precise and exhaustive cargo documentation forms the very lifeline of international shipping. The Bill of Lading (B/L), as previously noted, holds a central position, serving simultaneously as a receipt for the goods, a contract for their carriage, and a document conferring title. Beyond the B/L, other essential documents include the cargo manifest (detailing all cargo aboard), customs declarations, declarations for dangerous goods (where applicable), certificates of origin, and commercial

invoices. Ensuring that these documents are accurate and perfectly align with the physical cargo and the stipulations of the charter party is vital for seamless customs clearance and for averting delays or legal complications at both the loading and discharge ports.

4. Cargo Handling: This phase encompasses the entire sequence of operations involved in loading, stowing, and subsequently discharging the cargo. Proper cargo handling is paramount for safeguarding the vessel, its crew, and the integrity of the cargo itself. For bulk commodities, meticulous trimming is essential to prevent dangerous shifting during transit. For containerized cargo, correct lashing and securing procedures are critical.

5. Voyage Monitoring and Compliance: Once the voyage is underway, it is subjected to continuous monitoring. This involves tracking the vessel's precise position, speed, and fuel consumption, frequently. Regular communication channels between the vessel, shipowner, charterer, and port agents ensure that all relevant parties are kept abreast of the voyage's progress and any unanticipated events. Crucially, voyage monitoring also serves to guarantee ongoing adherence to the charterer's instructions and the provisions of the Bill of Lading.

The advantages of ship chartering are numerous. For charterers, it provides unparalleled operational agility. Rather than making substantial investments in owning and maintaining a fleet, they can dynamically adjust their shipping capacity based on fluctuating demand, accessing specialized vessels whenever required. This approach significantly minimizes operational risks and capital expenditure. For shipowners, chartering offers a consistent stream of revenue, enabling them to optimize the utilization of their valuable assets and mitigate the risks associated with volatile market conditions.

Capt. Md. Imran Kalam Chowdhury
Master Mariner (Singapore)

Capt. Mohammed Imran Kalam Chowdhury, a seasoned maritime professional, graduated from the Bangladesh Marine Academy in 1991. He built a distinguished seafaring career, rising from Trainee Officer to Captain across leading global shipping companies before retiring from sea service in 2010. Currently serving as Senior Marine Superintendent at Bernhard Schulte Shipmanagement, Singapore, he is also an Associate Member of the Chittagong Chamber of Commerce and a member of the Bangladesh Shipping Agents and Owners Association, reflecting his dedication to maritime excellence and community advancement.

Reflection of a Marine Engineer

Rafiqul Quader

This article captures the professional evolution of a marine engineer transitioning from sea to shore, highlighting the challenges and lessons learned across technical, managerial, and commercial roles. Drawing from decades of experience, the author discusses the importance of clear communication, risk management, and stakeholder collaboration in achieving project success. He contrasts traditional hierarchical leadership styles with the modern, data-driven, and collaborative approaches now essential in the maritime industry. The reflection also explores how engineers must develop business acumen, adaptability, and problem-solving skills to thrive in a rapidly changing technological landscape. Ultimately, it envisions the future marine engineer as a versatile professional leading intelligent, sustainable maritime systems.

I left sea in 1993 and briefly worked as a Superintendent. I went back to sea again for a contract and finally settled ashore. I joined Sembawang Shipyard as Project Engineer in January 1995. Here are some of my observations as I transitioned from a sea career to a shore environment in the yard and a large oil major.

Transitioning from a shipboard engineer to a project manager in a shipyard requires a shift in focus from technical problem-solving to managing relationships, communication and nurturing profitable business outcomes.

As mentioned, while marine engineers have a strong foundation in technical knowledge, project management demands a new set of skills:

- **Communication:** A project manager must translate technical details into clear, concise language that all stakeholders, including non-engineers, can understand. It's also crucial to be culturally sensitive and effectively communicate with diverse teams and individuals.
- **Business Acumen:** Successful project managers must have a solid grasp of project management principles, including managing budgets, timelines, and resources to prevent financial losses and legal issues.
- **Safety and Compliance:** Beyond personal responsibility, a project manager is accountable for ensuring that all work done on a vessel complies with international safety and regulatory standards. They must actively oversee safety protocols on site, even when dedicated safety teams are present.

On a personal note, I did see a project that ended up in a long drawn legal battle. Here are some of the critical learnings:

- **Scoping:** Thoroughly assess the vessel's current state and account for potential risks and unknowns to avoid unrealistic bids and timelines.
- **Contracting:** Ensure all

contracts are aligned and unambiguous to prevent disputes and delays. Close collaboration with legal and engineering teams is essential.

- **Risk Management:** Develop a comprehensive plan to identify, mitigate and create contingencies for risks example supply chain disruption, labour shortages.
- **Communication:** Establish clear, consistent communication channels with all stakeholders, from owners to subcontractors to prevent project failure.
- **Change Management:** Formally document, assess, and approve any changes in scope before implementation to avoid cost overruns and delays.
- **Resource Planning:** Accurately account for human and material resource availability and shortages within the project schedule.
- **Proactive Problem-Solving:** Anticipate and address issues before they escalate, rather than simply reacting to them.

Characteristics	Traditional Leadership at Sea	Modern Leadership in the age of Technology
Authority	Top Down – Chief Engineer is the unquestioned authority in Engine Room	Collaborative – encourages dialogue, feedback and crew initiative.
Decision-Making	Based on personal experience and intuition.	Data-driven, supported by condition monitoring, diagnostics and analytics.
Knowledge Base	Strong focus on mechanical knowledge & manual troubleshooting.	Multi-disciplinary – mechanical, electrical, digital systems, automation, cybersecurity, environmental compliance.
Communication	One-way traffic (orders given, crew follows- top down	Two-way and collaborative – during problem-solving, and idea sharing.
Characteristics	Traditional Leadership at Sea	Modern Leadership in the age of Technology
Training & Development	"On-the-job" learning, focused on technical skill repetition.	Continuous learning – supported by Management Company e-learning, simulator training, remote assistance and upskilling in new tech awareness and understanding of evolving Maritime Regulations.
Motivation	Discipline-driven.	Crew empowerment, recognition, mentorship and personal growth.
Team Dynamics	Hierarchical – Chief Engineer at the top and others below	Inclusive – emphasizes collaborative leadership, cultural sensitivity, diversity and team cohesion.
Crisis Management	Authoritative command – quick orders, no discussion.	Situational – decisive in emergencies, but adaptive in normal operations. Shore guidance and support generally expected
Shore Interaction	Limited, mostly through reports and telex/email	Continuous collaboration with shore support, due to modern technology real-time performance monitoring, communication and compliance reporting. This has also fostered more shore dependency.
Focus	Machinery performance and safe operation.	Holistic- machinery, energy efficiency, environmental compliance, sustainability, digital integration and crew well-being.

Perhaps it would not be out of place to review in a comparison table that highlights how the leadership style of a Marine Chief Engineer has shifted during our time from the traditional era to the modern, technology-driven age.

The leadership matrix presented is a summarised and general observation. Based on my experience at sea and ashore I must say there is no prescriptive leadership style but rather the ability to adjust based on the situation is important. To be successful, one must have strong expertise, ethics, business sense, and soft skills like collaboration, influence and teamwork in a virtual environment.

Let me share a learning from one of my professors when I was pursuing an MBA. He suggested whenever any e mail is written due to a problem or an issue that has developed; it is best to clearly explain the problem with appropriate suggestion/proposal and provide "Management" with the "Opinion" and best course of action to take. Nowadays, the impression is in any problem on board be it technical or regulatory the common language is, "please advise" which should not be the case.

"Success in any role requires a blend of strong expertise, ethics, business sense, and soft skills like collaboration and influence."

After about five years in the Shipyard, I joined ExxonMobil towards the end of 1999 prior to the merger of Exxon and Mobil. I was very fortunate to witness the merger of two great companies which went very well. The merger was indeed a textbook case. Many mergers have failed due to clashes in company culture and poor integration.

My time spent in the Yard did prepare me to have a customer focus in mind. As a Project Manager/Ship Repair Manager we were not a typical sales manager though satisfied Customers/ Technical Superintendent led to increased business.

The interesting challenge in the Lubricant Business was to effectively communicate the value of a product in terms of cost savings and operational efficiency rather than just technical/ product specifications. In short it may be summarised as moving product offer from commodity perception to differentiated approach with strong focus on problem solving. The engineer/sale's personnel deep technical knowledge becomes the unique selling proposition, providing value through expert advice and post-sales support that competitors may not be able to match.

"The marine engineer of the future will be a highly skilled technical expert managing, rather than just maintaining, an intelligent ship."

The industry is constantly evolving. During my time I had to focus externally on the understanding of the development of Emission Control Area, Sulphur regulations, guiding customers on compliant products to avoid engine damage and costly fines. During this transition I worked with reputed Shipping Companies in field performance trial of Marine Lubricants.

The marine lubricant business is global and complex. From a sales perspective through Customer and Logistic Service support I had to ensure timely and consistent supply to a vast network of ports worldwide for my customers contracted vessels. This involved managing last-minute orders and ensuring delivery to vessels as there is always a limited window for delivery to a ship be it in port or anchorage.

I remember we were facing challenges to deliver product to ships of a certain management company. A young new hire who was my "mentee" helped me to generate alarm notification prior to vessel calling Singapore using AIS Vessel tracking Services decades back. This message through Customer Service was transmitted as a reminder email whether the subject vessel would need lubrication supply. A very rudimentary application of the use of technology that made a difference to help solve Customer issue.

My experience in the industry led me to see a collective understanding that each of us represent our organisation and we are there to strongly defend our position in case of dispute or issues. However, I found when a Project Manager in the Yard or A Sales Manager in an Industry puts himself in the middle between the Customer and the Organisation and looks at issues fairly without bias, he or she could be more successful in managing conflict or arriving at a resolution that would be acceptable to all parties.

Finally, a question does arise in our mind what is the future of a Marine Engineer in this age of technology that is developing at breakneck speed?

In the future the marine engineer will be a highly skilled technical expert, managing an intelligent ship instead of focusing solely on maintenance

Rafiqul Quader is a Class 1 Marine Engineer (UK) and Chartered Engineer with an MBA from the University of Hull. After 15 years at sea and a tenure as Technical Superintendent, he joined Sembawang Shipyard, later serving as Ship Repair and Project Manager. He retired from ExxonMobil Asia Pacific after 22 years as Strategic/Key Account Manager in the Marine Lubricant Business. A Fellow of IMarEST and past President of the Bangladesh Marine Community Singapore, he now works as a Marine Consultant and enjoys reading, particularly on politics and history.

A Silent Invasion: The Night Banglar Progoti Was Attacked

Capt. Ghazi Abu Taher

The narrative recounts a harrowing night aboard the Banglar Progoti near Batu Berhanti in the Singapore Strait. During a routine voyage, the crew encountered a silent pirate attack that resulted in injuries, theft, and profound trauma—especially for the Captain's family. The story details the chaos of the incident, the pirates' intrusion, and the crew's struggle to manage navigation, security, and emergency response amidst a tense and confusing situation. It highlights the crew's lack of preparedness for such threats and explores the emotional and physical toll on the seafarers. The incident left a lasting impression—a night marked by helplessness, resilience, and the ever-present dangers faced at sea.

It was during the Waning Crescent phase of the moon. The nights were growing darker, with each evening pulling a deeper shade over the estuary. Banglar Progoti set sail on an early February morning from Chittagong, cloaked in fog as she moved steadily through the still waters.

The voyage began smoothly. The vessel, old and weathered, was bound for the Far East. Though the ship lacked modern comforts—no air-conditioning, dilapidated deckheads threatening to fall with each violent roll or pitch—the crew found ways to fill the evenings with life in the smoke room.

As we neared the Malacca Strait, we began experiencing technical issues. The gyro compass started malfunctioning. Head office was contacted, and we were instructed to divert to Singapore. For the crew, this came as good news—Singapore meant shore leave, shopping, and a break from the monotony of sea life.

That evening, as always, the sun dipped below the western horizon. The sky began to thicken with clouds, and darkness set in like a heavy curtain. I had completed my sea watch as Chief Officer and stepped down from the bridge around 8:15 PM. The Strait was alive with traffic—beacons and lighthouses blinked silently in the distance, as if welcoming us. Aside from the ship's own engine, everything was quiet.

The TV flickered between Indonesian and Singaporean channels, yet the smoke room remained lively. Since we were expected to anchor early the next morning, I retired to my cabin and soon fell asleep. The portholes were open, letting in a natural breeze. My cabin door was slightly ajar, like most others, to allow better airflow.
Then, at around 2:00 AM, the fire alarm shrieked.

I leapt out of bed and rushed to the bridge. The Captain was already there, yelling, "Pirates! Pirates are on board!

My wife has been attacked!"

The Singapore Strait remained abuzz with traffic. The Captain, unable to leave the bridge, was stuck managing navigation. I rushed back to my cabin, threw on my boiler suit and safety boots, grabbed a flashlight, and headed for the Captain's quarters.

What I saw was devastating.

His wife lay unconscious on the bed, bruised and bleeding. Their children—one son and the daughter—were tied up. The Second Engineer's wife, young and terrified, was massaging the Captain's wife's head and legs. She suddenly looked up, gasped, "There! There!"—then fainted again.

With others tending to the women, I assembled two teams to search the ship. We began with the lifeboats, then moved downwards the poop deck. The other team went forward. The ship was in ballast, freeboard high—how had the pirates managed to board?

The incident left a lasting impression—a night marked by helplessness, resilience, and the ever-present dangers faced at sea

That's when we found DOT ladder lashed athwartship, and a long rope dangling into the sea. That was their route to disembark.

I ran back to the bridge. It was nearly 3:00 AM. The Captain was still managing the vessel. They already sent distress message through VHF to alert the Singapore VTS, Coast Guard, and nearby ships. He asked me to check on his family and administer aid.

I returned to his cabin and found Mrs. Captain conscious but trembling. Her lips were swollen, and she had a nasty bruise on her forehead. I cleaned her wounds and gently asked what had happened.

She spoke softly, voice shaking:

"They took the ship's vault... I wasn't in deep sleep. When they entered, I opened my eyes and saw three masked men. Two of them were tying up the children. I thought it was a rummage party at first—like port customs. But when they started tying my kids, I reached for the phone.
"One of them hit me on the head with my husband's briefcase. It had my ornaments and our emergency cash. They gagged me. I watched in despair as they tied my children. Two of them, one with a tattoo on his arm, carried the vault out with a sharp long knife. Then the third man reached for my son.

"I fought him. I tried to scream, tried to hold onto my boy. I had waited years for him. People mocked me for not having children. He gave me back my dignity. And now these men tried to steal him? I couldn't let that happen.

"The last pirate ran out. Maybe he meant to take my son for ransom. As soon as my hands were free, I ran to the bridge to call for help. But before the Captain could act, I collapsed near the chartroom only uttered Pirates on board."

Outside, hundreds of navigation lights flickered—beacons blinking in various rhythms. Crew members were already prepping the pilot ladder. Despite the huge traffic, a silent, violent crime had occurred—leaving one woman physically hurt and emotionally scarred for life together with her children.

Singapore Coast Guard and VTS were informed again. Since the ship was in ballast and had a high freeboard, we hoped the pirates had trouble disembarking and escaping. Perhaps the nearby ships had spotted them.

The bridge team continued managing safe navigation amid the chaos.

Suddenly, VHF radios buzzed with nonstop chatter from nearby stations, distracting us further. Despite emotional exhaustion, the documentation process began. Statements had to be prepared for the authorities who would board once we anchored.

The Captain's son remained shell-shocked, eyes mostly closed, expression blank. His mother cried out suddenly, "Oh my God! Where are my bangles?" Those were a gift from her father, worn since her wedding day. The robbers had taken them without her even realizing.

The steward began cleaning the cabin, and the Purser discovered over US $6,000 in cash missing—money meant for ship provisions together with all officers' Certificate of competency. In 1991, for a BSC officer on modest pay, this was a huge amount. The agent was informed, and the radio officer sent an update to head office.
Medical aid was arranged. By early morning, we anchored on the eastern side. Coast Guard officials boarded, and all statements were submitted. But since the attack occurred in Indonesian waters, there was little the Singaporean authorities could do.

There had been no preparation, no warning and even no procedure to prevent such incident

As the trauma faded into morning light, one thought haunted me: why, amid such chaos, were we expected to manage everything—security, navigation, and now, bureaucracy? Even seasoned mariners onboard admitted they had never faced anything like this. There had been no preparation, no warning and even no procedure to prevent such incident.

In the end, despite his efforts to protect lives and the ship, the Captain faced blame. Head office determined that the stolen cash was in his custody—since it wasn't insured—and therefore to be deducted that from his salary. A painful blow, literally and financially. He was a simple-minded person and, to my surprise, the only one I ever met who used to burn the butt of a cigarette a bit before lighting it. Reason I never asked.

That night near Batu Berhanti—Shallow rocky reef, in the Singapore Strait—remains etched in my memory. I have passed that buoy many times since, and with every new crew, I've told them this story.

Now, Batu Berhanti stands as a steel buoy under Indonesian authority, It serves as a critical Aid to Navigation marking an isolated danger in a

narrow, high-current channel within the Strait's Traffic Separation Scheme.

But for us, it marks something more: a night of helplessness, resilience, and a brutal reminder of the risks we take in silence.

Capt. Ghazi Abu Taher, a distinguished mariner and community leader, serves as Senior Marine Superintendent at Stellar Shipmanagement Singapore. A graduate of Bangladesh Marine Academy's 17th Batch and recipient of the President's Gold Medal (1982), he later earned an MBA from Heriot-Watt University, UK. He has commanded various vessels with Bangladesh Shipping Corporation and lectured at Royal Roads University, Canada. Actively involved in MAEC-ZCC, An ARS, and a member of Harmony Circle, he has received the BMCS Distinguished Personality Award (2023), MUIS Perkasa Gold Medal (2022) and PA Long Service Awards (2021 and 2016).

Global Solutions For Marine Services

AvalonteC

*SINGAPORE *MALAYSIA
*INDIA *UAE* KOREA *CHINA *USA *GREECE

Contact Details:

AVALONTEC SINGAPORE PTE LTD
TEL: +65 65154280
Email id: info@avalontec.com.sg

AVALONTEC ENGINEERING PTE LTD
TEL : +65 6747733
Email id: repair@avalontec.com.sg

LALIZAS PRODUCT DISTRIBUTION CENTER
TEL : + 65 65154280
Email id: safety@avalontec.com.sg

www.avalontec.com.sg

- ⚓ BowThruster overhauling
- ⚓ Hyundai cargo oil pump service with spares
- ⚓ Boiler, IGG maintenance service
- ⚓ Fabrication of Reducer for LNG vessels
- ⚓ Fast Fuel Changeover (FFCO) project
- ⚓ Air Conditioning & Refrigeration repairs
- ⚓ FFA & LSA servicing and supplies (Approved by Classes)
- ⚓ Steel structural repairs, pipeline renewals & fabrication works
- ⚓ Deck Machineries & hydraulics – Windlass, Winches, Hatch cover & Cranes
- ⚓ ME & Aux Engine Overhauls & MAN B&W Alpha lubricator service, troubleshooting & spares
- ⚓ BWTS planning, fabrication, and installation
- ⚓ Scrubber repairs and Tower Fabrication
- ⚓ Vessel Renaming/ Funnel LOGO Painting works
- ⚓ Anchorage & Voyage Ship repairs
- ⚓ Automation & control systems, electrical works
- ⚓ Electric switchboard 6,600V High, Medium voltage & Low voltage D/D maintenance
- ⚓ VCB protection relay HiMAP & SYMAP service & re-conditioning
- ⚓ Kongsberg AMS, BMS, K-Bridge service work, Hyundai, ACONIS, AMS, PMS
- ⚓ Hyundai, ACONIS, AMS & PMS troubleshooting & service overhauls & repairs

" Ship services you can trust, delivered with pride"

HAQUE & SONS LTD.

CREW MANAGEMENT & SHIPPING AGENCY

Performance elevated

OVER 2150 SEAFARERS RECRUITED YEARLY

FOR MEGA CONTAINERS, CHEMICAL TANKERS, PRODUCT TANKERS, BULK CARRIERS AND LNG VESSELS

" Largest Crew Management & Shipping Agency in Bangladesh "

InterManager




Head Office - Chattogram:
Rummana Haque Tower,
1267/A, Goshaildanga, Agrabad C/A,
Chattogram-4100, Bangladesh.
PABX Tel : +88 02333316214, 15, 16
E-mail : haqsonsctg@haqsons.com

Branch Office - Dhaka:
House No-12, Road No-8, Sector-3,
Uttara Model Town,
Dhaka-1230, Bangladesh.
PABX Tel : +88 0248964723, 25, 35
E-mail : haqsonsdhk@haqsons.com

Branch Office - Khulna:
47/3, Rupsha Strand Road
Khulna, Bangladesh.
Tel : +88 02477722601
E-mail : haqsonskhl@haqsons.com

www.haqsons.com facebook.com/haqueandsonsltd twitter.com/HaqueSons

Over 990 IMA Cadets & Ratings

Already Employed in Renowned Foreign Shipping Companies under **HAQUE & SONS LIMITED**, Largest Crew Management & Shipping Agency.
Job Guaranteed for all IMA Passed out Cadets & Ratings.

INTERNATIONAL MARITIME ACADEMY
IMA
MARITIME LEADERS OF TOMORROW

ASSURE YOUR MARITIME CAREER

" Affiliated with Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh (BSMRMU) for Honors Degree "

Approved by:

01970096665, 01704159107, 01711799235, 01970317114
www.internationalmaritimeacademy.org
fb.com/internationalmaritimeacademy.org twitter.com/IMABangladesh

Gulf Turbo Solutions Group

Your Reliable Partner For Genuine Turbocharger Spare Parts & Authorized Service

- Total Turbocharger Solutions 24 x 7 x 365
- Onboard & Workshop Overhauls / Repairs
- Authorized by Turbocharger Makers
- Retrofit & Reman Turbochargers
- Trained, Certified & Experienced Personnel
- Service Engineers Travel Globally
- Global Spare Part Supply & Service
- Competitive Pricing
- Stock in Dubai & Singapore
- International Warranty - 12 Months

UAE	SINGAPORE	NETHERLANDS	BAHRAIN	INDIA
132B, Dubai Maritime City P.O. Box 25128 Dubai, U.A.E	43 Tuas View Loop Tuas Singapore 637698	Tenorweg 8 3363LN Sliedrecht The Netherlands	ASRY Shipyard P.O. Box 50917, Hidd Kingdom of Bahrain	Citi Point B-103, Chakala J. B. Nagar, Andheri East Mumbai 400059, India
+ 971 4 438 5571	+ 65 6898 5169	+ 31 614398551	+ 973 1746 4134	+ 91 9922193339

MITSUBISHI HEAVY INDUSTRIES MARINE MACHINERY & EQUIPMENT CO., LTD.
Authorized Repair Agent for MET Turbocharger

MITSUI E&S
COOPERATIVE WORKSHOP
DUBAI & BAHRAIN

KBB

NAPIER TURBOCHARGERS

Garrett
ADVANCING MOTION