

SESSION 3: 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.