Green Shipping Conclave 2025: Paving the Way for a Sustainable Maritime Future

The DGS-INMARCO Green Shipping Conclave 2022, held in Mumbai in November 2022, was a milestone in India's maritime decarbonization journey. Attended by **Shri Sarbananda Sonowal**, Honourable Union Cabinet Minister of Ports, Shipping and Waterways, senior IMO officials and key industry stakeholders, the event provided a critical platform to evaluate India's strengths and challenges in achieving maritime decarbonization, setting the stage for future actions.

Building on the success of GSC-2022, the Directorate General of Shipping (DGS), in collaboration with the Institute of Marine Engineers (India) (IMEI(I)), hosted the **Green Shipping Conclave 2025 (GSC-2025)** on 20th February 2025 at The Westin Mumbai Powai Lake. This event brought together industry leaders, policymakers and innovators to advance solutions enabling Indian shipping to achieve a 5% uptake in alternative fuels by 2030 and set a trajectory for net-zero GHG emissions by 2050.

The Green Shipping Conclave 2025 was graced by esteemed dignitaries, including **Mr. Arsenio Dominguez**, Secretary General of the International Maritime Organization (IMO); **Shri Sarbananda Sonowal,** Hon'ble Union Cabinet Minister of Ports, Shipping & Waterways; and **Shri Shantanu Thakur**, Hon'ble Minister of State for Ports, Shipping & Waterways. Also in attendance were **Shri Rajesh Kumar Sinha,** Additional Secretary, MoPSW; **Shri Shyam Jagannathan (IAS)**, Director General of Shipping; **Shri Ajithkumar Sukumaran**, Chief Surveyor, **DGS**; and **Dr. Malini Shankar (IAS Retd.),** Vice Chancellor, Indian Maritime University (IMU). The event also brought together other DGS officials, senior personnel from the Shipping Corporation of India, Directors of IMU, key representatives from shipping companies, among other prominent industry leaders.

As India strengthened its leadership in sustainable maritime practices, GSC-2025 drove cross-industry cooperation and actionable strategies, reaffirming the nation's commitment to a greener maritime future.

Session on Green Energy Waves: Driving Maritime Sustainability Through Green Fuels

Chair, Convenor, Speaker and Panelists, Experts

Session Chair	Shri. Arun Sharma	Executive Chairman, Indian Register of Shipping
Convener	Shri. P.K. Mishra	Managing Director, Indian Register of Shipping
Panelists	Shri. Mrinal Dutt	Senior Manager, GAIL
	Shri. Tarun Kumar	State Head (I&C), Maharashtra 1, BPCL
	Ms. Josefine Pallesen	Maritime Counsellor Royal Embassy of Denmark
	Dr. Arun Sharma	Adviser to Chairman, Group Head Sustainability & Climate Change, Adani Group
	Cmde Debesh Lahiri (Retd)	Advisor - Centre for Resource Efficiency and Governance (Green Shipping) The Energy and Resources Institute (TERI)
	Shri. Saurabh Mohan Saxena	Founder Director & President AHODS Technologies
Experts	Dr. Piyali Das- Teri	Associate Director, Pyrolytic Biofuels, Biochar and Green Chemicals
	Shri. Tejas Kshatria	Vice President, Green Technology, KPIT
	Shri. Devrup Kabi	Sr. Principal Surveyor , IRS

Coordinators

DGS	Shri. Satish Kamath	Engineer & Ship Surveyor, MMD Chennai
IMEI	Shri. Kunal Sharma	Sr. Surveyor, IRS

Session summary

The discussions began against the backdrop of the IMO's stringent intermediate targets for 2030 and 2040, aiming for net zero by 2050. The National Centre of Excellence for Green Ports and Shipping is spearheading multiple alternative fuel projects that are nearing commercial implementation. India is expected to become a net exporter of green fuels in the future, thanks to the country's low-cost and large-capacity renewable energy resources. International collaboration, particularly with countries like Denmark, will be crucial for advancing sustainable maritime practices and technology sharing. While LNG is currently the most suitable interim fuel for GHG reduction, emerging options like hydrogen without storage are also on the horizon. There is growing clarity in identifying net zero fuels such as green methanol and green ammonia, both of which have significant scalability potential. A multi-pronged approach is necessary due to the lifecycle intensity of green fuels. It is essential for companies to integrate sustainability into their business strategies. Additionally, nuclear energy may play an important role in the future.

Key Focus Areas

Green Fuels for Zero-Emission Shipping: Exploring green ammonia, hydrogen, biofuels, and synthetic fuels to reduce maritime carbon footprints.

- **Transitional Fuels & Infrastructure:** Leveraging LNG and methanol while developing robust bunkering and supply chains for green fuel adoption.
- **Safety, Regulations & Technology:** Aligning national policies with global standards and using emerging technologies to enhance fuel efficiency and scalability.
- **Collaboration for Innovation:** Fostering public-private partnerships to accelerate investment, innovation, and the transition to sustainable maritime energy.

Key Takeaways

- **Accelerate Green Hydrogen & Green Ammonia Adoption**: Leverage India's cost leadership in green ammonia and solar power, while scaling electrolyser manufacturing to reduce costs and enhance competitiveness.
- **Green Fuels & Transition Pathways:** Prioritize Green Hydrogen, Green Ammonia, and Green Methanol, support transition fuels like LNG and blended ethanol, and explore LPG for small fishing boats and hydrogen augmentation for efficiency gains.
- **Market Readiness & Policy Considerations**: Focus on creating a strong demand signal through policy and industry coordination rather than subsidies, while considering Fuel Life Cycle Assessment (LCA) and GFI-based fuel selection (methanol, ammonia, hydrogen).
- **Technological & Workforce Readiness**: Advance fuel cells and dual-fuel engines, promote low-temperature hydrogen fuel cell technology for inland waterways, and strengthen seafarer upskilling programs for the green fuel transition.
- **Regulations & Global Coordination**: Align with imminent global fuel standards, support a progressive low-levy fuel model, collaborate on offshore wind programs, and monitor nuclear energy advancements as a potential long-term alternative.

Session on Green Gateways: Pioneering Green Transitions of Ports

Chair, Convenor, Speaker and Panelists, Experts

Session Chair	Shri. Rajkumar Beniwal	Vice Chairman & CEO, Gujarat Maritime Board
Convener	Capt. S.I. Abul Kalam Azad	Nautical Adviser-Cum-Addl.DG (Nautical)(i/c), DG Shipping
Panelists	Shri. Surash Babu	Chief General Manager (M&EE)
	Shri. Niteen M. Borwankar	Chief Manager Mechanical & Electrical Engineering and CEO – SEZ , Jawaharlal Nehru Port Authority
	Shri. Rajeev Agarwal	Ex CEO & MD, Essar Ports
	Shri Girish Sreeraman	Area Business Director, South East Asia and Indian Subcontinent, DNV
	Shri. Daljit Singh Kohli	India Representative for Port of Antwerp & Bruges
Experts	Shri. Shobhit Kapoor	M&O Operations Manager SAW. Lloyd's Register India

Coordinators

DGS	Capt. Anish Joseph	Dy. Nautical Advisor-cum Sr. DDG(Tech)
IMEI	Shri Tarique Mulla	Hon. Secretary, IME(I) Navi Mumbai Chapter

Session summary

The panel discussed the various challenges and opportunities in the transition to Green Ports, providing valuable insights into the future of sustainable port operations while highlighting the importance of innovation, collaboration and necessary investments. The challenges included high initial investments, technological integration complexities, regulatory gaps and a shortage of a skilled workforce. Despite these challenges, the discussions also emphasized substantial opportunities through the green transition, such as improved operational efficiency through digitalization and smart technologies, environmental benefits and enhanced global competitiveness as a green ports can attract more international business as well as opportunity for Public-Private Partnership.

Discussion Highlights:

1. **Green Ports:**
   - **Strategies and Technologies:** Discussion on the latest strategies and technologies to make ports more environmentally friendly.
   - **Implementation Challenges:** Addressing the challenges in implementing green initiatives at ports.
2. **Shore Power:**
   - **Emission Reduction:** Benefits of shore power in reducing emissions from ships while docked.
   - **Infrastructure Requirements:** Necessary infrastructure and investment needed for shore power implementation.
3. **Just-In-Time (JIT) Green Corridor:**
   - **Efficiency and Sustainability:** Enhancing port operations' efficiency and sustainability through JIT logistics.
   - **Coordination and Collaboration:** Importance of coordination among various stakeholders to achieve JIT logistics.
4. **Alternative Fuels Availability in Ports:**
   - **Types of Fuels:** Availability of renewable diesel, biodiesel, hydrogen, and other alternative fuels
   - **Infrastructure Upgrades:** Need for significant investment in port infrastructure to support alternative fuel storage and distribution
5. **Trucks in Ports Converting to Battery Operated:**

- **Electrification Benefits:** Reduction in greenhouse gas emissions, air pollution, and noise levels
- **Challenges and Solutions:** High initial costs and the need for extensive charging infrastructure.

6. **Ports as Catalysts for Producing Green Fuels:**
   - **Green Energy Hubs**: Ports playing a crucial role in the production, application, and distribution of green fuels like green methanol and ammonia
   - **Supporting Decarbonization:** Ports facilitating the transition to renewable energy sources and supporting global decarbonization goals

Key Focus Areas:

- **Renewable Energy Integration:** Focus on strategies for adopting renewable energy sources such as solar, wind, and tidal energy in port operations to enhance sustainability and reduce carbon emissions.
- **Shore-to-Ship Power (Cold Ironing):** Discuss the implementation of cold ironing systems that allow docked vessels to draw power from the port grid, minimizing reliance on fossil fuels during berthing.
- **Energy-Efficient Cargo Handling:** Explore electrification and automation in cargo handling processes to improve energy efficiency and reduce operational costs in port activities.
- **Green Bunkering Infrastructure:** Emphasize the development of facilities for alternative fuels like LNG, hydrogen, and methanol to support the transition to greener maritime operations.

Key Takeaways:

- **Holistic Environmental Approach:** Ports must address pollution beyond their boundaries, integrate stakeholders to reduce bottlenecks, and optimize operations across the logistics value chain.
- **Energy Transition & Electrification:** Standardize state-level electricity policies, leverage cost-effective renewable energy, implement solar and wind power mixes, and provide land for green power generation and alternative fuel production.
- **Green Fuel Production & Infrastructure:** Focus on reducing electrolyser costs, improving ammonia production efficiency, and developing ports as green hydrogen hubs, with Tuticorin's Green Hydrogen pilot project as a model.
- **Technology & Logistics Optimization:** Enhance efficiency through digitalization (real-time monitoring, sensors, digital twins), expand rail networks, and introduce electric/hydrogen trucks and tugs, while addressing trucking challenges.
- **Bunkering & Shore Power:** Promote shore power (cold ironing), utilize LNG bunkering as a near-term solution with a 2030 target, and transition to hydrogen/ammonia bunkering by 2035, leveraging LNG terminals as low-hanging fruit.

Session on Green Ships & Smart Tech: Integrating Technology for Sustainable Seas

Chair, Convenor, Speaker and Panelists, Experts

Session Chair	Shri. C V Subba Rao	MD, Sanmar Shipping
Convener	Shri.Anil Kumar	Principal Surveyor, LR
Panelists	Shri.Arjun Chowgule	Executive Director, Chowgule Group
	Shri.Hrishikesh Narasimhan	Senior Consultant-Business Development L&T Shipbuilding
	Shri.Sanjay Verma	Director, Wartsila Singapore
	Shri.Sajan P John	Chief Operating Officer, Kochi Water Metro
	Shri.Ronny Hansen	Nautical Adviser, Danish Maritime Authority

Coordinators

DGS	Shri.Nebu Oommen	Ship Surveyor-cum- Deputy Director General (Tech.),
DGS	Shri.Pradeep Sudhakar K.	Chief Ship Surveyor-cum-Joint DG (Tech.) (I/C)
IMEI	Shri.Bryan D'sa	Exec. Committee Member, IME(I) Mumbai Branch

Session Summary

The panel discussed the alternate technology options and it's readiness level, The infrastructure needs and challenges in the supply chain, the policy changes and barriers that need to be resolved and finally arrive at a possible roadmap. The session " Green Ships & Smart Tech – Integrating Technology for Sustainable Seas" at the DGS-IMEI the Green Shipping Conclave 2025 under the chairmanship of Shri. Subba Rao, Managing Director, Sanmar Shipping and domain experts from Shipyards (Chowgule, L&T) Engine builder (Wartsila), ship owner (Kochi Water Metro) and National Administration (Denmark). Their insights significantly contributed to this important dialogue, helping to shape the strategies necessary for advancing green technology adoption in the maritime sector.

The session focused on fostering global partnerships to drive sustainable maritime practices and explored explore collaborative frameworks, shared technological advancements, and policy alignments that can accelerate the decarbonization of the maritime sector.

The panel discussed the alternate technology options and it's readiness level, The infrastructure needs and challenges in the supply chain, the policy changes and barriers that need to be resolved and finally arrive at a possible roadmap. The following points were discussed.

1. The Technology readiness Level (TRL) is advanced as explained by the leading Engine Makers. There are challenges to overcome. We can see pilot projects using alternate fuel taken up. To make sure Technological developments are safe, the regulatory regime be are progressing well, the IMO and Class societies have developed Rules and Regulation for Gas Low Flash point for Methanol and Ammonia.
2. We need to consider, both newbuild and retrofit to achieve 5% uptake in alternate fuel by 2030. For newbuild, the decision is clear, we can have Joint development Projects by stake holders. For existing ships, there could be challenges.
3. We need to look at what we need to achieve in green shipbuilding and green technologies in short term and mid-term and then progress into long term basis.
4. The shipyard is of the opinion that transitioning to fully alternate fuel propulsion would pose an enormous engineering challenge, requiring broader supply chain collaborations.
5. Shipyard needs to focus of ship segment for alternate fuel newbuilding and same way the engine builder are focusing on alternate fuel ship type. Engine builder stated that their focus is alternate fuel engine required for Passenger vessel newbuild.
6. Efficient Shipbuilding process will cut down the timeline needed and hence energy requirements. Moreover, the GHG emission during the shipbuilding process and manufacturing of Material, Machinery and Component manufacturing process will substantially cutdown emission.

7. The feasibility of manufacturing the material, equipment and components of green technologies, as well as the retrofitting of equipment and components of green technologies in India, needs to be explored since leading global engine builders and technology providers have a presence in India.
8. The availability of maintenance and support services for alternate fuel technology along coastal India, including distant locations such as Lakshadweep and the Andaman & Nicobar Islands, needs to be explored.
9. Smaller coastal general cargo vessels are being built with an electric propulsion system using a main generator and battery or a hybrid propulsion system with a battery or shaft generator.
10. For smaller passenger ferries, the vessel design depends on battery capacity and charging requirements.
11. For existing ships, the technology is limited to what we already have. The bunker tanks and spaces on board for retrofitting need to be considered. However, retrofitting alternate fuel systems for existing ships is an option that needs to be explored. For example, SCI has plans to retrofit a methanol propulsion system on board OSVs.

12. For alternate fuel uptakes, different ship types such as tugs, passenger vessel, cargo vessel will have different options.

Key Focus Areas:

- **Green Ship Design & Alternative Fuels:** Developing energy-efficient hulls, propulsion systems, and integrating LNG, hydrogen, and ammonia.
- **Smart Shipbuilding & Digital Innovation:** Using AI, big data, digital twins, and 3D printing for optimized construction and predictive maintenance.
- **Advanced Shipyard Infrastructure:** Automating fabrication units, building alternative fuel-ready facilities, and developing maritime clusters.
- **Regulatory Alignment & Workforce Training:** Aligning policies with IMO goals, streamlining certifications, and upskilling professionals through industry-academia collaboration.

Key Takeaways

- **Current Fuel Mix & Future Fleet Transition:** 99.17% of the fleet runs on conventional fuel, with only 0.83% using alternative fuels. Future orders show just 19% of vessels will adopt alternative fuels, highlighting the need to accelerate green fuel adoption.
- **Engineering & Supply Chain Challenges:** While India excels in hull fabrication, engineering and commissioning remains bottleneck. Green engine supply is delayed compared to demand, and India's battery technology still faces challenges related to size and lifespan.
- **Green Technologies & Hybrid Vessels:** Methanol, ammonia, and hydrogen are key green technologies gaining traction in India, with green hydrogen viewed as the future. Hybrid vessels, particularly successful in Europe, are seen as a transitional step toward fully green ships.
- **System Integration & Energy Efficiency:** Shipbuilding is evolving beyond commodity production, with a focus on system integration for safety due to alternative fuels. Energy savings can be achieved by optimizing production engineering, reducing build time, and improving emissions control.
- **Collaboration & Manufacturing Focus:** Strong collaboration among ship designers, clients, shipyards, equipment suppliers, and classification societies are essential. India's focus on manufacturing and adopting hybrid vessels aligns with global trends, as evidenced by Denmark's experience with digitalized shipping and retrofitting challenges.

Session on Green Capital: The role of Green Finance In Maritime Decarbonization

Chair, Convenor, Speaker and Panelists, Experts

Session Chair	Shri. Deepak Shetty	Former DG Shipping
Convener	Shri. P.K. Mishra	Managing Director, Indian Register of Shipping
Panelists	Ms. H.K.Joshi	Ex Chair Person & Managing Director, The Shipping Corporation of India Ltd
	Shri. Anil Devli	CEO, Indian National Shipowner's Association (INSA)
	Ms. Surbhi Goyal	Senior Energy Specialist, World Bank Group
	Shri. Ambrish Bansal	SVP Consultancy, Lloyd's Register
	Shri. Jaikumar Raghunathan	Senior Specialist, KPMG India

Coordinators

DGS	Shri. Praveen Nair	Engineer & Ship Surveyor-cum-Deputy DG(Tech)
IMEI	Shri. Rajesh Kasargod	Head Management, Adani Shipping (India) Pvt. Ltd.

Session summary

The panel discussed that the transition to zero carbon fuels for the maritime industry is challenging and diverse with no single pathway to decarbonization. The session discussed the primary challenges hindering the growth of green finance in India's maritime sector and possible methods that could be adopted in order to accelerate the transition. The panel also complimented the Government of India for it's initiatives such as Maritime Development Fund and the enhanced Shipbuilding Financial Assistance scheme that has the potential to drive the maritime decarbonization to the next level.

The panel was unanimous that the early movers should be incentivized with a need to explore the sandbox approach which could enable the initial funding for suitable investment projects which otherwise would be difficult on account of the risk of uncertainties.

The panel discussion also focused on the challenges and opportunities presented before the Indian port sector and the bunkering industry. The methods that can be adopted to enable India to benchmark its green finance policies and initiatives against the global best practices to enhance investor confidence and streamline funding for sustainable maritime projects was also discussed. This was also discussed in the background of the demand for short-term profitability and the expectation on better returns on investment.

The key role played by institutions such as World Bank in the development of climate finance was highlighted and their commitment to the ambitious green hydrogen project which has the potential to accelerate India's development of low-carbon energy was appreciated.

The panel also discussed the significance of developing KPIs for green financing which should be measurable, verifiable and aligned with the requirements of the nation and the IMO.

Key Focus Areas:

- **Green Finance Instruments:** Expanding green bonds, sustainability-linked loans, and blended finance models to support sustainable investments.
- **Risk Mitigation and Incentives:** Reducing investment risks through credit guarantees, carbon pricing, and emissions trading schemes.
- **Technology and Innovation Support:** Accelerating R&D and pilot projects with grants, subsidies, and public-private partnerships.
- **Global Standards and Long-Term Investment:** Harmonizing financial standards and promoting lifecycle-based investment decisions for sustainable growth.

Key Insights

Standardization & Global Benchmarks: Push for standardized definitions and global benchmarks for green finance to improve clarity and adoption, addressing challenges faced by financial institutions.

Financing Mechanisms & Investment Models: Encourage leasing models to reduce the financial burden on shipbuilders and operators, expand interest subvention and Viability Gap Funding (VGF) schemes to lower financing costs, and explore Sovereign Wealth Funds as funding sources.

Risk Management & Alternative Financing: Support alternative financing solutions like Green and Blue Bonds, Asset Reconstruction Companies (ARCs) to manage downturn risks, and align green fuel financing with demand signals through a phased transition strategy.

ESG & Sustainable Finance: Enhance integrated ESG reporting frameworks to secure international funding and donor loans, using World Bank sustainability indices as guides, and set measurable KPIs for sustainable financing.

Addressing Market Challenges: Develop policy incentives to mitigate high capex requirements, market volatility, rupee depreciation, and fluctuating freight rates, while overcoming barriers to green fuel adoption and aging fleet decarbonization.

Session on Green Alliances: International Co-operation For Greener Seas

Chair, Convenor, Speaker and Panelists, Experts

Session Chair	Shri CSR Ram	Jt. Secretary, Ministry of External Affairs
Convener	Shri. Aniruddha Chaki	Engineer & Ship Surveyor-cum-Deputy DG(Tech), DG Shipping
Panelists	Ms Monica	Consul General, Norway
	Mr Thiery Van Helden	Deputy Consul General, Netherlands
	Mr. Jakob Visti Eriksen	Special Adviser- Danish Maritime Authority
	Mr. Erik af Hällström	Consul General of Finland
	Shri. Philipp Wittrock	Project Manager & Lead Shipping, International PtX Hub
Experts	Dr. Arun Sharma	Adviser to Chairman, Group Head Sustainability & Climate Change, Adani Group

Coordinators

DGS	Shri. Aniruddha Chaki	Engineer & Ship Surveyor-cum-Deputy DG(Tech)
IMEI	Ms. Archana Sangal	Exec. Committee Member, IME(I) Navi Mumbai Chapter

Session summary

The session focussed on fostering global partnerships to drive sustainable maritime practices and explored explore collaborative frameworks, shared technological advancements, and policy alignments that can accelerate the decarbonization of the maritime sector.

It focused on International collaboration initiatives including Bilateral partnerships, regional alliances and engagement in global platforms.

The Discussions centred around Global Regulatory Alignments, Collaborative Technological Developments, Green Financing and Investments, Capacity Building and Knowledge Transfer and Development of Green Shipping Corridors and India's proactive engagement in these areas were appreciated by the panellists.

Key Focus Areas:

- **Global Regulatory Alignment:** Harmonizing maritime regulations with international climate goals.
- **Collaborative Innovation:** Advancing green shipping technologies through joint R&D and digitalization.
- **Green Financing and Partnerships:** Mobilizing global funds and public-private investments for sustainable shipping.
- **Capacity Building and Green Corridors:** Enhancing workforce skills and developing international routes with sustainable fuels workforce skills and developing international routes with sustainable fuels.

Key Insights

- **India-Norway Partnership for Maritime Sustainability**: Collaboration between India and Norway focuses on ship recycling, maritime innovation, and developing a white paper on coastal shipping, with India also participating in the IMO Green Voyage program and Oslo 2025.
- **Finland's Expertise in Energy-Efficient Vessels**: Finland aims for carbon neutrality by 2035 and leads in LNG technology for polar cruise ships, with 80% of the world's ice class vessels built in Finland and a green shipping corridor established in the Baltic Sea.
- **Netherlands' Maritime Opportunities in India**: India's state-of-the-art port facilities create growth opportunities for Dutch and EU companies, aligning with the Dutch Maritime Master Plan, which targets 30 hydrogen-powered ships by 2030.
- **Denmark's Centre of Excellence for Green Shipping**: Denmark is advancing sustainable maritime practices through its Centre of Excellence, promoting research and technology development for greener vessels.
- **Urgent Need for Collective Action**: If shipping were considered a country, it would rank 7th globally in terms of greenhouse gas emissions. International collaboration, including initiatives like the International Solar Alliance, is essential to accelerate decarbonization.

The IMO Secretary General's Round Table Meeting with CEOs of Renewable Energy Producers In India

The IMO Secretary General Mr. Arsenio Dominguez, alongside Shri Shyam Jagannathan (IAS), Director General of Shipping and Shri Ajithkumar Sukumaran, Chief Surveyor-cum-Addl. DG (Engineering) engaged in roundtable discussions with CEO's of Indian renewable energy producers from India.

The dialogue highlighted India's achievement of 200 GW in renewable capacity, aiming for 500 GW by 2030, setting the stage to become a key supplier of green hydrogen derivatives like green ammonia. The meeting focused on India's competitive advantages in low-cost solar power and robust electrolyzer production. The leaders emphasized India's readiness to meet global demand for zero-net-zero (ZNZ) fuels, underlining the importance of IMO's mid-term measures and stable financial incentives to accelerate the energy transition.

Session on Green Blue Print for Maritime India: Policy Makers Leading the Change

Chair, convenor, speaker and panellists, experts

Chair of the Session	Shri Rajesh Kumar Sinha, IAS	Additional Secretary, Ministry of Ports, Shipping and Waterways
Co-Chair of the Session	Shri Shyam Jagannathan, IAS	Director General of Shipping
Convener	Capt. S.I. Abul Kalam Azad	Nautical Adviser-Cum-Addl.DG (Nautical)(i/c), DG Shipping
Panel Member	Shri. Ajithkumar Sukumaran	Chief Surveyor-cum-Addl. DG (Engineering), DG Shipping
	Dr. Malini Shankar, IAS (Retd.)	Vice-Chancellor, Indian Maritime University
	Capt. Binesh Kumar Tyagi	Chairman and Managing Director, The Shipping Corporation of India Ltd.
	Shri Arun Sharma	Executive Chairman, Indian Register of Shipping

Coordinators

Coordinator	Shri Killi Mohana Rao	Principal Officer, MMD, Chennai

Session summary

The Green Shipping Conclave 2025 was an opportunity to all the stakeholders to express their thought process and ideology for developing a Nations Green Shipping Policy in line with India's National Environment Policy (NEP) of 2006 and aligning with the IMO's Revised GHG Strategy 2023.

The Session discussions were based on the inputs from various stakeholders like ship owners, operators, port facilities, ship designers, shipbuilders, equipment manufacturers, classification societies, maritime experts, interest groups, and the public is the process in developing key policies of the maritime sector.

Session Summary

Agenda:

- The Green Shipping Conclave 2025 brought together senior government officials from key maritime and industrial sectors to discuss India's existing policy initiatives and the future reforms required to position India as a global leader in green shipping.
- The main objective of the session was to facilitate the high-level policy discussions, highlighting regulatory advancements, financial incentives, workforce development, infrastructure expansion, and strategic frameworks essential for green maritime development.
- The key Focus of the discussion was on the Union

Budget's landmark proposals, including the ₹25,000 crore Maritime Development Fund (MDF) and the extension of the Shipbuilding Financial Assistance (SBFA) Scheme, while also integrating key takeaways from other sessions at the Conclave related to green fuels, shipbuilding, port sustainability, and global collaborations.

Key Discussion Points:

1. **Green Fuels**: Aligning policies with global best practices for ammonia, hydrogen, LNG, and biofuels to decarbonize shipping.
2. **Green Shipbuilding**: Strengthening financial and regulatory support for green ship construction and retrofitting.
3. **Port Sustainability**: Expanding shore-to-ship power infrastructure, renewable energy adoption, and emission reduction strategies in port operations.
4. **Global Collaboration**: Leveraging international alliances such as Green Voyage 2050 and the Denmark-India Centre of Excellence for Green Shipping.

Key Take Aways:

1. Technical feasibility of usage of green fuels is not proven, it currently faces significant challenges related to cost, infrastructure development, and safety concerns, but ongoing research and development are making it increasingly viable as a future solution for decarbonizing the maritime industry.

2. Green shipbuilding in India is considered highly feasible due to the government's strong focus on alternative fuels and renewable energy, coupled with a growing global demand for environmentally friendly vessels, positioning India to potentially become a major hub for green shipbuilding with the right investments and technology transfer. However, challenges remain regarding infrastructure development, access to advanced technologies, and existing financial constraints within the shipbuilding industry.

3. Shore-to-ship power supply is feasible in Indian ports, and is being implemented in phases. Govt. of India is emphasizing investing in infrastructure improvements on berths with shore power capability, efficient cargo handling systems, and optimized yard layouts to reduce idling time and energy usage.

4. India is committed to lead the maritime sector to green transformation through clean energy, sustainable ports, and innovative shipbuilding through global collaborations for technology transfer and for strategic investments.

Session on Green Navigators : CEO Forum for Sustainable Maritime Leadership

Chair, convenor, speaker and panellists, experts

Chair of the Session	Shri Rajesh Kumar Sinha, IAS	Additional Secretary, Ministry of Ports, Shipping and Waterways
Co-Chair of the Session	Shri Shyam Jagannathan, IAS	Director General of Shipping
Convener	Shri. Anil Devli	CEO, Indian National Shipowner's Association (INSA)
Member	Dr. Malini Shankar, IAS (Retd.)	Vice-Chancellor, Indian Maritime University
	Capt. Binesh Kumar Tyagi	Chairman and Managing Director, The Shipping Corporation of India Ltd.
	Shri Arun Sharma	Executive Chairman, Indian Register of Shipping
	Dr Sujata Naik	Chairperson-Tolani Maritime
	Shri Bharat K. Sheth	Deputy Chairman & Managing Director, The Great Eastern Shipping Co. Ltd.
	Shri C.V. Subba Rao	Managing Director, Sanmar Shipping
	Capt. S.I. Abul Kalam Azad	Nautical Adviser-Cum-Addl.DG (Nautical)(i/c), DG Shipping

Coordinators

Coordinator-DGS	Shri Gopikrishna.C	Engineer & Ship Surveyor-cum-Deputy DG(Tech)
Coordinator-IMEI	Shri Sanjeev Mehra	Hon. Secretary, IME(I), Mumbai Branch

Session summary

The CEOs of the leading Shipping Companies discussed the implications of recent policy measures announced in the Union Budget for 2025-26.

The panelists discussed primarily the recent Government Initiatives, Operational and Financial Strategies and Workforce Readiness besides the holistic 360 degree connect between Green fuels, Green Ships & technology, Green finance, training, Green ports and International Cooperation in the Green transition.

Summary

The main objective of the session was to discuss & deliberate the challenges and opportunities facing the Indian Shipping companies while transition to green shipping practices keeping in mind of the recent Union Budget's landmark announcements, including the ₹25,000 crore Maritime Development Fund (MDF) and the extension of the Shipbuilding Financial Assistance (SBFA) Scheme.

Key discussion points:

1. It was discussed that less than 3 percent of global pollution is from Shipping however the move towards Green transition is very intense.
2. It was also discussed that operational efficiency such as Voyage optimization, Just in time option can lead to reduction of emission.
3. India's interest must be the priority while making a choice between MBM or Levy in the IMO GHG reduction strategy.
4. It was also discussed that appropriate lifestyle changes, environmental concerns, financing options and stakeholder involvement are needed during the green transition.
5. While adopting changes, factors such as the involvement of youth, innovation & R&D projects, skill development, training needs

towards alternative fuels, government-aided research projects, technological training, updating of curriculum and collaboration with industries also need to be taken into consideration.

6. The need for technology & innovation, safety issues necessary for alternative fuels, quality assurance, education, commitment, finance and the necessary inter-dialogue was also highlighted.
7. Port connectivity – Green Tug Transition Programme, government initiatives in shipbuilding and the port sector towards setting up green hydrogen and green ammonia. Retrofitting in two vessels, multimodal transport and a conducive atmosphere.
8. The recent visits to South Korea and Japan by the Indian delegation and the steps taken toward shipbuilding projects were also discussed.

Key Take Aways:

1. Green Fuels: Aligning policies with global best practices for ammonia, hydrogen, LNG, and biofuels to decarbonize shipping.
2. Green Shipbuilding: Strengthening financial and regulatory support for green ship construction and retrofitting.
3. Port Sustainability: Expanding shore-to-ship power infrastructure, renewable energy adoption, and emission reduction strategies in port operations.
4. Global Collaboration: Leveraging international alliances towards Green Shipping.
5. Skill Development: Specialised training for the workforce towards green fuels.

Meeting of IMO Secretary General with Chairman & Senior Officials of Indian Register of Shipping

The IMO Secretary General Mr. Arsenio Dominguez, accompanied by Shri Shyam Jagannathan (IAS), Director General of Shipping and Shri Ajitkumar Sukumaran, Chief Surveyor-cum-Addl. DG (Engineering) participated in a roundtable discussion with Chairman Shri Arun Sharma and senior officials from the Indian Register of Shipping.

The meeting agenda focused on the role and contributions of the Indian Register of Shipping in relation to IACS and IMO, policy mechanisms to accelerate the adoption of alternative fuels, global best practices in green shipping, and their applicability to India's maritime sector. Discussions also centered on aligning national maritime policies with international regulatory frameworks to enhance India's role in global maritime sustainability.

Release of Consultative Policy Documents by Hon'ble Union Minister of Ministry of Ports, Shipping and Waterways

1. Indian Ocean Centre for Excellence for Sustainable Maritime Transport (IOCE-SMarT) is a visionary initiative driven by the Ministry of Ports, Shipping and Waterways, Government of India, that seeks to establish a world class hub for training, research, and innovation in sustainable maritime practices in India. It is a transformative step towards fostering a sustainable, safe, and efficient maritime industry in the Indian Ocean region. Envisaging partnership with the IMO's global MTCC network, IOCE-SMarT seeks to advance the maritime sector in the Indian Ocean region through technological innovation, sustainable practices, digital proficiency, and technical cooperation.

   A consultative document prepared by the Directorate General of Shipping (DGS) and Lloyds Register (LR) towards the IOCE-SMarT was released by Honourable Union Minister of Ministry of Ports, Shipping and Waterways in the Session.

2. The National Green Shipping Policy (NGSP) is a strategic initiative designed to transition India's maritime sector toward environmental sustainability, technological innovation, and global competitiveness. As a cornerstone of India's economic growth, the shipping industry handles 95% of trade by volume, making it essential to adopt a unified policy framework that addresses decarbonization, compliance with international regulations, and the integration of green technologies. The NGSP envisions a sustainable maritime future, aligning national priorities with international goals and positioning India as a leader in green shipping.

   A consultative document prepared by the Directorate General of Shipping (DGS) and Lloyds Register (LR) was released towards The National Green Shipping Policy (NGSP) by Honourable Union Minister of Ministry of Ports, Shipping and Waterways in the Session.

3. India's maritime sector is poised to transition towards sustainability with the formulation of a comprehensive Future Fuel Strategy (FFS). This strategy aims to position India as a leader in the global green fuel market by adopting cleaner fuels, developing essential infrastructure, and fostering international collaboration. The strategy's roadmap for implementation is structured around multiple scenarios to ensure a resilient and adaptable approach, aligning with India's broader decarbonization goals and commitments under the Maritime India Vision 2030 (MIV2030), Maritime India Amrit Kaal 2047, Harit Sagar and Harit Nauka vision. Future Fuel Strategy for India: India's Future Fuel Strategy (FFS) is designed to transform the maritime sector by focusing on the adoption of sustainable fuels, infrastructure development, and supportive policy frameworks. The strategy aims to ensure energy security, reduce carbon emissions, and enhance India's position in the global green fuel market.

   A consultative document prepared by the Directorate General of Shipping (DGS) and Indian Register of Shipping (IRS) was released towards the Future Fuel Strategy (FFS) by Honourable Union Minister of Ministry of Ports, Shipping and Waterways in the Session.

4. In addition to the above, a report of Indian Maritime University on "Centre of Policy Studies" was released by Honourable Union Minister of Ministry of Ports, Shipping and Waterways in the Session.

Technical Paper Presentation Forum at GSC-2025

The Technical Paper Presentation Forum at GSC-2025 served as a dynamic platform for professionals, academics, researchers, and students to present pioneering research and innovative solutions in the maritime sector. This forum fostered knowledge exchange and collaboration, with a strong emphasis on green shipping, emerging technologies, and sustainable maritime development. Participants had the opportunity to showcase their work to industry leaders, policymakers, and peers.

Session on Green Energy Waves – Driving Maritime Sustainability through Green Fuels

Chair , Convenor , Panelists , Experts

Session Chair	Shri N. Girish	Chief Surveyor, Indian Register of Shipping
Coordinator	Shri Mugil Rajan	Engineer & Ship Surveyor-cum-Deputy (Tech), DG Shipping
	Ms. Shilpa Bhandurge	Member, IME(I)
Panel Speakers	Shri Karan Doshi	Research Engineer, Indian Register of Shipping
	Shri Yogin Soodesh C	The Energy and Resources Institute
	Shri Abdul Raheem	Chief Maritime Strategy & Innovation Officer, Lila Global
	Shri Ilias Soultanias	Sustainability Manager, American Bureau of Shipping (ABS)
	Shri Rajneesh Verma	Director, Vedam Design & Technical Consultancy

Session summary

- Shri T.K. Sahu, JMD of Indian Register of Shipping delivered a keynote address to inaugurate the technical paper session. The session comprised of various technical papers on the topic of alternative fuels.
- The presentation by Shri Karan Doshi from IRS presented the methodology as per International Standard to perform the Lifecycle Analysis of Maritime Fuels as prescribed in 2024 IMO LCA Guidelines.
- The presentation by Shri Abdul Raheem from Lila Global discussed the technical aspects and the overall trend of alternative fuels including fuel availability and cost projections, with particular emphasis on biofuels. As alternative fuels gain traction, the maritime sector will be better positioned to meet global emission targets, ensuring a cleaner and more sustainable future for generations to come. Biofuels and their blends can be used to reduce the GHG emission.
- The presentation by Shri Yogin Soodesh C from TERI highlighted the prospects of Fuel Cell in Marine Applications-Prospects for India was also discussed.
- There were discussions on the Shipping Energy Transition and Green Shipping Corridors Development.
- The presentation by Shri Rajneesh Verma from Vedam delved on the potential environmental benefits of AMP in India analysing the carbon footprint and examining the power sources including fossil fuels and renewable sources.

Session on Green Tech Warriors: Engineering the Future of Decarbonisation

Chair , Coordinators and speakers

Session Chair	Shri Shobhit Kapoor	M&O Operations Manager SAW. Lloyd's Register India
Coordinator	Capt.V. Pardhasaradhi	Nautical Consultant, Mercantile Marine Dept.
	Shri Karthik.S	IME(I)
Speakers	Shri. Anil Sharma	HOD (ETO), Anglo Eastern Maritime Academy
	Shri H. Van den Heuvel	Royal IHC Holland
	Shri Pankaj Misra	Wartsila
	Shri Bimal Haridas	MAN Energy Solution
	Dr. Suhas Vhanmane	Indian Register of Shipping
	Capt. MSN Murthy	Indian Navy

Session summary

The Panel discussed the Onboard Carbon Capture Systems (OCCS) onboard ships as a part of the larger CCUS (Carbon Capture, Utilization, Storage System).

- The paper presentation by Mr H. Van den Heuvel from Royal IHC Holland discussed valuable insights into hybrid power drive systems for hopper dredgers, focusing on energy efficiency. To reduce climate change resulting from human emissions, the maritime industry must increase its operational efficiency and adopt green fuels.
- There was a presentation by Shri Pankaj Misra on Wartsila's engine options for future fuels. The paper suggested that Fuel flexibility and the ability to convert for fuels is crucial if ship operations to continue uninterrupted. The best choice is a set-up, that does not depend on the availability of a single fuel type.
- There was a paper presentation by Shri Bimal Haridas from MAN Energy Solution which pointed out that Methanol is an important addition to the

carbon free fuel options giving an advantageous trade-off between energy density, combustibility and toxicity and as such, stands in the center of the MAN Energy Solutions company strategy and its ingenuity focus.

- The presentation by Dr. Suhas Vhanmane from IRS highlighted that as the shipping desires for using zero emission fuels and technologies, nuclear power emerges as a potential pathway toward decarbonizing the shipping sector due to its several advantages including reduced frequency of refuelling and uninterrupted power supply and growing recognition of its benefits.
- The paper presented by Capt. MSN Murthy from Indian Navy gave important technical insights into Advanced hydrogen on demand system (AHODS).

Session on Green Horizons: Merging Technology, People & Circular Maritime Practices

Chair , Coordinators and speakers

Session Chair	Sumithran Sampath	General Manger, Class NK
Coordinator	Shri Pravin Kapale	E&SS, DG Shipping
	Shri Mohan Singh Pal	Director Maritime Education & Training, IME(I)
Speakers	Capt. Dinesh Sharma	Digital Solutions Advisor - Lloyd's Register
	Shri Jamil Al Ali	Head of Regional Commercial & Business Development for the Middle East Region, Bureau Veritas
	Shri R.Srinivas & Shri Avinash Vaze	Senior Surveyors, Indian Register of Shipping
	Shri Rohit Agarwal	Guideship Consulting
	Shri Arpit Raj	DNV, India
	Shri. Jacob Isac	Dy. Manager (Design), Garden Reach Shipbuilders & Engineers
	Shri Chirag Bahri	International Operations Manager, International Seafarers' Welfare and Assistance Network (ISWAN)

Session summary

- The Presentation of Capt. Dinesh Sharma from LR enlightened the audience on AI and digital transformation in the maritime industry.
- The Presentation of Shri Jamil Ali from Bureau Veritas presented Decarbonization Trajectories, and explained the vital Role of Digitalization.
- The Presentation of Shri R.Srinivas and Shri Avinash Vaze from Indian Register of Shipping highlighted the Cyber Resilient Network Architecture and discussed the challenges in network security and provided a brief overview on the concept of security zones, network segmentation and methods to address cyber security issues in an integrated network including use of cyber secured components towards network resilience.
- The Presentation of Shri Rohit Agarwal of Guideship Consulting discussed the relevance of ship recycling and its impact on India's environmental and economic landscape.
- Shri Arpit Raj from DNV put forth his views on Unlocking Circular Economy Potential in India's Ship Recycling Industry.
- The Presentation of Shri Jacob Isac from GRSE highlighted the India's Inland Waterways Renaissance in terms of Sustainable Propulsion & Innovative Green Designs and the initiatives by GRSE in decarbonisation projects.
- Finally the Presentation Shri Chirag Bahri delved into the important topic of Understanding the Impact of Decarbonisation on Seafarers' Wellbeing and presented the findings of an ISWAN survey.

Session on Students Session Green Sparks: Igniting Budding Mariners' Innovations in Maritime Sustainability

Chair, coordinators and speakers

Keynote Address	Dr. Malini V Shankar, IAS (Retd.)	Vice Chancellor, Indian Maritime University
Session Chair	Cmde (Dr.) Vivek Chawla (Retd.)	Director, Indian Maritime University, Mumbai Port Campus
Coordinator	Shri Pradeep Sudhakar K.	Chief Ship Surveyor-cum-Joint DG (Tech.) (I/C)
	Shri Sunil Kumar	Hon. General Secretary, IME(I)
Speakers	Mr. Mohd Emaad Khan	IMU Kolkata
	Mr Moosa Minhaj Vu & Yash Nagaonkar	IMU, Mumbai Port Campus
	Ms. Neha R, Mr. Siva P Prasad and Dr Jayaram S	Sree Narayana Gurukulam College of Engineering, Ernakulam, Kerala

Session summary

Dr. Malini Shankar, Vice Chancellor, IMU inaugurated the student's session by delivering an encouraging keynote address.

Mr. Mohd Emaad Khan from IMU Kolkata presented a paper on Enhancing Microbial Fuel Cell Efficiency for Sustainable Marine Wastewater Treatment and Energy Generation: A Path towards Carbon Neutral Shipping. The integration of Microbial Fuel Cells (MFCs) with shipboard Sewage Treatment Plants (STPs) presents a transformative opportunity for the maritime industry. Traditional STPs consume significant energy for aeration and sludge treatment, adding to operational costs and carbon emissions.

Mr Moosa Minhaj Vu & Yash Nagaonkar from IMU MPC presented their views on Maritime Energy Transition Landscape.

By synthesizing technical insights, economic considerations, and future outlooks, the presentation provided a framework for understanding the transformative potential of hydrogen fuel cells. This was followed by a presentation by Ms. Neha R from Sree Narayana Gurukulam College of Engineering on use of Sodium Based Batteries for Propulsion System.

The session concluded with the session Chair Cmde (Dr.) Vivek Chawla (Retd.) presenting mementoes to the speakers and coordinators of the session Shri Pradeep Sudhakar K., Chief Ship Surveyor-cum-Joint DG (Tech.) (I/C) and Shri Sunil Kumar, Hon. General Secretary, IME(I).

Glimpses of the Event


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ABS
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DGS-IME(I) Green Shipping Conclave 2025
Green Blue Print for Maritime India:
Policy Makers Leading the Change
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5. THE INSTITUTE OF MARINE ENGINEERS (INDIA)


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