iMélange

January 2026

Monthly Magazine of The Institute of Marine Engineers (India)

The Institute of Marine Engineers (India)

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- Assessment, Examination and Certification of Seafarers ***Course Id – 1062*** (OFFLINE) – (12 Days) - 09th March 2026
- Advanced Training for Ships using Fuels covered within IGF code ***Course Id – 5312*** (OFFLINE) – (5 Days) - 10th Feb 2026 / 02nd Mar 2026
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- ENGINE ROOM SIMULATOR OPERATIONAL LEVEL (3 DAYS) COURSE (OFFLINE) - Commencing Soon
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Features:
Experienced Faculty,
Individual Attention

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This Course ensures that the Core publications namely, the STCW Convention and the Code and the Quality Management System is familiarized and well understood by the trainee.

This Course also covers the techniques of assessment and developing written tests and conduct of oral and practical assessments

Assessment, Examination and Certification of Seafarers

Dates: 09th – 20th March 2026

Time: 9am - 5pm

Course Fee: Rs.15500/- (per participant inclusive of Taxes)

VENUE: IMEI HOUSE, Plot No.94, Sector-19, Nerul, Navi Mumbai- 400706

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From the Editor's Desk

Dear Esteemed Readers,

The new year arrives with a sense of renewal and resolve. January is a time to reflect on lessons carried forward and to set the compass for the journey ahead. This edition of iMélange captures that spirit—bringing together culture, policy, infrastructure and innovation that continue to shape India's maritime narrative.

The month opened on a thoughtful and creative note with IME(I) hosting a literary evening and book launch featuring seafaring authors. Such gatherings remind us that maritime life is not defined by machinery and regulations alone but also by stories, experiences and reflections that give the profession its depth and humanity. IME(I) celebrated the 77th Republic Day with full patriotic fervour, marked by the unfurling of the National Flag and collective reflection on the values of unity, duty and national pride that guide the engineering and maritime fraternity. Engagement at the institutional level continued with IME(I) Visakhapatnam's participation in the National Shipping Board meeting and a courtesy visit and interaction at the Kolkata Branch—both reinforcing dialogue, continuity and collaboration across stakeholders.

On the national front, India's infrastructure push gathered strong momentum. Hon'ble Prime Minister Shri Narendra Modi dedicated waterways and railway infrastructure projects worth ₹830 crore in West Bengal, strengthening multimodal connectivity and reinforcing the strategic role of inland waterways. This was complemented by the Cabinet Minister flagging off ₹235 crore worth of upgrades at Chennai and Kamarajar Ports, signalling focused investment in capacity enhancement and operational efficiency.

Industry milestones during the month reflected both scale and ambition. Mundra Port achieved a national first by berthing a fully laden VLCC, underlining India's growing capability to handle ultra-large vessels. IWDC 3.0 cleared projects exceeding Rs. 1,500 crore, providing fresh impetus to port-led development, while Swan Defence's USD 227 million contract for chemical tankers highlighted India's rising stature in specialised shipbuilding. On the global stage, progress toward a potential USD 8 billion submarine agreement between India and Germany points to deepening strategic and technological collaboration.

Sustainability remained a strong underlying theme. Initiatives focusing on biofuel production from biowaste and efficiency enhancement toward self-sustainable green ports reflect a pragmatic approach to environmental responsibility—where innovation aligns with operational realities.

This edition also marks a moment of pride as GEIMS celebrates 21 years of maritime excellence, a reminder of the enduring importance of quality education and institutional commitment in shaping future professionals. We also pause in remembrance through the obituary section, honouring lives that have contributed to the maritime fraternity and whose legacy continues through the institution and its people.

As the year unfolds, the message is clear: progress in maritime India is being shaped by thoughtful leadership, strong institutions and a willingness to evolve with purpose. We look forward to your articles, insights and reflections for the forthcoming edition. Kindly send your contributions to editornewsletter@imare.in or subeditor@imare.in by 7th February 2026.

SUNIL KUMAR
Editor-in-Chief (Hon.) – iMélange

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Course Dates: 10th – 14th February 2026/ 02nd – 07th March 2026

5 Days

COURSE FEE
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77th Republic Day Celebrated with Patriotic Fervour at IME(I), Nerul

The 77th Republic Day of India was celebrated with dignity and patriotic spirit at IME(I), Nerul, Navi Mumbai. The Indian National Flag was ceremoniously unfurled on the occasion, marking the significance of the day and reaffirming the Institute's commitment to national values.

The event witnessed the gracious presence of IME(I) Members, students, faculty and staff, who gathered to commemorate the historic occasion. The flag unfurling ceremony was performed by **Mr. A. K. Gupta,** Fellow Member, IME(I).

Addressing the gathering, Mr. Gupta emphasised the responsibilities and duties of every Indian citizen in upholding the ideals enshrined in the Constitution of India. He highlighted the importance of unity, integrity and active participation in nation-building.

Adding to the patriotic spirit of the occasion, **Mr. Vivek Diwakar Prasad**, Honorary General Secretary, IME(I), delivered a stirring patriotic address that resonated deeply with the audience and evoked a strong sense of national pride.

The Director of IME(I) – METC, **Mr. Mohan Singh Pal**, also addressed the attendees and briefed them on several initiatives being undertaken by IME(I) to strengthen engagement with industry and enhance professional development opportunities for members and students.

The celebration was further enriched by the presence of senior members including **Mr. Vijay Arora, Mr. S K Aneja, Mr. Bharat Bhusan Badwal, Mr. Shanti Narayan, Mr. Ramesh Vantaram, Ms. Archana Sangal, Capt. Harish Khatri**, among others, who contributed to the solemnity and success of the event.

The Republic Day celebration at IME(I), Nerul concluded on a high note, reflecting collective patriotism, institutional pride and a shared commitment to the progress of the nation.

Here is some interesting trivia. *Do we hoist our National Flag or do we unfurl it?*

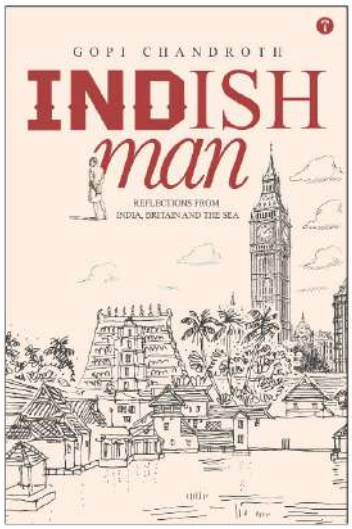
The flag is "raised" or ***hoisted*** on Independence Day.

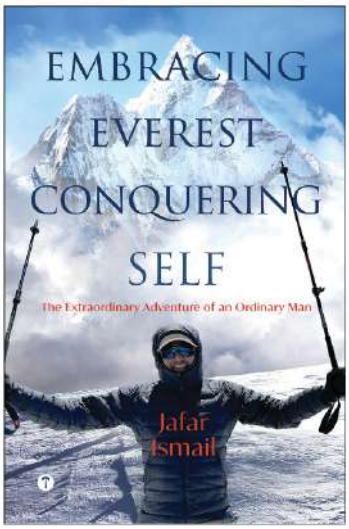
The first time this was done was on 15 August 1947 when the British flag was honourably brought down and the tricolour was raised from the base.

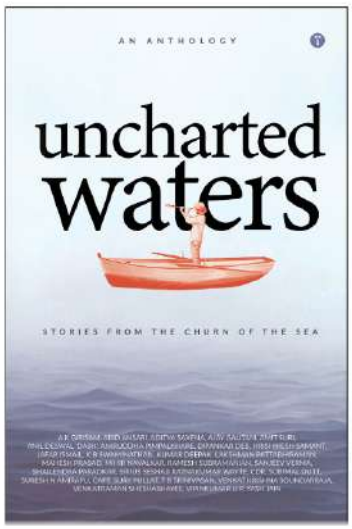
On Republic Day, however, the flag is ***unfurled***.

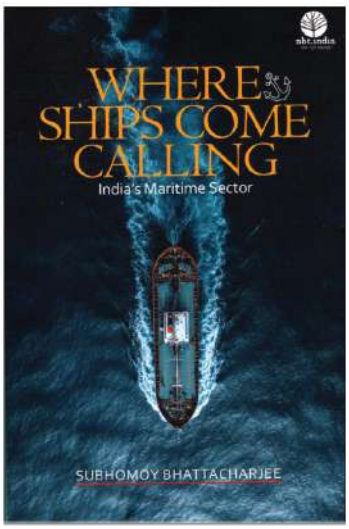
The flag is at the top, but wrapped. Unfurling symbolizes India's transition from a Dominion to a Republic.

IME(I) Hosts Literary Evening and Book Launch Featuring Seafaring Authors









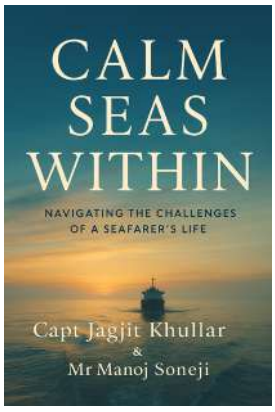
The Institute of Marine Engineers (India) successfully hosted a distinguished literary evening on 14th January 2026 at its Head Office, Nerul, bringing together members of the maritime fraternity for an intellectually engaging book launch and author interaction programme. The event celebrated literary contributions from professionals within the seafaring community and highlighted the creative and reflective dimensions of life at sea.

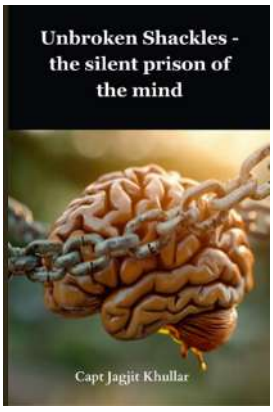
The programme commenced with a welcome address by **Mr. Kaushik Seal**, President, IME(I), who emphasised the importance of encouraging creative expression and knowledge sharing among marine professionals. This was followed by the setting of the agenda, mood and tone for the evening by the moderator, **Mr. Amit Suri**, who guided the audience through the flow of discussions and interactions.

The event featured presentations by four accomplished authors from the maritime community. **Mr. Gopi Chandroth** spoke about his book titled: **Indish Man**, sharing insights into its theme and inspiration, followed by **Mr. Jafar Ismail**, who elaborated on his literary journey and experiences at sea reflected in his work titled**: Embracing Everest Conquering Self**. **Mr. Subhomoy Bhattacharjee** then addressed the gathering, offering perspectives on his book and the narratives drawn from maritime life titled: **Where Ships Come Calling**. **Capt. Jagjit Khullar** spoke about his inspiration and his journey while writing the book titled: **Calm Seas Within.**

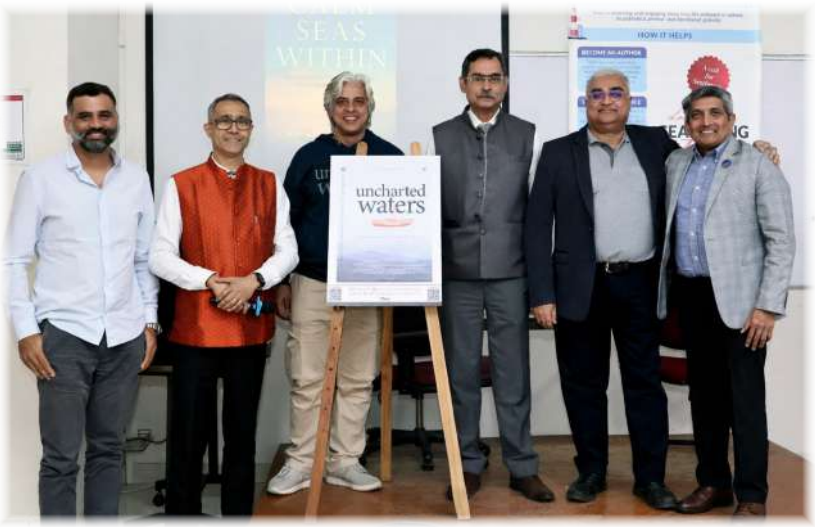
An interactive panel discussion and audience Q&A session followed, allowing participants to engage directly with the authors on writing, seafaring experiences and the intersection of maritime careers with literature. One of the key highlights of the evening was the formal launch of the new anthology titled *"Uncharted Waters"*, which marked a significant contribution to maritime literature.

The programme concluded with a book signing session and high tea.





Glimpses of the Event


uncharted
waters


HOW IT HELPS
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A call for Seafarers
iMEI

The Institute of Marine Engineers (India)

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27 FEBRUARY 2026

Venue:
Mumbai Cricket Association, MCA Club Lawns BKC, Mumbai

For any queries or sponsorship details,
Pls contact: Mr. Suraj : 9967481448; mumbai@imare.in

IME(I) Visakhapatnam Participates in National Shipping Board Meeting

The National Shipping Board, New Delhi, organised a stakeholders' seminar in collaboration with the Visakhapatnam Port Authority at Four Points Hotel, Visakhapatnam. The meeting was conducted under the chairmanship of **Shri Sameer Kumar Khare, IAS (Retired),** Chairperson, National Shipping Board, with **Capt. Nitin Mukesh,** Secretary and **Shri Jitendra S. Jadav,** Assistant Director General, coordinating the proceedings.

The seminar witnessed participation from various stakeholders of the maritime sector to deliberate on key issues related to shipping and allied activities. The IME(I) Visakhapatnam Branch was invited to attend and actively participated in the discussions. The branch was represented by **Dr. D. S. Anand,** Chairman; **Dr. V. V. S. Prasad,** Vice Chairman; **Mr. V. Lakshmipati Rao,** Honorary Secretary and **Mr. S. V. D. Prasad,** Governing Council Member.

During the event, Shri Khare, was felicitated by Dr. Anand on behalf of the IME(I) Visakhapatnam Branch, in recognition of his leadership and contributions to the maritime sector.

Several important issues raised by the stakeholders were discussed in detail and duly noted by the National Shipping Board. On behalf of the branch, a specific request was made for the upgradation of the Visakhapatnam MMD into a P.O. Office, considering Visakhapatnam's growing importance as a major metropolitan and maritime hub in India.

The meeting concluded with a formal vote of thanks.

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Dates: 09th - 20th March 2026 / 11th - 21st May 2026

Time: 9am - 5pm

Course Fee: Rs.15500/- (per participant inclusive of Taxes)

VENUE: IMEI HOUSE, Plot No.94, Sector-19, Nerul, Navi Mumbai- 400706

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IME(I) Kolkata Branch Visit

A moment of cordial appreciation was marked during the official visit of IME(I) President, Mr. Kaushik Seal, to the IME(I), Kolkata Branch on 19th January 2026.

The visit facilitated meaningful and constructive discussions between the President and **Capt. Ashok Menon**, Principal, METC IME(I), Kolkata Branch; **Mr. S. K. Sarkar**, Chairman, Kolkata Branch along with the Executive Committee Members. The deliberations focused on the growth, initiatives and future development of the Kolkata Branch.

The visit concluded on a warm and gracious note with an exchange of greetings and the presentation of a bouquet to the President, symbolising respect and appreciation.

THE INSTITUTE OF MARINE ENGINEERS (INDIA)

KOLKATA BRANCH

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Tel. (M) : +91 8697430058/9831636004
E-mail: principalkolkata@imare.in/ enquirymetckol@imare.in

Course Fee & Schedule for DGS Approved Courses at IMEI, Kolkata Branch

Sr. No.	Name of the course	Course Fee	Course Duration	Schedule
1.	Basic Training for Ships using Fuels covered within IGF Code (IGFB)	Rs.10,000 /- (including lunch & one-time Exit Examination fees)	5 days	2nd February- 6th February, 2026/ 2nd March- 6th March, 2026
2.	Crisis Management & Human Behaviour	Rs. 8,000 /- (including lunch & one-time Exit Examination fees)	5 days	9th February-13th February, 2026/ 9th March -13th March, 2026
3.	Crowd management, Passenger Safety and Safety Training	Rs. 3,500 /- (including lunch & one-time Exit Examination fees)	3 days	16th February-18th February, 2026 / 16th March -18th March, 2026
4.	Security Training for Seafarer with Designated Security Duties (STSDSD)	Rs. 2,000 /- (including lunch & one-time Exit Examination fees)	2 days	19th February-20th February, 2026/ 19th March -20th March, 2026
5.	Ship Security Officer (SSO)	Rs. 2,500 /- (including lunch & one-time Exit Examination fees)	3 days	27th January-29th January,2026/ 23rd February-25th February, 2026 / 23rd March-25th March, 2026

- Rs. 50/- for DGS Fee for issuance of certificate
- If more candidates are available, we can schedule a special batch as and when required.
- Special Discount may be available for block booking.

Note: Dates are subject to change

Prime Minister Narendra Modi Dedicates Waterways and Railway Infrastructure Projects Worth ₹830 Crore in West Bengal

Prime Minister **Shri Narendra Modi** inaugurated, laid the foundation stone for and flagged off multiple development projects valued at over ₹830 crore at Singur in Hooghly district, West Bengal on 18th January 2026. Addressing the gathering, the Prime Minister emphasised that the development of eastern India is integral to achieving the vision of a developed India and reaffirmed the Union Government's sustained commitment to this objective.

Highlighting recent milestones in rail connectivity, the Prime Minister stated that West Bengal witnessed the launch of the country's first Vande Bharat Sleeper Train. He added that the state has also received nearly half a dozen new Amrit Bharat Express trains, with three additional services being flagged off. One of these, he noted, will further strengthen connectivity between his parliamentary constituency of Varanasi and West Bengal. Amrit Bharat Express services have also been introduced for Delhi and Tamil Nadu, making the last 24 hours particularly significant for the state's rail infrastructure expansion.

Shri Modi further underlined West Bengal's vast potential in inland waterways and noted that the Union Government is actively supporting the development of port-led infrastructure in the state. He stated that projects related to ports and river waterways were inaugurated and their foundation stones laid on 18th January itself, describing them as critical enablers for transforming West Bengal into a major hub for manufacturing, trade and logistics. The Prime Minister congratulated all stakeholders associated with the successful implementation of these projects.

Union Minister for Ports, Shipping and Waterways, **Shri Sarbananda Sonowal**, stated that the dedication of infrastructure projects worth ₹830 crore marks a major step toward strengthening waterways and rail-based transportation in West Bengal. He noted that these initiatives will significantly enhance cargo movement, improve multimodal connectivity, ensure safer and more energy-efficient passenger travel and accelerate economic growth and employment generation across the region.

Speaking on the revival of inland waterways under the Prime Minister's leadership, Shri Sonowal remarked that despite their immense potential, India's inland waterways remained largely underutilised for decades. He stated that under the visionary leadership of Prime Minister Narendra Modi, the sector has been transformed into a modern, efficient and economical mode of transport, now emerging as a vital pillar of India's multimodal logistics

network. This transformation, he added, is helping reduce congestion on roads and railways, lower logistics costs and promote sustainable growth nationwide.

As part of a major push to strengthen river-based logistics and promote sustainable inland water transport, projects worth ₹552 crore were launched in the ports and inland waterways sector. These initiatives aim to decongest conventional cargo routes and expand multimodal connectivity across eastern India.

A key highlight was the inauguration of the Extended Port Gate System at Balagarh, developed by the Syama Prasad Mookerjee Port Authority (SMPA). Located approximately 45 nautical miles upstream from Kolkata, the facility is designed to ease congestion at the Kolkata Dock System and facilitate efficient cargo movement through inland waterways.

The Balagarh facility features a modern barge terminal with two berths capable of handling containerised and coal cargo, with an estimated capacity of 2.7 million tonnes per annum. Seamlessly integrated with National Waterway-1 (Ganga–Bhagirathi–Hooghly) and supported by road and rail connectivity, the terminal significantly strengthens the region's multimodal logistics framework. Supporting infrastructure includes a newly constructed road overbridge and advanced dredging facilities, ensuring uninterrupted year-round navigation and improved vessel turnaround time.

Advancing the clean transport agenda, the Prime Minister also launched a 50-passenger hybrid electric aluminium catamaran, marking a significant milestone in green inland water transport. Developed at a cost of ₹12 crore, the vessel is powered by advanced lithium-titanate battery technology and offers an energy-efficient, environmentally sustainable option for passenger movement on Kolkata's inland waterways.

Emphasising West Bengal's strategic importance, Shri Sonowal stated that the state has historically served as India's gateway to maritime trade and is once again emerging as a growth engine for eastern India under the Prime Minister's leadership. Strengthened ports, inland waterways and rail connectivity, he noted, are positioning West Bengal as a vital link between the rest of the country and the Northeast, in line with the Prime Minister's vision of making eastern India the nucleus of India's next development phase.

In the rail sector, the Prime Minister inaugurated railway infrastructure projects worth ₹280 crore and flagged off new passenger services to improve both regional and long-distance connectivity. Key initiatives included the commissioning of the 15-km Jayrambati–Barogopinathpur–Maynapur rail section, part of the 83-km Tarakeswar–Bishnupur rail project, expected to boost socio-economic development in Bankura district. A new passenger train between Jayrambati and Maynapur was also flagged off, benefiting daily commuters and students. Additionally, three Amrit Bharat Express services were launched, connecting Santragachi with Tambaram, Howrah with Anand Vihar Terminal, and Sealdah with Banaras, thereby strengthening economic, cultural and religious linkages across the country.

The inauguration, conducted virtually from Singur, underscores the Government of India's commitment to strengthening logistics, mobility and regional connectivity in West Bengal and the eastern region. The event was attended by the Governor of West Bengal, **Shri C. V. Ananda Bose**, Union Ministers **Shri Shantanu Thakur** and **Shri Sukanta Majumdar**, along with other dignitaries.

Collectively, these projects reflect the Modi Government's integrated and forward-looking approach to infrastructure development, combining sustainable inland water transport with modern rail connectivity. They are expected to reduce logistics costs, ease congestion, enhance passenger mobility and reinforce West Bengal's role as a vital gateway for trade and connectivity between mainland India and the North-Eastern region.

21 Years of Maritime Excellence

The Great Eastern Institute of Maritime Studies (GEIMS), Lonavala, successfully commemorated its **21st Foundation Day** on 16th January 2026, celebrating over two decades of contribution to maritime education and professional training. The event witnessed the presence of senior maritime professionals, industry leaders, alumni, faculty, cadets and members of the media.

The function was graced by **Capt. Rajesh Tandon,** CEO – FOSMA, as the Chief Guest and **Mr. Viren Rasquinha,** Managing Director & CEO – Olympic Gold Quest (OGQ), as the Guest of Honour.

A major highlight of the celebration was the motivational presentation by Mr. Rasquinha, who drew compelling parallels between elite sports and the maritime profession. His address focused on performance excellence, mental resilience, discipline and the importance of structured preparation under pressure.

Mr. Rasquinha shared inspiring examples from India's 2024 Paris Paralympic campaign, beginning with **Nishad Kumar**, Paralympic high jump silver medallist, who demonstrated remarkable consistency and mental strength in maintaining world-class performance across successive Paralympic Games. He also referred to **Navdeep Singh**, Paralympic gold medallist in javelin throw, highlighting his perseverance, technical mastery and the ability to rise above adversity to achieve global success.

Further enriching his presentation, Mr. Rasquinha spoke about **Seeta Devi**, the Indian para-archer who, despite being born without arms, has competed at the highest international level using her feet to shoot arrows. Her journey, he noted, stands as a powerful example of determination, adaptability and the limitless potential of the human spirit.

Mr. Rasquinha emphasised that the success of these athletes was not accidental but the result of years of focused training, scientific support, goal setting and mental conditioning—principles that are equally critical for aspiring maritime professionals navigating demanding careers at sea and ashore.

In his address, Capt. Tandon commended GEIMS for its sustained contribution to the maritime sector and its role in nurturing competent and disciplined maritime professionals. He emphasized the critical importance of safety culture, ethical conduct and leadership at sea, stating that these values form the backbone of a successful maritime career. Capt. Tandon further encouraged cadets to continuously upgrade their skills, remain adaptable to technological advancements and

uphold the highest standards of professionalism in an increasingly complex global shipping environment.

The Foundation Day celebrations also included felicitation of distinguished alumni and shipping companies, along with award presentations recognizing outstanding cadet achievements, reinforcing the institute's strong industry linkage and commitment to excellence.

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About Cochin – The Marine and Commercial Capital of Kerala

Cochin, known as the Queen of the Arabian Sea, is a vibrant city located on the south west cost of India, star of God's Own Country, Kerala. From time immemorial, Arabs, British, Chinese, Dutch, and Portuguese traders have left an indelible mark on the history and development of this beautiful coastal town.

Cochin has preserved many of its historic landmarks and monuments, which continue to add to its charm and glory. The city is the Maritime and Commercial capital of Kerala, boasting of major infrastructure such as seaports, container terminals, modern shipyard, maritime educational and training centres, airport, an efficient Metro and Water Metro network.

Cochin enjoys excellent connectivity to Kerala's major tourist destinations through rail, road, and inland waterways. A wide range of hotels and restaurants offering delicious cuisine at affordable prices make it a destination for both business and leisure travellers.

The Institute of Marine Engineers (India)

The Institute of Marine Engineers (India) is a premier professional body representing marine engineering professionals across the country. With a membership strength of over 13,000, the Institute members include professionals serving both in India and abroad in key positions across the maritime industry.

Headquartered in Mumbai, the Institute operates eight regional branches located in different parts of the country. It actively provides various facilities to enhance the knowledge and professional competence of its members, while extending a wide range of services aimed at their professional growth and welfare.

The primary objectives of the Institute are to promote the scientific and technological advancement of marine engineering, facilitate the exchange of ideas and information among marine engineers, uphold the professional status of its members, foster cooperation with other professional institutions, classification societies, and the maritime industry, and contribute to the advancement of engineering education in the country.

About the event, COMARSEM 2026

COMARSEM (Cochin Marine Seminar) is a flagship event periodically organised by the Cochin Branch of The Institute of Marine Engineers (India). The upcoming COMARSEM 2026, scheduled for January 2026, will be an international seminar bringing together eminent stakeholders from across the global maritime industry under one roof.

COMARSEM 2026 organized by **IMEI Kochi** branch
in association with **DG Shipping**

Themed "**Maritime India – Innovations and Collaborations**," this mega event will feature panel discussions, technical presentations, and interactive sessions that deliberate on the progress of India's maritime sector and explore strategies to realise the nation's vision of becoming a maritime superpower.

The event will host focused panel discussions and paper presentation on key topics such as:

- Policy framework and new legislations to accelerate Indian Shipping and Inland Waterways.
- Infrastructure growth for enhancing shipping, shipbuilding & repair and ship recycling.
- Accelerating the adoption of greener technologies to meet decarbonisation goals
- Innovate training methodologies for skill development focused on alternate fuel, digital. autonomous, AI technology etc.
- Developing maritime clusters to address emerging challenges indigenously
- Improvements in logistics and supply chain systems for sustained growth.

These discussions aim to foster cross-industry collaboration, drawing valuable insights from both Indian and international participants, while exploring the financial and technological pathways essential for achieving these ambitious goals.

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IWDC 3.0 Clears Projects Worth Over ₹1,500 Crore

The third meeting of the Inland Waterways Development Council (IWDC 3.0) concluded successfully in Kochi, Kerala, charting a comprehensive and future-ready roadmap for the expansion of India's inland water transport (IWT) ecosystem. The meeting marked a significant step towards strengthening river-based logistics, promoting sustainable mobility, enhancing tourism and deepening Centre–State collaboration to fully harness the economic potential of India's inland waterways.

Chaired by Union Minister of Ports, Shipping and Waterways, **Shri Sarbananda Sonowal,** the day-long deliberations brought together senior leadership from several states, reflecting the growing national consensus on inland waterways as a critical pillar of India's multimodal transport framework. Among those present were **Shri Mukesh Agnihotri,** Deputy Chief Minister of Himachal Pradesh; **Shri Sharwan Kumar,** Minister of Transport, Government of Bihar; **Shri K. G. Kenye,** Minister of Power and Parliamentary Affairs, Government of Nagaland; **Shri Ojing Tasing,** Minister of Rural Development, Government of Arunachal Pradesh; **Shri Daya Shankar Singh,** Minister of Transport, Government of Uttar Pradesh and **Shri Barinder Kumar Goyal,** Minister of Water Resources, Government of Punjab, along with senior officials and industry stakeholders.

During the meeting, the Council identified and approved projects exceeding ₹1,500 crore, aimed at accelerating green mobility, strengthening multimodal logistics networks and fostering river-led economic development across the country. Foundation stones were laid for projects worth more than ₹150 crore, including the development of river cruise jetties in Kerala, Gujarat, Karnataka, Odisha and Telangana. These initiatives are expected to significantly boost river cruise tourism and support the creation of integrated cruise circuits nationwide.

The Council was also apprised of the progress on Ro-Ro and cargo terminals at Muktyala and Harishchandrapuram on the Krishna River (National Waterway-4) in Andhra Pradesh, which are expected to enhance cargo movement and provide a reliable alternative to road-based logistics. In Jammu and Kashmir, onshore infrastructure along the Jhelum River (National Waterway-49) was approved to support passenger movement and tourism, alongside the deployment

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of ten hybrid electric vessels to promote clean and efficient water transport in the region.

A major focus of IWDC 3.0 was asset augmentation to ensure safe, reliable and year-round navigation. Asset procurement worth over ₹465 crore was announced, covering survey vessels in Kerala; Ro-Pax berthing jetties in Bihar, Jharkhand and West Bengal; floating pontoons and quick-opening mechanisms in Uttar Pradesh, Bihar and West Bengal; hybrid survey vessels; amphibian and cutter suction dredgers; and tug-barge units. These investments are aimed at improving navigability, operational efficiency and safety across national waterways.

The Council also reviewed major upcoming projects with an investment exceeding ₹900 crore. Key initiatives include the development of a modern slipway facility at Kochi, construction of 110 jetties across Odisha (25) and the Northeast (85) and the implementation of the National River Traffic and Navigation System (NRTNS) in Maharashtra. Other significant projects include the development of a ₹70-crore cruise terminal at Uzan Bazar Ghat in Guwahati and a ₹144-crore approach road connectivity project to the Bogibeel River Port in Dibrugarh on the Brahmaputra (National Waterway-2).

Addressing the Council, Shri Sonowal emphasised that inland waterways have emerged as a strategic component of India's transport and logistics transformation under the leadership of Prime Minister **Shri Narendra Modi.** He noted that focused policy interventions have reduced congestion on roads, lowered logistics costs and strengthened the ease of doing business. He underlined that rivers are increasingly being viewed not merely as natural resources but as vital economic lifelines driving growth, sustainability and connectivity.

The vast network of backwaters and canals in Kerala was highlighted as a major opportunity for expanding inland water transport. The Council also took note of initiatives by the Inland Waterways Authority of India (IWAI) to conduct feasibility studies for urban water transport in 18 cities, including Guwahati, Varanasi, Patna, Tezpur and Dibrugarh, among others.

Kerala emerged as a focal point at IWDC 3.0, with a series of initiatives announced to strengthen inland water transport and logistics in the state. The Jal Vahak cargo promotion scheme is proposed to be expanded to other national waterways, including those in Kerala. The scheme provides reimbursement of up to 35 per cent of the total operating expenditure incurred on cargo movement through inland waterways and is expected to encourage greater private sector participation. By enabling cargo owners to hire vessels operated by entities beyond IWAI or ICSL, the scheme aims to attract major shipping companies, freight forwarders, trade bodies and operators handling bulk and containerised cargo. Initially valid for three years, the initiative is expected to enhance the commercial viability of water-based logistics and optimise supply chain networks.

The Council also announced the commencement of Fixed Day Scheduled Sailing Services on commercially viable stretches, demonstrating the readiness of inland waterways as a dependable, cost-effective and environmentally sustainable mode of cargo transport. Additional initiatives for Kerala include the development of river cruise jetties and the induction of a survey vessel to strengthen passenger movement, tourism and navigational safety.

IWDC 3.0 reiterated that inland waterways remain the most fuel-efficient and environment-friendly mode of transport, contributing to reduced carbon emissions, decongestion of road and rail networks and lower logistics costs. River cruise tourism was identified as one of the fastest-growing segments of the maritime economy, supported by the development of modern terminals, improved navigation systems and dedicated cruise circuits.

Special emphasis was placed on the Northeast region, where inland waterways are expected to play a transformative role in enhancing connectivity, trade, tourism and livelihoods. The government plans to develop 85 jetties across the region with an investment exceeding ₹500 crore, strengthening regional logistics integration and creating new economic opportunities for riverine communities.

The Council reviewed the sector's rapid growth over the past decade. Cargo movement on national waterways has increased from 18 million tonnes in 2013–14 to 145.84 million tonnes in 2024–25. The number of operational national waterways has grown from three to 32, while the number of luxury river cruise vessels has increased from five to 25. Operational terminals have increased from 15 to 25, and floating jetties from 30 to 100, reflecting growing confidence among industry players and state governments.

IWDC 3.0 reaffirmed the government's forward-looking priorities, including the deployment of green and hybrid vessels, expansion of digital navigation and traffic management systems, development of modern inland terminals, strengthening shipbuilding and ship-repair facilities, and promotion of maritime skill development. Regulatory issues raised by states were reviewed with a focus on faster execution through coordinated action.

The meeting was attended by **Shri Vijay Kumar,** Secretary, Ministry of Ports, Shipping and Waterways; **Shri Sunil Paliwal,** Chairperson, IWAI; **Shri Sunil Kumar Singh**, Vice Chairman, IWAI; and other senior officials, industry representatives and experts. The deliberations built upon the foundations laid during IWDC 1.0 in 2024 and IWDC 2.0 in 2025, with a strong emphasis on sustainability, technology-driven solutions and accelerated implementation.

IWDC 3.0 concluded with a shared commitment by the Centre and states to scale up inland water transport, strengthen regional connectivity, promote cleaner transport solutions and position India's rivers as engines of inclusive and sustainable economic growth. Inland waterways were reaffirmed as a future-ready mode of transport for cargo and passengers alike, contributing to smarter logistics, greener mobility and a stronger India.

Cabinet Minister Flags Off ₹235 Crore Upgrades at Chennai and Kamarajar Ports

Union Minister for Ports, Shipping and Waterways **Shri Sarbananda Sonowal** inaugurated and laid the foundation stones for port infrastructure and digital upgrades worth ₹235 crore at Chennai Port Authority and Kamarajar Port Limited during the "Viksit Bharat, Viksit Ports" programme held in Chennai.

The projects are aimed at improving port safety, resilience and operational efficiency, supporting India's broader maritime-led growth strategy and enhancing trade logistics in Tamil Nadu.

At Chennai Port, several key works were flagged off, including the repair and strengthening of an 850-metre stretch of coastal revetment using climate-resilient designs, construction of a new firefighting pump house at the oil dock area to meet safety norms, and modernisation of the Chennai Port Hospital to upgrade medical facilities.

The minister also inaugurated an Enterprise Business System, a SAP-based digital platform intended to streamline port operations by integrating finance, human resources, procurement and other functions, improving transparency and vessel turnaround times.

At Kamarajar Port, Shri Sonowal inaugurated the rehabilitated northern breakwater head, rebuilt after cyclone damage, and laid the foundation stone for a new boundary wall project to strengthen security and improve access control.

In addition, the minister launched the national e-Port Clearance Portal under the One Nation-One Port Process, enabling shipping lines and agents to apply for and receive port clearance documents digitally, a move expected to reduce turnaround times and enhance predictability for maritime operations nationwide.

Officials said the upgrades will support the ports' roles as key logistics and trade hubs on India's east coast. Last year, Chennai and Kamarajar ports together crossed a combined cargo throughput of over 100 million tonnes, reflecting steady growth in maritime trade volumes.

Shri Sonowal noted that the projects are part of the government's push to build globally competitive, climate-resilient port infrastructure, strengthen safety and ease of doing business, and reinforce ports as engines of economic development.

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India & Germany Near Historic $8 Billion Submarine Agreement

India and Germany are on the verge of finalizing a landmark defense deal worth over $8 billion, which would mark the largest-ever arms agreement for New Delhi and significantly bolster India's naval capabilities.

Under the proposed arrangement, German submarine technology and production expertise will be transferred to India — a major shift in defense cooperation and strategic manufacturing. The submarines will be jointly built by Germany's Thyssenkrupp Marine Systems GmbH and India's Mazagon Dock Shipbuilders Ltd, with facilities in India playing a central role.

A key feature of the deal is the inclusion of Air Independent Propulsion (AIP) systems, allowing submarines to stay submerged for longer periods — a capability that enhances stealth and operational reach in the Indian Ocean region.

Officials say this partnership may also reshape India's earlier plans to purchase additional French submarines, as New Delhi prioritizes this new collaboration with Germany.

The deal is seen as part of India's broader strategy to reduce dependence on foreign defense imports — particularly Russian hardware that has dominated its arsenal — while boosting indigenous design and manufacturing under initiatives like *Make in India*.

In addition to defense cooperation, talks between **Mr. Friedrich Merz**, Chancellor, Germany and Prime Minister **Shri Narendra Modi** are expected to touch on trade ties and broader economic engagement, including ongoing negotiations toward a free-trade agreement between India and the European Union.

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India's Mundra Port Becomes First in Country to Berth Fully Laden VLCC

Adani Ports and Special Economic Zone Ltd's Mundra Port has achieved a significant milestone by becoming the first port in India to berth a fully loaded Very Large Crude Carrier (VLCC), company officials said.

The VLCC, named *MT New Renown*, with a cargo capacity of around 3.3 lakh cubic metres, successfully docked directly at the Mundra terminal's dedicated VLCC berth. Prior to this, India had not handled fully laden VLCCs at berth and relied on offshore moorings or lightering (partial unloading) operations for such large crude carriers.

The development marks a step forward in India's crude oil import logistics, allowing direct handling of large tankers without needing to offload at sea, which can improve efficiency and reduce logistics costs. The Mundra VLCC facility includes a 400-metre length jetty with deep draft and is connected via pipeline to the HPCL Rajasthan Refinery at Barmer, enhancing the flow of imported crude oil into the domestic refining network.

The achievement places Mundra among a select group of global ports capable of directly accommodating fully laden VLCCs, reflecting the port's advanced infrastructure and growing strategic importance in India's maritime and energy sectors.

Adani Ports said this milestone underlines the country's push to build world-class port capabilities, strengthen energy security, and boost operational efficiency in handling large crude shipments.

The milestone comes as Mundra continues to grow its cargo handling capabilities; the port handled over 200 million metric tonnes of cargo in 2024-25, making it one of the busiest commercial ports in the country.

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Swan Defence Bags USD 227 Million Chemical Tanker Contract

Swan Defence and Heavy Industries Ltd. (SDHI) has secured a significant shipbuilding contract valued at USD 227 million from Norway-based shipping company Rederiet Stenersen AS for the construction of six chemical tankers at its Pipavav shipyard in Gujarat.

As part of the agreement, SDHI will build six IMO Type II chemical tankers, each having a deadweight capacity of 18,000 tonnes. The vessels will be constructed at the Pipavav facility, which houses India's largest dry dock. This order is being viewed as one of the largest commercial shipbuilding contracts awarded to an Indian shipyard and marks a major milestone for domestic shipbuilding capabilities.

The first vessel is scheduled for delivery within 33 months from the date of signing of the contract, followed by subsequent deliveries at regular intervals. The agreement also includes an option for the construction of six additional vessels of the same design.

The tankers will be designed by Marinform AS in collaboration with StoGda Ship Design & Engineering and will be classed by DNV. Built to Ice Class 1A standards, the vessels will be equipped with advanced hybrid propulsion systems. They will be dual-fuel and LNG-ready, offering enhanced operational efficiency, flexibility and high levels of automation.

Commenting on the development, SDHI Director **Mr. Vivek Merchant** said that the contract represents an important milestone in the company's growth journey and reflects growing international confidence in Indian shipbuilding capabilities, engineering strength and infrastructure.

From the shipowner's perspective, **Mr. John Stenersen,** Director – Ship Management at Rederiet Stenersen, noted that this is the company's first newbuilding order placed with an Indian shipyard after a comprehensive technical and commercial evaluation, highlighting SDHI's competitiveness and execution capability.

Industry observers also point out that recent changes in India's Shipbuilding Financial Assistance Scheme, which now includes chemical tankers under specialised vessels eligible for support, have contributed to improving the global competitiveness of Indian shipyards.

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Biofuel Production from Biowaste and Efficiency Enhancement to Obtain a Self-Sustainable and Green Port

ABSTRACT

Every year tonnes of waste is generated due to dumping of waste from onboard ships and also from the port itself. Even though guidelines and protocols are strictly formatted for the discharge and treatment of the waste generated, there is a lack of efficient management and treatment of the waste. This paper consists of inputs projected towards the proper treatment and methodology adopted to efficiently extract usable outputs which will transform the ports into self-sustaining and green. Biofuel can be generated from biowaste collected from the ships and ports, procedures stated below would increase the efficiency of biofuel by atleast 15%. Nanomaterials used in the process will reduce Greenhouse Gas(GHG) emissions. Biofuel production is an already known process but due to its low efficiency and properties, the revolution of discarding Heavy Fuel Oil (HFO) is yet to be seen. We have brought out certain methodologies and procedures with the infusion of aquatic invasive species found near ports to transform the ports and bring light on the reduction of GHGs.

Keywords: Biofuel, Biowaste, Nanomaterials, Green ports

INTRODUCTION

One pressing concern for ports is the need to provide adequate facilities for handling the garbage generated by ships, as numerous shipowners are dissatisfied with the limited availability of these facilities. Proper management of garbage generated at ports is crucial for protecting the environment in and around ports. Travelling between ports, ships generate a range of waste such as oily waste, exhaust gas, cleaning wash water, ballast water, sewage, greywater, cargo residues, food waste and other household-like garbage.

The general trend in global waste regulations is to shift waste away from being disposed of in the ocean and towards disposing it on land. There is a growing focus on improving waste efficiency and prospective for recycling, making practices like separating trash more important. These advancements show an increased need at ports for waste management systems that are both efficient and effective, as they must deal with larger quantities of waste from ships while the shipping industry expands worldwide. Ports with efficient waste handling will experience quicker ship rotations, reduced ship downtime and higher port capacity. Innovative waste management strategies are currently being put into practice worldwide. Enhanced segregation on vessels and in harbours allows for more efficient and effective processing of waste. Certain waste could be subject to minimal processing while aboard a vessel.

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2. Officers holding Certificate of Competency
3. Holds a Certificate of Proficiency for Basic training for Chemical Tanker cargo Operation
4. Has at least three months of approved sea going service on chemical tankers Within the last sixty months on Chemical tankers, or at least one month of approved onboard training on Chemical tankers on a supernumerary capacity, which includes at least three loading and three unloading operations and is documented in an approved training record book as specified in section B-v/1 of the STCW Code.

Advanced Training for Chemical Tanker Cargo Operation	**10 days**	**Commencing Soon**

VENUE: IMEI HOUSE, Plot No.94, Sector-19, Nerul, Navi Mumbai- 400706

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Comparative Analysis: Established Standards and Our Input

STEPS	STANDARD PROCEDURE	OUR INPUT
Waste Disposal	Transport waste to Treatment plants.	To Build a Biofuel production plant near port ,which will use port and ship's generated biowaste as raw material.
Collection of Biomass	Waste from ships and ports are separated accordingly and in some cases also get dumped in ocean.	1)Separation of Biowaste onboard 2)Using Algae such as "Water hyacinth"(Eichhornia crassipes) as raw material
Production Process	Limited availability for feedstocks, Quality control, High production cost.	Using nanomaterial Catalyst in processes like Transesterification and gasification to increase overall fuel and process efficiency ,
Green ports Initiative	Promoting emission reduction technologies, Waste management practices and eco-friendly infrastructure	Nanomaterials will reduce GHG emissions for creating greener fuel.
Use of Biofuel	Not used widely because of it's less efficiency and less availability	Introducing ways to increase efficiency of Fuel: 1)Pretreatment 2)Increasing it's calorific value 3)Blending 4)Using Nanomaterials as a catalyst

1. Installation of a Biofuel production plant on the ports/near the ports

1.1 Basis for plant installation and selection criteria:

1) Raw Material Availability: Agricultural and industrial availability near to ports.

2) Infrastructure: Strength of the foundation for operation of biofuel plants can enhance its production.

3) Market accessibility: Global connection for expanded distribution

4) Influence of Environment: Renewable initiatives in the present ports will provide an opportunity for future biofuel projects.

1.2 Advantages of Biofuel plant on ports

1) Logistical Efficiency:

- Availability of raw material: Ports provide easy access to raw resources such as ocean debris or imported biomass, leading to increased logistical efficiency and lower transit costs.
- Efficient Distribution: Biofuels can be easily exported or dispersed throughout the country from the port by ships, vehicles, or pipelines.

2) Economic Benefits:

- Employment creation: The factory will employ people during both the building and operating stages.
- Capital Generation: The sale of biofuels may provide significant revenue for the local economy.

3) Environmental Impact:

- Waste Utilisation: Transforming marine debris or agricultural waste into biofuel reduce waste in the environment.
- Emission reduction: Biofuels are generally regarded as more sustainable than fossil fuels, helping to minimise greenhouse gas emissions.

1.3 Potential Indian ports for biofuel production

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THE INSTITUTE OF MARINE ENGINEERS (INDIA)

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Phone no: +91 22 – 27711663 / 27701664, Mobile No: +91 8454847896

RANKED GRADE A1 (OUTSTANDING)

D. G. Shipping Approved Course

06 Days

★Course Id - 5111

Basic Training for Oil and Chemical Tanker Cargo Operations

Entry Criteria: Any seafarer who has successfully completed approved Basic Safety Training Course as per STCW Section A-VI/1, para 2,3, Tables A-VI/1-1, A-VI/1-2, A – VI/1-3, A-VI/1-4

This course is principally intended for candidates for certification for basic training for oil and Chemical tanker cargo operations as specified in section A-V/1-1 para 1 of the STCW Code as amended.

On successful completion of this course, candidates will be qualified in accordance with regulation Section A-VI/1 of the STCW code for Seafarers, 1978 as amended and will be eligible to carry out the assigned specific duties and responsibilities related to cargo or cargo equipment on Oil and Chemical Tankers

VENUE:- IMEI HOUSE, Plot No.94, Sector-19, Nerul, Navi Mumbai-400706

Course Date: Commencing Soon

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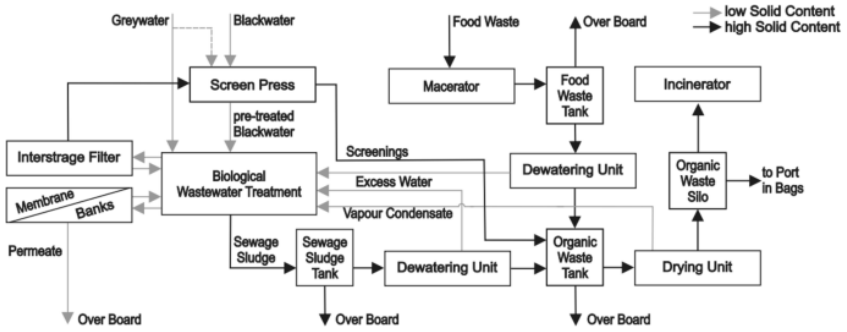
2. Collection of Biomass



"Schumüller, K., Weichgrebe, D. & Köster, S. Biogas potential of organic waste onboard cruise ships — a yet untapped energy source. *Biomass Conv. Bioref.* **12**, 5647–5662 (2022)".

2.1 Using port waste as raw material

Ship type	Number of persons on board	Duration of voyage (in Arctic waters)	Amount of waste generated
Cargo ship (> 400GT)	20	7-14 days	210-420 kg
Cargo ship	20	5-10 days	150-300 kg
Research vessel	25-50	10-30 days	375-2250 kg
Fishing vessel	6-8	5-10 days	45-120 kg
Exploration/offshore support vessel	10-15	7-14 days	105-315 kg
Cruise ship/passenger vessel	15-3000	7-15 days	210-90,000 kg
Cruise ship/passenger vessel	15-3000	15-30 days	450-180,000 kg

Table 1: Amount of MARPOL Annex V waste generated onboard a ship (source: PAME)

"Guidance document on developing a port management plan ,By Peter Van den dries"

2.2 Using Invasive algae plant species also as a raw material

Eichhornia crassipes, popularly known as "**water hyacinth"**, is a fast-growing aquatic weed that has great potential for biofuel production. The plant's high cellulose content and biomass yield make it an ideal substrate for bioethanol production in tropical countries. The plant's biomass can also be utilised to make biodiesel and biohydrogen. To promote renewable energy and control dam pollution, algal oil was produced from a plant known for thriving in waste water dams. Algae plants were taken from the dam and the oil was recovered using the (Mrs. Thamari Sengudzwa , February 2014) **Soxhlet method**. Hexane was employed as a solvent. A 14% conversion rate was obtained for a 6-hour extraction period. The algal oil will next be trans-esterified to yield a biofuel.

Biofuel is a sulphur-free alternative to petrochemical fuel. Furthermore, it is known to be the cleanest fuel for combustion systems. Eichhornia crassipes (Mart.) Solms are native macrophytes of South America with a high reproductive capacity and adaption tolerance to varied conditions. Their rapid growth rate in eutrophicated media makes this aquatic plant a promising biomass source for biofuel production.

3. WASTE TO WEALTH (Biomass to Biofuel)

3.1 Issues occurred

1) Fuel Quality Variability:

- The engine performance is affected by the uneven quality of biofuels because of variations in feedstock and manufacturing procedures. This causes concerns, such as clogged fuel injectors and filters.

2) Engine Compatibility:

- Higher biofuel blends may cause corrosion or damage to engine components that were not designed for biofuel use. Older engines, in particular, may need adjustments

3) Cold weather performance:

- There can be challenges in the operation of machinery from biofuels, particularly biodiesel, due to their tendency to gel at low temperatures.

4) Storage Stability:

- Biofuels might lose stability over time due to microbial growth and water absorption. Long-term storage may demand the use of stabilising agents or more regular inspections.

5) Energy Content:

- Biofuels have a lower energy density than standard fossil fuels, which reduces engine power and efficiency. This might end up in reduced driving ranges or increased fuel consumption in automobiles.

6) Supply Chain and Infrastructure:

- The current petrol supply infrastructure may not be entirely compatible with biofuels, demanding modifications in storage, handling and delivery. Biofuel refuelling stations are a handful in the marine industry, which has an influence on fuel logistics.

7) Environmental Concerns:

- Although biofuels are sustainable, their production can result in deforestation, biodiversity loss and water use difficulties if not handled appropriately. Biofuels' life cycle emissions, which include land-use change, may outweigh their overall environmental advantages.

8) Cost:

- Biofuels are often more costly to produce than conventional energy sources, resulting in

higher costs for consumers without subsidies or incentives.

3.2 WAYS TO OVERCOME

1) Fuel Quality Variability:

- Fuel quality variability reduction, establishing and enforcing stronger regulations for biofuel production.
- Advanced Refining Techniques: Investing in improving the quality and consistency of biofuels.

2) Engine Compatibility:

- Engine modifications include retrofitting older engines with biofuel-compatible components such seals, gaskets and fuel injectors.
- Hybrid engines: Developing and deploying engines that run on a variety of fuels, including increasing mixes of biofuel.

3) Cold Weather Performance:

- Additives: Usage of cold flow enhancers or anti-gelling chemicals in biofuels to avoid solidification at low temperatures.
- Blend Optimisation: Changing biofuel blends seasonally to improve performance in various climes.

4) Storage Stability:

- Improved storage solutions, such as improved sealing and ventilation, can prevent moisture absorption.
- Regular Monitoring: Perform periodic tests and apply stabilisers to keep gasoline quality consistent over time.

5) Energy Content:

- Engine Tuning: While using low-energy biofuels, optimise engine settings to increase efficiency.
- Blending biofuels with greater energy density fuels can help balance performance and range.

6) Supply Chain and Infrastructure:

- Invest in adapting existing gasoline infrastructure to handle biofuels, such as storage, delivery and refuelling stations.
- Logistics Planning: Improve supply chain management to assure consistent biofuel availability, particularly in rural or underserved locations.

7) Environmental concerns:

- Use sustainably obtained feedstocks with little environmental effect, such as waste products or non-food crops.
- Lifetime Analysis: Conduct complete lifetime studies to ensure that biofuels produce net environmental benefits, taking into account land use changes.

4. Ways to increase the fuel efficiency by changing procedure and composition

1) Pretreatment

Pretreatment is a key stage in converting lignocellulosic material into biofuel. Organosolv pretreatment eliminates lignin from lignocellulose structures using ethanol and water, boosting biogas generation by making them porous. Microwave-assisted alkali pretreatment is another option.

2) Thermochemical conversion

This technology is more efficient than biochemical routes because it transforms algal biomass quickly and directly to ethanol. By using adequate catalyst in production procedure.

3) Increase biofuel's calorific value (39-41 MJ/kg)

- While preserving the hydrogen and carbon ratio.
- Use of Drying.
- Increasing the carbon chain of ethyl ester.

4) Blending

Blends of animal fat and vegetable oil biodiesel have been found to improve fuel quality and combustion properties. Biodiesel-biodiesel mixtures also help to reduce exhaust pollution. This method raises the saturation level of biodiesel fuel.

5. How Nanoparticles can improve efficiency

1) Improving Energy Efficiency:

- Nanomaterials can increase energy efficiency by improving catalysts used in biofuel manufacturing

processes such as transesterification and gasification. These catalysts can increase reaction rates while reducing the energy required to convert biomass into fuel.

- Better Fuel Conversion: Nanocatalyst can increase the conversion efficiency of biofuels, resulting in larger yields of useful energy from the same feedstock.

2. Environmental Impact:

- Nanomaterials can reduce greenhouse gas emissions by developing cleaner biofuels.
- Wastewater Treatment: Nanomaterials can help treat wastewater created during biofuel production, lowering pollutants and the environmental impact of biofuel plants.

3. Increased Feedstock Utilisation:

- Improved Biomass Breakdown: Nanomaterials can help break down lignocellulosic biomass (such as agricultural waste) more effectively, making it easier to convert these materials to biofuels.
- Feedstock Flexibility: Nanotechnology enables the use of a greater range of biomass sources, including non-food crops and waste materials, reducing competition from food production while increasing feedstock availability.

4. Increasing Economic viability:

- Cost-Effective Production: Using nanomaterials in catalysts and processing equipment can save manufacturing costs by increasing efficiency and removing the need for expensive inputs.
- Prolonging Equipment Life: Nanomaterials can improve the longevity and efficiency of processing equipment, resulting in fewer maintenance costs and downtime.

5. Overcome Technological Challenges:

- Advanced Fuel Additives: Nanomaterials can be used as biofuel additives to improve combustion, reduce engine wear and increase overall engine performance.
- Nanomaterials can improve the storage stability of biofuels, slowing degradation and boosting shelf life.

6. Supporting Sustainable Practices:

- Water Purification: Nanomaterials can be utilised to improve filtering systems that purify the water used in biofuel production, reducing water use and minimising environmental impact.
- Soil Remediation: Nanomaterials can help restore soils damaged by intensive biofuel crop farming, restoring soil health and preventing further deterioration.

7. Resolving Engine Compatibility Issues:

- Engine Coatings: Nanomaterials can be used to form protective coatings for biofuel engines, reducing corrosion and wear while boosting engine compatibility.

CONCLUSION

Our approach to increase the efficiency of biofuel production as well as the infrastructure of the plants through different methods together will ultimately lead to the revolution of marine-grade fuel. As of now due to low efficiency of biofuel it is blended with HFO and the availability being comparatively low it is not able to completely change the present scenarios . With time as the market and demand of biofuel increases, it will reduce GHG emissions by a huge amount pushing us towards self-sustaining and green ports. Also the infrastructural development will create new opportunities for modifications and as the infusion of nanomaterial into this sector evolves, the entire sector will revolutionise.

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Obituary

Vijai Kumar (F 503)

(26.02.1946 – 19.01.2026)

The Institute of Marine Engineers (India) expresses its profound sorrow at the passing of **Shri Vijai Kumar**, who left for his eternal abode on **19 January 2026.**

Shri Vijai Kumar hailed from a humble background and carried that simplicity and humility with him throughout his life. Quiet, dignified and unassuming, he never sought the spotlight, yet his presence left a lasting impact on everyone who knew him. He was a person of gentle intellect, integrity and unwavering kindness, someone whose life spoke more through actions than words.

During his academic years, he was known for his attentive and composed demeanour in the classroom, absorbing knowledge with quiet dedication. He was ever willing to extend a helping hand. Friends and peers could approach him at any hour, confident of his support. His generosity of spirit and calm reassurance made him deeply respected and fondly remembered.

Sadly, illness overtook him, bringing an untimely end to a life that quietly enriched many others. The IME(I) fraternity remembers Shri Vijai Kumar with heartfelt respect, affection and gratitude.

May his noble soul attain everlasting peace.

The Institute of Marine Engineers (India)

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