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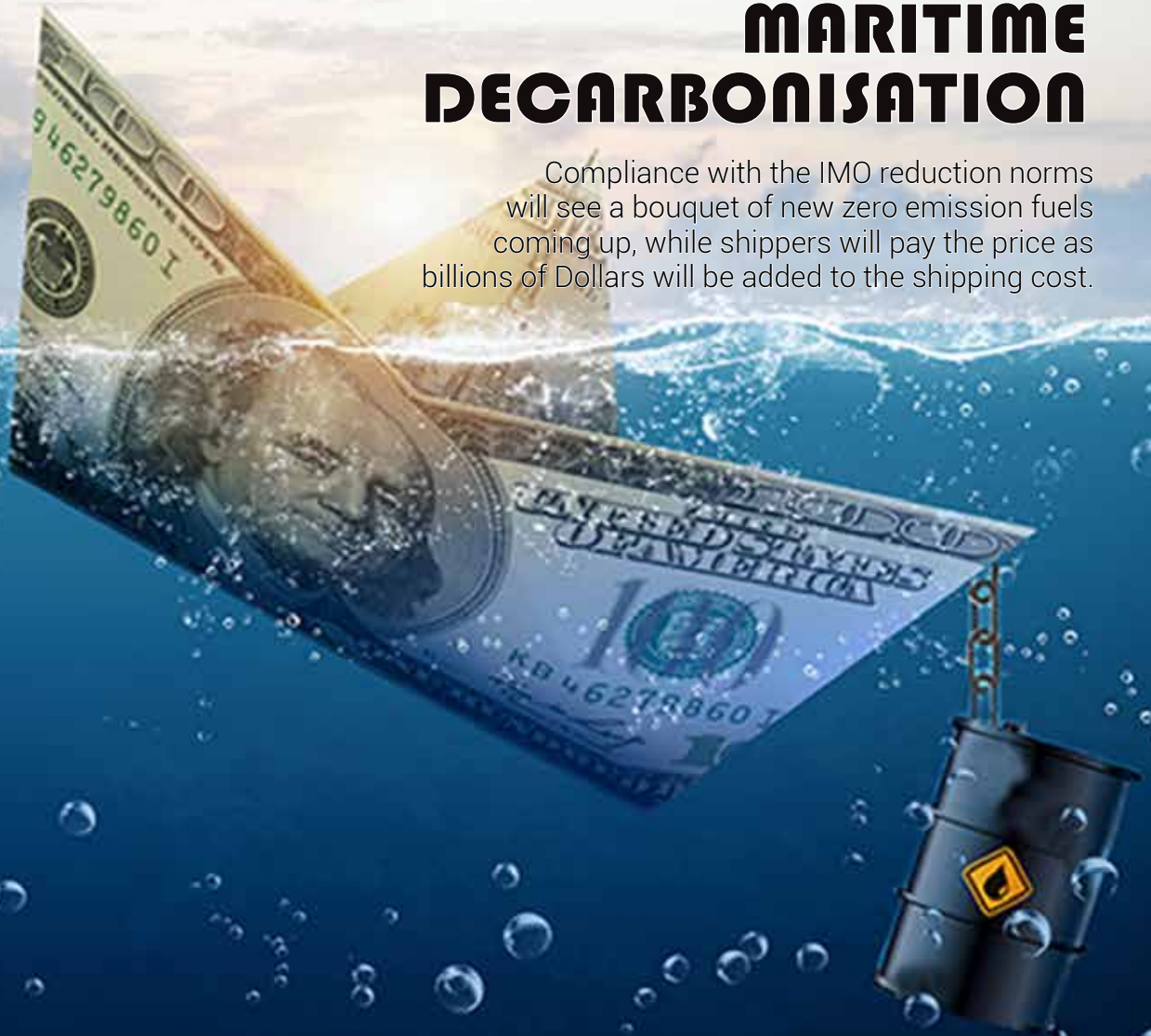


INTERVIEW

P.L. HARANADH, IRTS
CHAIRMAN, PARADIP PORT

THE TRILLION DOLLAR PATH TO MARITIME DECARBONISATION

Compliance with the IMO reduction norms will see a bouquet of new zero emission fuels coming up, while shippers will pay the price as billions of Dollars will be added to the shipping cost.





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DAUNTING TASKS AHEAD FOR THE NEW GOVERNMENT



India pays a remission of about \$86 billion in freight charges and as exports go up the figure will soon touch \$100 billion.

India will soon have a new government at the centre. One of the most pressing tasks for this new government will be implementing a new industrial policy that addresses current structural constraints, and reimagines India's manufacturing sector in the context of global supply chain shifts and the green agenda for climate change. If India has to become the global factory, then India has to position as the most liberal FDI destination. FDI inflows witnessed a 13% decline to \$32.03 billion between April and December 2023. This decline is attributed to lower investments in sectors like computer hardware, telecom, auto and pharma. Industrial development goes hand-in-hand with infrastructure development, but a recent clause introduced by RBI enables the banks to burden the borrower with any increase in cost resulting from implementation of new regulations. This will be a major deterrent for infrastructure companies. The Ministry of Roads, Transport & Highways has voiced its concern for maintaining stability in the project lending rates.

Another front on which the new government will have to work hard is - boosting exports. India's trade deficit with nine of its ten trading partners has increased in 2023-24 over 2022-23. The trade deficit has particularly increased with China, Russia, Singapore and Korea. The vision should be to achieve a consistent 10% economic growth in the long run. India's exports are charting a new course with bilateral agreements, FTAs and uncharted territories like Africa, Latin America, and Central Asia. A major stumbling block are the headwinds of quality and trade restrictions. The developed countries are putting environmental restrictions on India's exports. India has flagged this issues over the EU's decision to impose carbon tax on sectors such as steel, aluminium and fertiliser, which makes Indian exports less competitive.

Another geopolitical challenge the exporters face is the Red Sea crisis, causing a spiking in freight rates particularly on the India to East & West Coast of the US routes. Such unpredictable events raise the cost of Indian exports. The Indian trade community has long been voicing for a national shipping line of global reputation. India pays a remission of about \$86 billion in freight charges and as exports go up the figure will soon touch \$100 billion. If Indian flagged tonnage moves 25% of this business then about \$25 billion can be saved annually. Along with it comes the need for insurance by local P&I services.

India as a manufacturing hub and a great exporting nation will need to exercise greater control on logistics costs and supply chains.

A handwritten signature in black ink, appearing to read 'Ramprasad'.

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THINK LOGISTICS, THINK CONCOR

हमारा लक्ष्य, ग्राहक मूल्य सृजन

Our Ethos: Customer Value Creation



MOVEMENT ON DEDICATED FREIGHT CORRIDOR (DFC)

CONCOR is not only expanding its existing businesses but has also taken various initiatives to take advantage of opportunities available. This includes setting up of MMLPs on DFC network, expansion of double stack hauls etc.

IT - ENABLED BUSINESS SOLUTIONS

- IT is the backbone of Logistics operations.
- Launched app for 1st/Last mile services
- Pilot project on AI-based solution initiated at ICD TKD
- Consideration for extending AI solution to other CONCOR terminals nationwide
- Arrangements made for real-time location tracking of containers
- Automated billing for vendors, Implementation of an e-Office
- Digital workplace solutions



INCREASED FOCUS ON 'SUSTAINABILITY'

- Acknowledgment of global warming as a significant concern
While ESG norms are being finalized for Logistics sector in India, CONCOR is making itself future ready by:

Deployment of LNG Trucks:

- 90 trucks already deployed, More than 40 in the pipeline
- Total of app. 130 trucks to be deployed, marking the largest order in India

Installation of Solar Panels at Terminals

Memorandum of Understanding (MoU) with:

- IGL & IOCL for LNG infrastructure
- NTPC Vidyut Vyapar Nigam for solar power-based solutions

FIRST MILE LAST MILE CONNECTIVITY (FMLM)

FMLM App for Transporters- CONCOR e-Logistics Transporter App: CONCOR has developed FMLM App to provide End to End logistics support to its customers. The very purpose of FMLM is to strengthen and provide connectivity at reasonable rates to the Customers through competitive bidding among empanelled vendors at terminal level.



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THE TRILLION DOLLAR PATH TO MARITIME DECARBONISATION

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Compliance with the IMO reduction norms will see a bouquet of new zero emission fuels coming up, while shippers will pay the price as billions of Dollars will be added to the shipping cost.

18 POLICY Regulatory scenario in maritime decarbonisation

The aim of IMO is to promote energy transition and give the world fleet an incentive, while contributing to a level playing field. Handholding will also be provided to Least Developed Countries and Small Island Developing States through the transition.



22 DECARBONISATION An agenda for shipowners and shippers

Many Indian ships are relatively old, making immediate technology retrofits difficult and costly. Availability and affordability of alternative fuels, along with necessary bunkering infrastructure, remain a challenge for scaling up the transition.



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Hapag Lloyd is one of the first shipping companies in the world that have converted large container ships to dual-fuel propulsion

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The path ahead for clean fuels is crystallising. There would not be one single fuel, but multi-fuels....



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The transition to a sustainable industry is a complex one, but Methanol's simple solution is increasing in popularity.

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SMART PORT 5.0 DIGITALIZATION



- » HMI-Proximity Warning and Alert System
- » Remote Crane Management System, RCMS
- » Traffic and Parking Management
- » Fuel Management System
- » Locating Solution
- » Object identification and counting
- » Crowd Management,
- » IT Infrastructure and Data Centre
- » Design and Implementation
- » Assets and Inventory Management
- » Bespoke Solutions
- » Mobility Solution
- » Video Surveillance & Entrance Management
- » Visitor Management System
- » AI & IoT Platform
- » Smart Ports 5.0 System
- » Terminal Automation System
- » Digital Twin
- » Gate Operating System
- » Truck OCR
- » Rail OCR,
- » Crane OCR
- » WMS
- » YMS
- » Unmanned Weighbridges

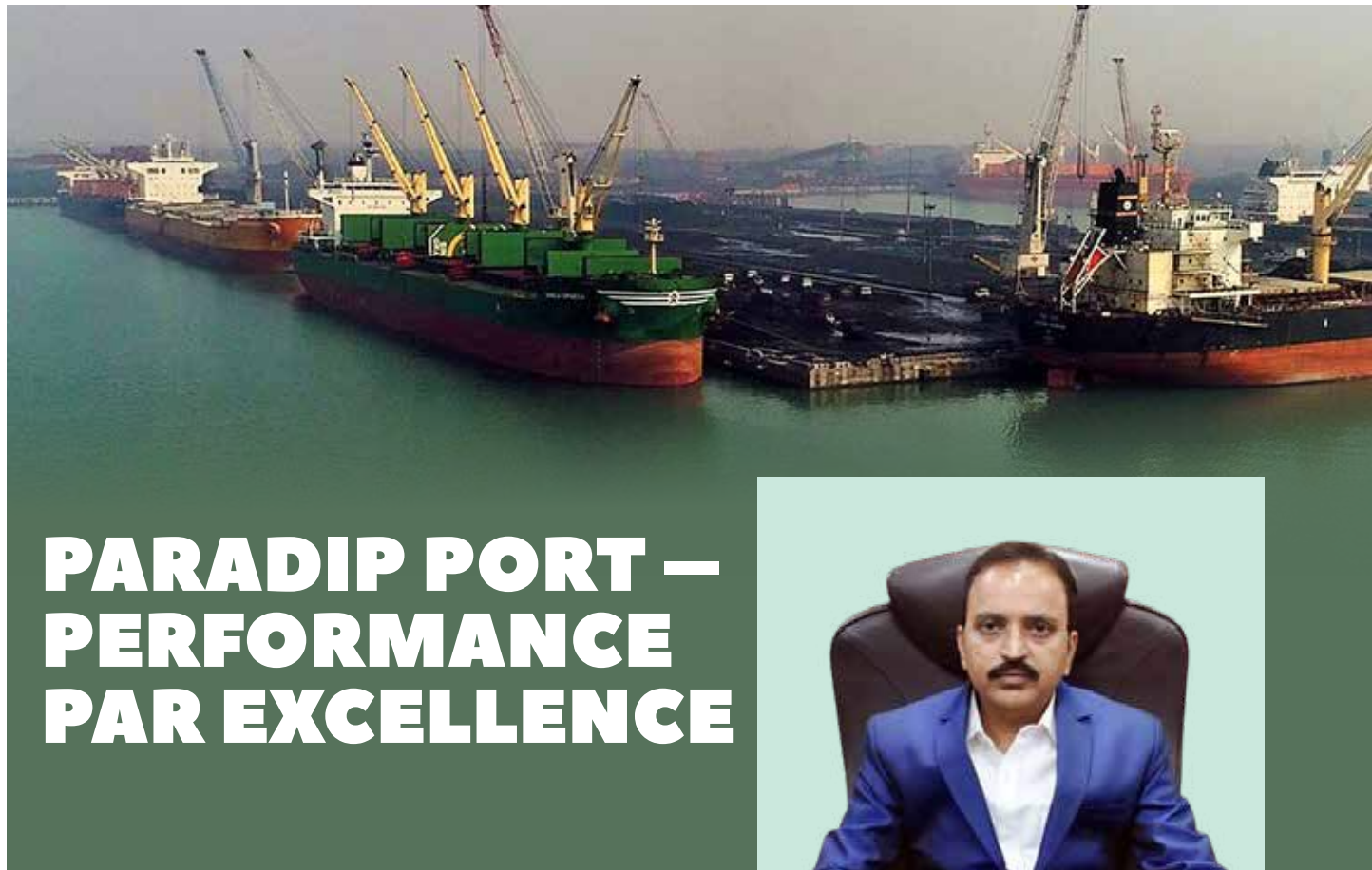


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PARADIP PORT – PERFORMANCE PAR EXCELLENCE



Odisha will soon boast of a smart port which is cape enabled, 100% mechanised and delivers cargo at the door step of the customer.

Not very long ago, the name Paradip Port was synonymous to dusty cargo. Among the several issues that hindered the growth of the port include shortage of rakes, complete dependence on only bulk cargo and low stevedore productivity. But today, the port has made its way to the helm, to capture the number one position among major ports. This transformation has been brought in under the able leadership of **P.L. Haranadh, IRTS, Chairman of the port.**

The improvement has been in several parameters across the ecosystem, both in terms of cost and quality – be it tariffs, services provided, berthing on arrival and storage charges. The port is moving heavily towards automation, integrating with National Logistics Portal and ICEGATE. Studies are in progress for berthing of vessels using Artificial Intelligence. The port is expeditiously transforming into a smart port, eliminating physical touch points.

Digital initiatives

Paradip Port has embarked on a comprehensive journey towards becoming a smart port, leveraging digital solutions to enhance operational efficiency and streamline administrative processes. These include the National Logistics Portal (Marine), enterprise business solutions, unmanned weighbridges with gate automation systems, and a new signal station equipped with a next-generation Vessel Traffic Management and Information System.

Coming to financial performance, for the first time, the operating surplus post tax has come to Rs.1000Cr, while the



operating ratio is only 36%. For every Rs.100 earned the port is spending Rs.36, which is one of the best operating ratio among major ports.

Most of the cargo coming to the port is through rail. About two years ago customers used to complain about paucity of rakes, but this issue has been addressed on priority. Before 2021-22, the average coal loading/unloading was 17 rakes per day, with minor system improvements now the system is able to handle 26 rakes per day.

Traditionally, Paradip has concentrated on iron ore, coal and crude oil cargo. A lot of containerised cargo is available in the hinterland. About two years ago, in around 200km radius of the port, about two lakh teus cargo was identified, which was either diverted to Haldia or Visakhapatnam Ports. This cargo is being brought back to Paradip Port.

An exclusive berth for containerised cargo along with a few CFSS will be developed, as part of an ecosystem for handling containerised cargo. MSC and RCL shipping lines are now making regular calls to the port, availing 75% concession in vessel related charges. Container scanning charges have been waived off altogether. This year the port targets to handle around 50,000 teus, which will grow to one lakh teus by next year. An MMLP has also been developed by CONCOR for handling containerised cargo.

Paradip Port also leads in terms of coastal cargo handling among all Indian Ports. 25% of the entire country's coastal cargo is handled at Paradip Port, which has five dedicated berths for coastal cargo. A new common berth for handling coastal plus exim cargo is being planned. The distance between ships calling at coastal berths has been reduced to 10 meters, from 20 meters earlier, which has reduced the waiting time for ships. The idling time of stevedores has been reduced from two hours to half-an-hour.

Coming to liquid bulk, storage tanks are being developed for crude oil, which will be transmitted through pipelines to refineries in Assam. The tanks will be ready in 2025-26, bringing 8-10 million tonnes of extra crude oil cargo to the port.

Awards & accolades

"Sagar Shrestha Samman 2023" bestowed by the Ministry of Ports, Shipping, and Waterways has been awarded to Paradip Port for three categories including the coveted, No.1 Major Port for Annual Performance. Additionally, the Port has received the "Port of Operational Excellence" title at the GMIS 2023.

In the next 12 months...

The port will focus on capacity augmentation. Tenders will be called for new berths and mechanisation of existing berths. The target is to handle 150 million tonnes and cargoes which were not handled traditionally will be targeted. The port will bring in own rakes to deliver cargo at the door step of the customer.

The port currently has four docks – one is 16 meters in depth while others are 14.5 meters.

Before 2021-22, the average coal loading/unloading was 17 rakes per day, with minor system improvements now the system is able to handle 26 rakes per day.

A dock on the western side of the port (The Western Dock project) is being awarded to Jindal Steel & Ports Ltd. It will have 18 meters depth and 35 million tonnes capacity for handling imported coal, limestone and steel. Paradip Port will thus become a Cape enabled port.

Paradip Port has overtaken Deendayal Port, to become the number one major port in terms of highest cargo handled in FY2023-24. What has been the strategy behind achieving this feat and what are your plans going forward?

Achieving the status of the number one major port in terms of cargo handled is undoubtedly a significant accomplishment for Paradip Port. This success can be attributed to a combination of system improvement strategies and forward-thinking planning. Few key factors include timely infrastructure development, enhanced multimodal connectivity, operational efficiency, proactive customer engagement and business development initiatives.

Looking forward, we remain committed to operational excellence, leveraging technology, and fostering strategic partnerships to remain No.1 Port for years to come.

It is said that the port tariffs at Paradip Port are also relatively less compared to other major ports. What are the other factors which make Paradip the preferred port?

Paradip Port's competitive tariffs play a significant role in attracting business. Notably, it holds the distinction of being the highest

productive port among Indian ports and has frozen tariffs for three years, further enhancing its attractiveness to stakeholders.

Its strategic location on the east coast of India offers convenient access to major international shipping routes. The port boasts modern infrastructure, including advanced facilities and equipment, ensuring efficient cargo handling. Investments in multimodal connectivity, provide flexibility and cost-effectiveness to customers. Operational efficiency is prioritized through continuous improvement initiatives and a customer-centric approach. Additionally, Paradip Port's proactive business development engagement fosters strong partnerships and facilitates smooth operations.

Paradip has been a bulk cargo port for long but it has now started catering to containerised cargo as well. What are your plans for growing the containerised cargo?

Paradip Port has tremendous potential for diversification and growth, particularly in the realm of container cargo.

Container traffic at Odisha Ports is at its nascent stage due to lack of container handling ecosystem and absence of port calls of container shipping lines to Odisha ports. A major chunk of container traffic thus gets diverted to the neighbouring states such as Andhra Pradesh and West Bengal. This adds up additional logistics cost to the customers belonging to Odisha.

Paradip Port has already developed a 5 MTPA Clean cargo and container terminal, being operated by its PPP operator PICT. Further, the Port offers the lowest Vessel Related Charges (VRCs) among Indian ports, a discount of up to 75% is offered on VRC for container vessels. We also offer free container scanning facilities at our terminal.

The commencement of container services by major shipping liners like MSC, will facilitate direct connectivity from the Port of Colombo to Paradip Port.

Additionally, the completion of

KEY PERFORMANCE INDICATORS

Highest productive port among Indian ports and it has frozen tariffs for coming three years.

- In FY2023-24, the port handled 145.38 million metric tonnes of cargo.
- Capable of berthing 16-meter draught cape vessels.
- Coal rakes loading/unloading has increased from 17 rakes per day to 26 rakes per day.
- This year the port targets to handle around 50,000 teus, which will grow to one lakh teus by next year.
- The port is progressively transitioning to 100% mechanized cargo handling by 2030.
- Exclusive green hydrogen and green ammonia berth to be developed for export and bunkering with 5 MTPA capacity to be awarded by year 2026.
- The port constitutes a majority share of nearly 30% among the Indian Major port coastal volume.
- Liquid bulk storage tanks are being developed which will add 8-10 million tonnes of extra crude oil handling capacity by 2025-26.
- The western dock being developed will have 18 meters depth and 35 million tonnes capacity to berth Cape sized vessels.

the Multimodal Logistics Park being developed by CONCOR will further boost container traffic through our port. There are also plans for facilitating setting up of additional CFSs in the region.

The port is said to be developing a separate berth for handling green hydrogen and green ammonia. Tell us about the loading/unloading and storage infrastructure being developed at the port for handling eco-friendly fuels?

At the GMIS 2023, Paradip Port has signed MoUs with four investors of Green Hydrogen and Green ammonia plants to set up plants. The total investment will be to the tune of Rs 50,800Cr.

These developers have shown interest to develop their green Hydrogen/ Ammonia Facility and have requested for creation of required infrastructure nearest to Paradip Port for export of Green Ammonia or other Green Hydrogen Derivatives.

The Port plans to develop exclusive green hydrogen and green ammonia berth for its export and bunkering with 5 MTPA capacity to be awarded by year 2026 at a cost of Rs 325 Crs.

Could you provide insights into the green initiatives undertaken by Paradip Port to promote environmental sustainability and reduce its ecological footprint?

An ambitious Greenification drive aimed at achieving a million tree coverage by 2025, enhancing

carbon sequestration and air quality is planned. The port is progressively transitioning to 100% mechanized cargo handling by 2030 to enhance operational efficiency and reduce carbon emissions. Embracing sustainable energy sources, the port plans for installing a 10 MW solar power plant. Shore power supply will be extend to coastal cargo vessels. Furthermore, the port targets complete electrification of its railway network with phasing out of diesel locomotives, thus promoting cleaner rail transport.

The cargo handled by the entire port sector (including both major and private ports) is expected to grow from 1.4 billion tonnes currently to 2.5 billion tonnes by 2030. Moreover, this growth will be largely driven by coastal shipping of coal and containers. How do you see Paradip Port contributing to this growth story?

The scope of coastal shipping volumes at Paradip Port is substantial, and we are fully aware of the immense potential that coastal shipping holds in transforming maritime transportation in India.

Presently, Paradip Port is the Coastal Shipping Hub of the nation. Paradip Port constitutes a majority share of nearly 30% among the Indian Major port coastal volume. The Port has handled 59.19 MMT of coastal cargo in FY 2023-24, the highest among all Indian Ports. Out of this coastal volume thermal coal has contributed a substantial volume of 43.97 MMT.

We have successfully initiated coastal shipping of thermal coal to Western coast ports, serving the requirements of Gencos in Maharashtra, Gujarat, and Rajasthan.

As part of our commitment, we consistently invest in developing coastal shipping infrastructure within the port, encompassing dedicated berths, jetties, and storage facilities. Seamless connectivity with other coastal ports is a priority, with ongoing collaborations to enhance routes and connectivity.

Additionally, we are exploring the potential of offering incentives and concessions to industries, aiming to

make coastal shipping an attractive option in terms of both cost and efficiency.

Last year, Paradip Port was recognised as the best port of the country for its overall performance by the government of India. Could you please elaborate on the key performance indicators of the port?

As Chairman of Paradip Port, I'm delighted to elaborate on the key performance indicators that have contributed to our recognition as the best port in the country for our overall performance.

Cargo Throughput: In the fiscal year 2023-24, Paradip Port achieved a remarkable milestone by handling an unprecedented 145.38 million metric tonnes (MMT) of cargo. This exceptional performance surpassed previous records and solidified our position as the highest cargo handling major port in the country.

Coastal Shipping Traffic: We achieved the highest-ever coastal shipping traffic of 59.19 MMT, showcasing our growing prominence as a hub for coastal shipping in India. The significant increase in thermal coal coastal shipping to 43.97 MMT further underscores our port's importance in facilitating maritime trade.

Berth Productivity and Ship Handling: Paradip Port has continually improved its berth productivity, reaching 33,014 metric tonnes (MT) compared to the previous fiscal year. Additionally, we handled 21,665 rakes and 2,710 ships during the fiscal year, demonstrating our efficiency in vessel handling operations.

System Improvement Measures: Our increased performance in cargo handling can be attributed to various system improvement measures undertaken during the fiscal year. Notable initiatives include optimizing operations at the mechanized coal handling plant, enabling the handling of 16-meter draught cape vessels at the northern dock, and simultaneous handling of different vessel types at coal handling berths.

Financial Performance: Paradip Port's financial results for the fiscal year reflect a robust performance, with

operating revenue crossing Rs. 2,300 crores and operating surplus exceeding Rs. 1,510 crores. The net surplus before tax and after tax also witnessed significant growth, highlighting our financial stability and efficiency in resource management.

Paradip Port stands as a beacon of excellence in the maritime sector, and we remain dedicated to delivering world-class services and driving economic prosperity for the nation.

Industry experts opine, no infrastructure should be used for more than 80% of its capacity. What are your plans for capacity upgrade at the port?

At Paradip Port, we are fully cognizant of this principle and have comprehensive plans in place for capacity upgrades to ensure optimal utilization of our infrastructure while meeting growing demands. Here's an overview of our ongoing and planned capacity augmentation projects:

Western Dock Project: Last year, we awarded the 25 MTPA Western Dock project to JSPL, which is a pivotal step in our capacity expansion journey. This project involves the creation of a new dock equipped with modern infrastructure and handling facilities to accommodate various types of cargo. Additionally, it includes deepening the inner harbor to accommodate Cape vessels with drafts of up to 18 meters. The introduction of Cape vessels will enable us to achieve economies of scale and reduce transportation costs per unit of cargo significantly.

Pipeline Projects: In addition to the Western Dock project, Paradip Port in couple years of time will initiate process for development of 3 new berths, mechanisation of 4 existing berths and 1 green hydrogen berth. This will lead to Paradip to become 100% mechanised port by 2030.

By implementing these projects, Paradip Port is on track to become the first port in the country with a capacity of 400 MTPA by 2030. These initiatives underscore our commitment to ensuring sustainable growth and enhancing our capabilities to meet the evolving needs of the maritime industry and the economy at large. 

THE TRILLION DOLLAR PATH TO MARITIME DECARBONISATION

Compliance with the IMO reduction norms will see a bouquet of new zero emission fuels coming up, while shippers will pay the price as billions of Dollars will be added to the shipping cost.





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In a door-to-door cargo movement, the sea leg is the major contributor to GHG emissions, contributing to about 90% share of the total emissions. Transporting 80% of world trade, the shipping sector plays a pivotal role in the global economy, yet it contributes 2% of global emissions, which underscores the urgency for the industry to reduce its environmental impact.

The container ships emitted approximately 230 million tonnes of

CO₂ in 2023, which saw a total of 1 billion tonnes of CO₂ emitted from all shipping segments. The war in the Middle East has all but stoked a disastrous rise in CO₂ emissions. Eliminating the Red Sea and the Suez Canal from the route map of the major container lines, traffic has been rerouted around the Cape of Good Hope, in the process creating persistent equipment and space imbalances; degrading reliability; driving steep rate increases for cargoes originating in Asia;

hampering the growth of the fastest-growing trade route between Asia and the US East Coast.

Far from declining on the way to a mandated 20% reduction in carbon dioxide emissions by 2030, the shipping industry's combined emissions will rise sharply in 2024 as liners forego the Red Sea for the Panama Canal, which will add roughly 30% to the length of their voyages. The worst-case scenario has industry emissions approaching 350 million tonnes by 2050, assuming that there is no intervention by governments, shippers, consumers, and industry groups.

IMO has set interim targets for reducing emissions by 20-30% by 2030 and 70-80% by 2040, compared to 2008. To meet these targets clean fuels must account for at least 5% of the total fuel used by shipping. Besides regulatory changes resulting from decarbonisation policies, emissions limits and related taxes, there will be enormous technological change in the design of ships and their propulsion systems, with a transition to engines powered by low or zero carbon fuels.

"Coming to the short-term emission reduction goal of 2030, there are a couple of regulatory measures such as the energy efficiency index for existing ships, which about 68% of global bulk carriers will not be able to meet these standards without certain modifications like installing energy saving devices or reducing the engine power. Similar is the situation of the Indian flagged fleet, wherein majority of the vessels will require engine power reduction of 25-45%. There are major implications to the Indian tonnage as it is relatively old," opines **Indra Nath Bose, Advisor, Great Eastern Shipping Co Ltd.**

"The second is the Operational Carbon Index, which indicates the per ton mile of cargo carried. As per the index, the CO₂ emission should be below a certain benchmark. Accordingly the ships have to be operated in order to ensure their emissions remain within the permissible limits."

IMO to introduce CO₂ charge worldwide by 2027

The International Maritime Organization plans to introduce charges on CO₂ emitted by shipping. Details of

"Coming to the short-term emission reduction goal of 2030, there are a couple of regulatory measures such as the energy efficiency index for existing ships, which about 68% of global bulk carriers will not be able to meet these standards without certain modifications."



INDRA NATH BOSE
ADVISOR, GREAT EASTERN SHIPPING CO LTD.

the pricing mechanism will be finalised by next year, and the charges will be introduced in 2027. Countries including the Marshall Islands — the flag state for thousands of vessels — earlier submitted a proposal for a minimum emissions charge of \$150 per ton of CO₂-equivalent, which would add hundreds of Dollars to shippers' fuel bills for every ton of oil they burn. Others, including European Union nations, Canada and China have submitted separate documents discussing GHG pricing. However, the policy will be only as effective as rigorously the respective countries enforce it.

The EU has already put a cost to emissions

The EU parliament has included shipping in the EU's Emissions Trading System (ETS). As a result, it will start charging tax from EUs outbound and inbound shipping companies from Jan 1, 2027. The EU ETS will initially cover large ships of 5,000 gross tonnes and above

but will be expanded after 2026 to cover smaller ships as well. On the emission side, initially, only carbon emissions will be tracked, but from 2026, all greenhouse emissions, including methane and nitrous oxide gases, will be covered, says GTRI, a market research firm.

But all this only indicates that the decarbonisation bill for the maritime sector is only going to rise in the near future.

The decarbonisation bill

Many of the world's largest importers and exporters are ill informed about the implications of the forthcoming emissions regulations and the billions of Dollars that will be added to freight costs in the future, informs Drewry. Over 80% of the world's merchandise trade valued at more than \$20 trillion takes place through 6,400 cargo ships. Compliance with the two directives will result in about 3-4% increase in the price of export and import products, amounting to \$600-800 billion annually at global level.

The International Energy Agency (IEA) estimates that it will cost \$1.5 trillion to achieve net-zero emissions from international shipping by 2050. India's shipping sector must set aside over \$100 billion to survive in a low carbon future.

US consultancy AlixPartners has said in its 2024 report that container shipping has very high carbon dioxide emissions, and the liner industry has to spend US\$1.4 trillion to achieve carbon neutrality by 2050. Targeted investment and conversion to alternative-fuel propulsion systems will be inadequate to achieve the mandated 20% reduction by 2030, but net zero by 2050 remains within reach—barely—if 5% to 17% of the industry's fleet is converted to zero emission fuels (such as ammonia, methane, or hydrogen) by 2030 and 84% to 93% is converted by 2050.

The cost burden will be borne by both carriers and energy suppliers and, ultimately, by shippers and end users. AlixPartners said: "But none of the required investment and emissions reductions will occur without powerful incentives and sanctions to change the behaviour of carriers and shippers alike. That won't happen easily or overnight."

Sustainable shipping fuels are projected to reach cost parity with fossil fuels by 2035, contingent on the



implementation of stringent emissions policies such as carbon taxes and emissions limits, according to a new report by Wärtsilä.

The report, titled ‘Sustainable fuels for shipping by 2050 – the 3 key elements of success’ highlights that policies like the EU Emissions Trading Scheme (ETS) and the Fuel EU Maritime Initiative (FEUM) could more than double the cost of fossil fuels by 2030, setting the stage for sustainable fuels to be cost-competitive for the first time.

Roger Holm, President, Marine Power & Executive Vice President, Wärtsilä Corporation emphasized the necessity of a united approach to accelerate the adoption of sustainable fuels. “Achieving net zero in shipping by 2050 will require all the tools in the toolbox, including sustainable fuels. Coordinating action across policymakers, industry, and individual operators is crucial to bring about the systemic change needed to produce a mix of sustainable fuels quickly and affordably,” Holm stated.

The industry is currently in the “chicken and egg” dilemma, where shipowners hesitate to commit to new fuels without guarantees of scalability and cost-effectiveness, while fuel suppliers await clear demand signals. Only decisive policy action, industry collaboration, and individual operator initiatives can overcome these barriers.

To close the price gap between fossil and sustainable fuels, policymakers need to establish an internationally agreed, science-based pathway for eliminating

“The International Maritime Organization plans to introduce charges on CO2 emitted by shipping. Details of the pricing mechanism will be finalised by next year, and the charges will be introduced in 2027. The IMO’s mechanism is set to be the planet’s first ever global, mandatory price for GHG emissions.”



ARSENIO DOMINGUEZ
SECRETARY GENERAL, IMO

fossil fuels from maritime operations and to adopt a global industry standard for marine fuel carbon pricing. The significance of global collaboration on innovation and infrastructure to deliver

sustainable fuels at scale is equally important.

The debate on putting a cost to emissions

The European Union, Canada, Japan and climate-vulnerable Pacific Island states are among 47 countries rallying support for a charge on the international shipping sector’s greenhouse gas emissions. Supporters argue the policy could raise more than \$80 billion a year in funding which could be reinvested to develop low-carbon shipping fuels and support poorer countries to transition. Opponents, including China and Brazil, say it would penalise trade-reliant emerging economies. Researchers have said a \$150 carbon price could make investments in low-carbon ammonia-fuelled systems economic compared with conventional ships.

Another submission, from the 27-country EU, Japan, Namibia, South Korea, the International Chamber of Shipping and others, advocate combining a price on shipping emissions with a global emissions standard for maritime fuel.

An IMO meeting in September 2024 serves as a deadline for countries to decide whether to take forward both the fuel standard and an emissions price. A senior EU official said the bloc believes “only the two together can suffice” to meet the IMO’s targets.

Impact on developing economies

China, Brazil and Argentina pushed back on the idea of a CO2 levy in IMO talks last year. A study by Brazil’s University of Sao Paulo found a carbon tax on shipping would cut GDP across developing countries by 0.13%, with Africa and South America among the hardest-hit regions.

A proposal by Argentina, Brazil, China, Norway, South Africa, the United Arab Emirates and Uruguay advocates a global fuel emissions intensity limit, with a financial penalty for breaches, as an alternative to a levy on all shipping emissions. That would mean if countries fully complied with the fuel standard, no emissions would face the fee. The EU for one has said it may bring more international shipping emissions into its local CO₂ market if the IMO does not agree a global emissions price by 2028.

Liners opt for adding tonnage

Red Sea Crisis



As liners forego the Red Sea for the Panama Canal, it will add **30%** to the length of their voyages, stoking a rise in CO₂ emissions



Container ships emitted **230 million** tonnes of CO₂ in 2023



CO₂ charges: Some countries propose a minimum emission charge of **\$150 per tonne** of CO₂ equivalent



Compliance with emission regulations will increase the cost of EXIM cargo by **3-4%**



Liner industry will have to spend **\$1.4 billion** to achieve global neutrality by 2050



Indian shipping sector needs **\$100 billion** to survive in a low carbon future

rather than long term charters due to fuel dilemma

The dilemma over alternative fuels and financing means that liner operators are more inclined to order newbuildings themselves, rather than turning to tonnage providers.

As a result, these non-operating owners' fleets remain lower than pre-Covid-19 days. Tonnage providers have seen net fleet additions for the first time in nearly four years, as newbuilding deliveries finally outpace ship sales, according to Alphaliner. Newbuilding deliveries added 86 ships of 342,000 TEUs to tonnage providers' fleet, while just 80 ships of 238,800 TEUs have been sold, mainly to other operators.

The decline in tonnage providers' fleets began in August 2020, as the Covid-19 pandemic saw freight rates hit historically high levels. To control rocketing charter costs, liner operators began buying more ships. MSC, particularly, was the most active buyer as it marched towards overtaking Maersk Line as the world's largest liner operator.

In addition, liner operators, flush with cash from the pandemic-fuelled boom, are leaning towards working with shipyards to determine ideal fuel and propulsion choices.

Price comparison of alternate and conventional bunkers

Despite the EU Emissions Trading System's (EU ETS) tax on carbon, burning HSFO, VLSFO or LSMGO and paying for the CO₂ they emit still pays off when bio-blended alternatives are priced as high as they are today. Biofuels have become considerably more mainstream as bunker fuels in the past year and market participants are looking for ways of benchmarking their buying performance against their peers.

Bunker intelligence platform ENGINE has teamed up with price reporting agency and biofuels specialist PRIMA Markets on biofuel-blended bunker fuel benchmark prices. ENGINE is also introducing its Fuel Switch Snapshot, a price tracker of comparable alternative and conventional bunker fuels in the world's biggest bunkering hubs – Rotterdam, Singapore and Los Angeles.

ENGINE's new weekly Fuel Switch Snapshot provides an apples-to-apples comparison of bunker fuels on the

Decarbonisation cost

Over 80% of the world's merchandise trade valued at more than \$20 trillion takes place through 6,400 cargo ships. Compliance with the two directives will result in about 3-4% increase in the price of export and import products, amounting to \$600-800 billion annually at global level. The International Energy Agency (IEA) estimates that it will cost \$1.5 trillion to achieve net-zero emissions from international shipping by 2050. India's shipping sector must set aside over \$100 billion to survive in a low carbon future.

market, so buyers can consider not only the outright price of the fuels, but also how far their ships can sail on them and what they will pay to burn them on EU-linked voyages.

Intermediate and long-term fuels

The fuel we use is hydrocarbon and will continue to be so, but the feedstock used for producing that fuel and the production path will be different from what it is today. For instance, to make green Methanol, Hydrogen or Ammonia, it must come from renewable sources like wind, solar or hydro power. The feedstock used must be renewable, for instance hydrogen can be obtained by splitting water into hydrogen and Oxygen, while carbon can be obtained from certain feedstock to make hydrocarbon.

"Currently Methanol is already in use for the past 6 years and is largely traded. Now Methanol can be produced from LNG and coal, but these fossil fuels don't give environmental benefit. The benefit is in using green Methanol. Many container liners are trying to produce green Methanol, it is a viable fuel, easy to handle as compared to Ammonia or Hydrogen. And we can see Methanol being widely used by 2050," suggests Indra Nath Bose.


Coming to LNG, there is still a lot of debate on its environmental benefits, because many still consider it as a fossil fuel. Lifecycle Assessment guideline to gauge the entire CO₂, NO_x, Methane emissions right from production to combustion of the fuel, is being developed by IMO, which will tell us

how much one fuel is environmentally beneficial over the other. These guidelines will be able to tell us if LNG is indeed a preferable bunker, until then those who have invested into this fuel or are planning to invest need to keep their fingers crossed.

A 2024 study had revealed that green ammonia would be a very viable option to decarbonize international shipping by 2050. This could be used to fuel the demands as much as 60% of the global needs. And this takes almost about UD\$2 trillion of investment to put up the facility in about ten fuel ports globally.

However, industry experts opine that rather than one fuel, the industry will select different fuels for different types of ship, and it is important not to eliminate any of the current options too early as an industry.

At this point in time when no green fuel is under production at scale and available, it is difficult to guess which future fuels will survive, or which of ammonia, hydrogen, methanol, LNG, LPG or additives-rich biofuels might dominate. Biofuels could play an important role in the short term as they presented no technical challenge.

Nothing combines energy intensity, cost and convenience quite like fossil fuels. Their low-carbon alternatives – will have less energy content and their own safety risks. Also, we need to understand the variations in physical properties of these fuels and the implications. A lot of studies and experiments are in-progress as we write this story and which fuels will dominate in the future, only time will tell the story. 

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It is a global race to meet the deadlines set by the International Maritime Organisation and other agencies, for the staggered decarbonization of the maritime sector. The objective is to limit global temperature rise to 1.5-degrees Celsius. What is maritime decarbonisation and why is it important? And how is the Indian Government dealing with this mammoth task?

One of the main culprits responsible for global warming is the maritime industry. Shipping is hard to decarbonize firstly owing to its global nature and secondly due to the wide range and types of vessels, and equipment involved. Further maritime interfaces with the hinterland transportation modes like trucks and rail. Studies have shown that Global emissions from all vessels account for about 3% of total GHG emissions each year.

The process of decarbonization of the maritime sector has been a slow and arduous process.

The task ahead is gargantuan. What are the challenges in implementing the GHG strategy? The IMO Secretariat in a detailed email response to Maritime Gateway stated, "the shipping sector

has undertaken an ambitious agenda to achieve net zero by or around 2050. The 2023 IMO Strategy for Reduction of GHG emissions requires the uptake of alternative zero and near-zero GHG fuels and technologies in the maritime sector by 2030. It also aims to reduce annual GHG emissions by at least 20% by 2030 (striving for 30%) and 70% by 2040 (striving for 80%), compared with 2008 levels."

They had further stated that there was also a need to consider issues such as safety, regulation, pricing, infrastructural availability, lifecycle emissions, supply chain constraints, barriers to adoption and more. The shift to green shipping would entail costs - for instance, UNCTAD reports that an additional \$8bn-28bn will be required annually to decarbonise ships by 2050, and even more substantial investments, ranging from US\$28bn to US\$90bn every year, will be needed to develop infrastructure for 100% carbon-neutral fuels by 2050.

However, "there was also a need to consider issues such as safety, regulation, pricing, infrastructural availability, lifecycle emissions, supply chain constraints, barriers to adoption

REGULATORY SCENARIO IN MARITIME DECARBONISATION

The aim of IMO is to promote energy transition and give the world fleet an incentive, while contributing to a level playing field. Handholding will also be provided to Least Developed Countries and Small Island Developing States through the transition.

By Vijay Kurup

and more.

The Secretariat further stated that the IMO's strategy for GHG emissions reduction was committed to a just and equitable transition - each step should be holistic and supported by research and international consensus. In that vein, member states were currently considering various proposals to deliver on the reduction targets, comprising of both, a technical element, namely a goal-based marine fuel standard regulating the phased reduction of the marine fuel's GHG intensity and an economic element, based on a maritime GHG emissions pricing mechanism.

IMO was currently working on an impact assessment to look at the potential impacts of the measures being proposed on Member States, which will inform decisions on how to move forward. The aim is to promote the energy transition and give the world fleet an incentive, while contributing to a level playing field and a just and equitable transition. We also want to support Least Developed Countries and Small Island Developing States through the transition.

A timeline has been set, following IMO processes:

March 2024 – Advance discussions

of 'mid-term measures' to support emissions reduction in the medium term. These measures include a global marine fuel standard and pricing mechanism. An interim report of the impact assessment that these measures will have on countries will be considered by the Marine Environment Protection Committee at its 81st session (MEPC 81).

October 2024 – Finalisation of impact assessment (MEPC 82)

Spring 2025 – Approval of measures (MEPC 83)

Autumn 2025 – Adoption of measures (six months after MEPC 83).

How has India taken up its war against decarbonization?

India is a signatory to several international agreements aimed at mitigating greenhouse gas (GHG) emissions. In the Paris Agreement, India signed the Paris Agreement in 2015 and ratified it in 2016. Under this agreement, India has made voluntary commitments to:

- Reduce the emissions intensity of its GDP by 33-35% by 2030 compared to 2005 levels.
- Increase the share of non-fossil fuels in the electric power mix to 40% by 2030.

- Create an additional carbon sink of 2.5-3 billion tonnes of CO₂ equivalent through additional forest cover by 2030.

Prime Minister Modi's Amrit Kaal Vision 2047, *inter alia*, is focussed on India's clean energy goals and climate action plans. It emphasises sustainable development and a "green" future for India. This inherently involves reducing reliance on fossil fuels and transitioning towards cleaner energy sources.

India has commenced the process of turning Tugboats into Green Hybrid Tugs. These would be powered by green hybrid propulsion systems under the Green Tug Transition Programme (GTP) launched by the Ministry of Ports, Shipping, and Waterways as part of its new policy. Under this programme the tugboats used in ports would be converted to 'green tugs' that run on non-fossil fuels such as methanol, hydrogen, or ammonia. The policy is designed with an aim to reduce carbon emission in transport and become a global hub for green shipping by 2030.

The shipping ministry has set a target for the initial green tugs to start working in all major ports by 2025. At



least 50 percent of all tugs are likely to be converted into green tugs by 2030.

Harit Sagar Guidelines 2023, emphasis on use of Clean / Green energy in Port operation, developing Port capabilities for storage, handling and bunkering of greener fuels such as Green Hydrogen, Green Ammonia, Green Methanol / Ethanol etc. The guideline also provides a framework for the Major Ports for formulating an action plan for achieving targeted outcomes in terms of quantified reduction in carbon emission over specified timelines.

The Harit Nauka Guidelines, also commits to transport of passenger ships through inland waterways in an environment friendly and sustainable manner by adoption of low-emission fuel (CNG/LNG/electric/hydrogen/methanol).

Further the ministry has also introduced the country's first Centre of Excellence in Green Port & Shipping (NCoEGPS), which will develop a regulatory framework for the usage of wind energy for marine applications, and identifying suitable biofuel for blending with conventional marine fuels.

Under the International Maritime Organization's Green Voyage 2050 project, India has been selected to conduct a pilot project related to green shipping. Paradip Port, Deendayal Port, and VO Chidambaram Port will be developed as hydrogen hubs, capable of handling, storing, and generating green hydrogen by 2030. India is expected to become an exporter of green hydrogen.

The Indian railways have taken up

Decarbonisation cost

UNCTAD reports that an additional \$8bn-28bn will be required annually to decarbonise ships by 2050, and even more substantial investments, ranging from US\$28bn to US\$90bn every year, will be needed to develop infrastructure for 100% carbon-neutral fuels by 2050. The Indian shipping ministry has set a target for the initial green tugs to start working in all major ports by 2025. At least 50 percent of all tugs are likely to be converted into green tugs by 2030.

“Further the ministry has also introduced the country's first Centre of Excellence in Green Port & Shipping (NCoEGPS), which will develop a regulatory framework for the usage of wind energy for marine applications, and identifying suitable biofuel for blending with conventional marine fuels.”

cudgels to be carbon neutral by 2030. As of November 2023, approximately 60,000 km of broad-gauge network has been electrified. The Dedicated Freight Corridors (DFCs) are expected to reduce the carbon emissions of 457 million tons of CO2 over 30 years. In comparison to the cargo carried, the extent of energy consumed would also be less.

Any customer choosing to transport their goods by rail would be awarded Rail Green Points (RGP) which would reflect the savings of carbon emission by using rail. The figure would indicate the tonnes of carbon dioxide saved.

The transition to “green” would be a giant leap. Many promising green technologies are still under development or not yet commercially viable. Transitioning to new fuels and technologies requires significant investments in infrastructure and fuel availability, which can be expensive.

Methanol and ammonia engines will be available in the next five years. However, the development of the regulations lags the technological developments in both ammonia and hydrogen. India's port sector has been expanding. However, many ports lack the infrastructure to transition to greener technologies. Overall, the IMO's stance on decarbonization is ambitious but also recognizes the challenges involved. They are working on a range of strategies and initiatives to achieve their goals and encourage wider participation from the industry and governments. India has a long way to go, but it has begun well. As the proverb goes a task well begun is half done. 





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AN AGENDA FOR SHIPOWNERS AND SHIPPERS

T

he countdown has begun. The deadline is not too far off, considering the mammoth task ahead. The goal is to reduce Greenhouse Gas (GHG) emissions to net zero by 2050. More than 130 countries have set or are considering to reduce GHG emissions to net zero by 2050. India has not committed to the deadline of 2050. However, India's official target is to reach net zero emissions by 2070. What are the Indian Shipowners' and shippers' plans to grapple with the looming change?

The government is considering several measures to ease the Indian shipowner's shift to the new dispensation. It is offering a mix of policies, incentives, and initiatives

Many Indian ships are relatively old, making immediate technology retrofits difficult and costly. Availability and affordability of alternative fuels, along with necessary bunkering infrastructure, remain a challenge for scaling up the transition.

By Vijay Kurup



to Indian shipowners. Some of the measures that are likely to evolve are:

- Phasing out older, less fuel-efficient ships.
- Encouraging the use of cleaner fuels like LNG or biofuels.
- Implementing carbon pricing mechanisms for maritime emissions.
- Financial Incentives for adopting cleaner technologies such as LNG conversion kits, exhaust gas cleaning systems (scrubbers), or new builds with more energy-efficient designs.
- Offering tax breaks on cleaner fuels or investments in green technologies could impel shipowners to move towards decarbonization.
- The government might collaborate with financial institutions to develop green financing schemes that offer loans with lower interest rates for shipowners undertaking clean projects.

- Expanding the network of LNG bunkering facilities at major Indian ports is crucial for wider adoption of LNG as a cleaner fuel.

Shore Power Infrastructure:

Investing in shore power infrastructure allows ships to plug into the electricity grid at ports, reducing emissions while docked.

In a recent FICCI conference on Green Shipping & Ports, **R Lakshmanan, Joint Secretary, Ministry of Ports, Shipping & Waterways** said that they were looking at close to 5000 vessels over the next seven to ten years' time span, which would run on electricity. They were also coming up with more hydrogen fuel cell-based ferries, built by Cochin Shipyard Ltd, that were already operational with the Kochi Metro.

The Ministry of New & Renewable Energy (MNRE) has, on 1st February, 2024, come out with guidelines, called "Scheme Guidelines for implementation of Pilot projects for use of Green Hydrogen in the Shipping Sector". Under this mission MNRE will implement a pilot project that would entail existing ships would be retrofitted to enable them to run on Green Hydrogen or its derivatives.

Retro-fitting vessels would not come easy, **Rizwan Soomar, Chairman, FICCI Committee on Logistics & CEO and Managing Director, DP World** said, the solution is to either retrofit the 60,000 vessels with engines that can use the hydrogen or ammonia as a fuel, and then replace new vessels by 2050. But that, he felt, would incur a substantial amount of investments. Depending on the size, retro-fitting each vessel could cost almost ten to US\$15 million per ship. He felt that the better and viable option would be to have new ships. As the ship got closer to end of life, it was going to be more expensive to retrofit.

Many Indian ships were relatively old, making immediate technology retrofits difficult and costly. Availability and affordability of alternative fuels, along with necessary bunkering infrastructure, remain a challenge for scaling up the transition.

Rajeev Nayyar, President, Institute of Marine Engineers (India) says,

"The Ministry of Ports, Shipping & Waterways is looking at close to 5000 vessels over the next seven to ten years' time span, which would run on electricity. They were also coming up with more hydrogen fuel cell-based ferries, built by Cochin Shipyard Ltd, that were already operational with the Kochi Metro."



R LAKSHMANAN, IAS
JOINT SECRETARY, MINISTRY OF PORTS,
SHIPPING & WATERWAYS

"Implementing a decarbonisation strategy within the Indian shipping context, would be, specifically difficult, for the many small and medium stakeholders within the industry, who faced the challenge of the cost of transition. Further considering the lack of adequate infrastructure, be it in ship building, ship repairs or ports at large, adoption of green technologies and practices would be a challenge."

Many Indian shipping companies are prioritising fuel optimization by improving ship design, embracing operational efficiencies (like slow steaming), and investing in energy-saving technologies. Several major Indian shipping companies are already involved in transition towards cleaner fuels. Leading shipping companies

are starting to explore the potential of other alternative fuels like ammonia, hydrogen, and biofuels, often through research collaborations. They are engaging with national initiatives like the Indian Coastal Green Shipping Programme and collaborating with international partners for technology and infrastructure readiness.

Adapting existing ships with cleaner technologies would be expensive, while on the other hand, new builds with cleaner designs would not only be more future-proof but also involve significant investment. Nayyer says, "In addition, with India being a developing country the energy demand and the decarbonisation needs elsewhere in the industry could probably take precedence, making Indian Shipping laying stake for a small piece of the cake, making it very challenging and probably expensive."

The requirements for Energy Efficiency Existing Index (EEXI) and Carbon Intensity Indicator (CII) certification came into effect on 1 January 2023, will further have a significant impact on Indian shipowners, driving changes in operations, potentially impacting finances. Very simply put, EEXI measures the energy efficiency of a ship. CII is a measure of how efficiently a ship transports goods or passengers. It initiates the collection of data for the reporting of their annual operational carbon intensity indicator and CII rating. EEXI and CII go in conjunction.

Another imminent problem for the Indian shippers is the imposition of the European Union's proposed Carbon Border Adjustment Mechanism (CBAM), which would come into effect in 2026. The CBAM will require importers of goods into Europe or UK to start reporting on the emissions embedded in their products and pay for them.

This additional price would be imposed on all goods exported from India which during the process of production involved carbon emissions. Indian exports, particularly from those industries with high carbon footprints like steel and aluminium, plastics, industrial chemicals etc, would find themselves outpriced due to this additional imposition, as compared

to goods from exporters from other countries with lower carbon emissions. The CBAM is expected to impact India's iron, steel, and aluminium exports worth US\$8-\$9 billion.

Transitioning to cleaner production processes would inevitably involve upfront investments, thereby impacting their profit margins and competitiveness in the global market. The shift towards clean energy sources and materials could disrupt traditional supply chains. Indian exporters might need to find new suppliers who align with decarbonization goals. The Centre is exploring compensation to exporters to soften the blow of the carbon tax.

The Government has raised concerns that CBAM might unfairly target developing nations like India, which are still in an industrial development

stage. They are considering challenging it at the World Trade Organization (WTO).

The hydrogen fuel cell technology in India is in the nascent stage and holds immense promise for India's manufacturing sector.

How was the IMO facilitating collaboration and technology transfer between developed and developing countries to support decarbonization efforts in the global shipping industry? In an email response to Maritime Gateway, the IMO Secretariat said, "The 2023 IMO GHG Strategy acknowledges the challenges that developing countries, in particular Least Developed Countries (LDCs)

and Small Island Developing States (SIDS), may face in the implementation of the Strategy. Shipping will undoubtedly need new technologies, new fuels, and innovation to meet the GHG targets. There needs to be investment in R&D, infrastructure and trials."

IMO offers funding assistance for LDCS and SIDS through a series of capacity-building and technical cooperation programmes.

Any change is not without challenges. But along with challenges come opportunities: Many countries are prioritising sustainability and clean products. Indian exporters who can demonstrate lower carbon footprints in their production processes could gain a competitive edge in these markets. 

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(Sd/-)
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JOURNEY TOWARDS NET ZERO SHIPPING

Hapag Lloyd is one of the first shipping companies in the world that have converted large container ships to dual-fuel propulsion

By A S L Narasimha Rao

Hapag-Lloyd has set a deadline of 2045 to operate netzero fleet by reducing the absolute GHG emissions. The carrier in its pursuit to go green has been initiating several measures in energy transition. In 2020 Hapag-Lloyd achieved fuel savings of about 15% with 39 vessels by removing the fouling on their outer hulls. Since beginning of 2020, the company has been operating its vessels using IMO 2020-compliant low-sulphur fuel oil, thereby reducing sulphur-oxide emissions by 70% compared to 2019.

Hapag-Lloyd first ordered six 23,500-teu LNG dual-fuel containerships from Hanwha Ocean in 2020, and it added 6 more sister vessels in 2021. The orders have a total price tag of about \$2 billion.

The carrier focused on new propulsion technologies for energy efficiency. It is the first shipping company in the world that has converted a large container ship to dual-fuel propulsion. The vessels operate using LNG. The initial test phase has started to employ bio-fuels based on used cooking oil. LNG however, is not a permanent solution for cleanest shipping, but Hapag-Lloyd continues to use it until alternate fuels emerge.

In September 2023, Shell started delivering LNG to Hapag-Lloyd's giant LNG-powered containerships in the Dutch port of Rotterdam under a deal. The vessels were delivered in 2023 are able to reduce carbon emissions

Hapag-Lloyd has also planned a pilot bunkering program with biomethane in 2024. For this they are partnering with a consortium for a Green & Digital Corridor between Rotterdam and Singapore.

between 15% and 25%.

Hapag-Lloyd increased the amount of bunkered biofuel blend to more than 200,000 tonnes. In 2023, it has deployed three new dual-fuel vessels which can run on LNG and alternative fuels. Hapag-Lloyd launched Ship Green, a biofuel-based solution for emissions-reduced transportation for its customers. The LNG bunker consumption of Hapag-Lloyd totaled 22,769 tonnes in 2023. It was 4,582 tonnes in 2022.

In December 2023, The CEOs of leading global shipping lines have issued a joint declaration at COP 28, calling for an end date for fossil-only powered newbuilds and urging the IMO to create the regulatory conditions to accelerate the transition to green fuels. The CEO of Hapag-Lloyd, Rolf Habben Jansen was part of that declaration and reaffirmed commitment to advance

the decarbonisation of the maritime industry.

In addition, Hapag-Lloyd joined the Green Corridor Consortium – an initiative between the ports of Rotterdam and Singapore to reduce emissions on this vital shipping route.

Hapag-Lloyd's local and global social engagement was expanded in 2023 with new partnerships including One Earth – One Ocean and 4Life Solutions. Through these collaborations, the carrier aims to help preserving the world's oceans.

In March 2024, Hapag-Lloyd began working on synthetic methane project to reduce emissions from its fleet of LNG-powered ships. The carrier converted 15,000-teu containership called Brussels Express into LNG retrofit.

Initial project design for synthetic methane produced from CO2 and green hydrogen, is currently in development. The shipping firm expects to be able to bunker the first quantities from 2026. The advantage of synthetic methane is that methane slip during manufacture is less than with the production of fossil LNG and can be monitored. Hapag-Lloyd has also planned a pilot bunkering program with biomethane in 2024. For this they are partnering with a consortium for a Green & Digital Corridor between Rotterdam and Singapore. It aims to reduce CO2 emissions on this main trading route by 20% to 30% by 2030. Hapag-Lloyd is part of the biomethane track and is working towards a pilot bunkering program in Singapore in 2024. 



THE QUEST FOR CLEAN FUELS

The path ahead for clean fuels is crystallising. There would not be one single fuel, but multi-fuels. The biggest hurdle confronting this transition is the quantum of investment involved and the safety for the storage and carriage of these fuels.

By Vijay Kurup

The world has come together in a concerted effort to find alternate fuels that produce less or no pollutants. CNG and LNG are now being used extensively. LNG bunkering facilities are crucial in supporting the transition to more eco-friendly and economically viable shipping operations. However, there is a basket of alternate fuels that are being considered.

Biofuels: Produced from organic materials like plants, algae, or animal waste. Examples include ethanol, biodiesel, and biogas.

Ethanol: A form of alcohol derived from

corn or other plant starches. It can be blended with gasoline to reduce emissions.

Biodiesel: A fuel produced from vegetable oils, animal fats, or used cooking oil. It can be used in diesel engines.

Biogas: A mixture of methane, carbon dioxide, and other gases produced by the decomposition of organic matter in landfills or manure from farms. It can be used for electricity generation or heating.

Hydrogen: When produced through electrolysis, hydrogen is a clean fuel

option, especially for applications like electric vehicles and fuel cells. When used as a fuel cell, hydrogen produces only water vapour. While hydrogen has a lower energy density by volume when compared to traditional fuels, it has high energy density by weight. Meaning that if you compare 1 cc of hydrogen with 1 cc of conventional fuel, then 1 cc of hydrogen will have less amount of energy. However, if you have 1 kg of hydrogen and 1 kg of conventional fuel, then 1 kg of hydrogen will have more energy packed in it than 1 kg of fuel, thus making it an exceedingly efficient instrument, as a fuel for ships.

Ammonia: The energy density of Ammonia per unit volume is lower compared to hydrogen. It is lower than most conventional fuels like gasoline, diesel, or natural gas. Green ammonia, produced from renewable energy and nitrogen, is being explored as a potential fuel for ships and other heavy-duty applications. When ammonia is used as a fuel the by-product is water and nitrogen.

Electricity: Electricity generated from renewable sources is clean power.

Rizwan Soomar, CEO and Managing Director, DP World, says, green Ammonia would be a very viable option to decarbonize international shipping by 2050. This could be used to fuel the demands for as much as 60% of the global needs. And this takes almost about USD\$2 trillion of investment to put up the facility in about ten fuel ports globally.

Where does India stand on alternate fuels? The government has introduced several guidelines.

Maritime Amrit Kaal 2047 envisages the share of renewable energy at ports to exceed 60% by the year 2030 and 90% by 2047. In this regard, the major ports in India are adopting renewable energy measures. Over the past couple of years, the renewable energy capacity at major ports has increased substantially by 1300%. Currently around 140 MW of renewable energy (solar and wind) is being generated at major ports. Visakhapatnam Port, Deendayal Port and New Mangalore Port have surplus renewable energy wherein New Mangalore Port is 100% solar powered.

Green port guidelines: The guidelines lay emphasis on use of clean/green energy in port operations, developing

“Waiver of inter-state transmission charges for a period of 25 years will be allowed to the manufacturers of Green Hydrogen and Green Ammonia for the projects commissioned before 30th June 2025.”

port capabilities for storage, handling and bunkering greener fuels.

Green vessel development: Indian shipyards are actively developing ferries and vessels (passengers/cargo) that will ply on various alternate fuels.

Harit Sagar guidelines:

- 50% electrification of ports equipment, including vehicles by 2030 and less than 90% by 2047. A few Port authorities are also working on the development of shore power-based infrastructure. Currently, all the major ports are providing shore to ship power facilities to port crafts and tugs. Going forward, all the major ports shall be equipped with shore to ship power facilities for EXIM vessels.
- Retrofit port crafts for propulsion on cleaner and greener fuel.
- Creation of infrastructure for storage, bunkering of green hydrogen.
- Green ammonia bunkers and refuelling facilities to be established at all major ports by 2035.
- Share of renewable energy at ports to exceed 50% by 2030 and by 90% by 2047.
- At Least one LNG bunkering station and adequate number of EV charging stations in port campus by 2030.

National Green Hydrogen mission:

The Government has set a production target of 5 million metric tons per annum of green Hydrogen by 2030. As part of Maritime Amrit Kaal Vision, all ports are working to have green hydrogen hub facilities. Three locations for these hubs have already been identified at Paradip Port, Deendayal Port and V.O. Chidambaranar Port. The Government is taking several measures to facilitate the

transition:

Green Hydrogen / Ammonia manufacturers may purchase renewable power from the power exchange or set up renewable energy capacity themselves.

Open access will be granted within 15 days of receipt of application. Waiver of inter-state transmission charges for a period of 25 years will be allowed to the manufacturers of Green Hydrogen and Green Ammonia for the projects commissioned before 30th June 2025. The manufacturers of Green Hydrogen / Ammonia shall be given connectivity to the grid on priority basis.

The benefit of Renewable Purchase Obligation will be a granted incentive to the hydrogen/Ammonia manufacturer and the Distribution licensee for consumption of renewable power. A single portal for carrying out all the activities including statutory clearances in a time bound manner will be set up by the Ministry of New & Renewable Energy (MNRE). Manufacturers of Green Hydrogen / Green Ammonia shall be allowed to set up bunkers near Ports.

The advantages of hydrogen and ammonia as a fuel are overwhelming, but the challenges are daunting no less.

Investment: A significant investment and technological advancement would be required for building a global network of bunkering facilities for alternative fuels.

Ship modifications: Hydrogen has a low energy density by volume compared to traditional fuels. This means ships would need larger storage tanks to carry the same amount of energy, potentially impacting cargo space.

Safety considerations: Hydrogen is highly flammable and explosive. Special safety measures would be needed during storage, transportation, and bunkering operations. Ammonia is not highly flammable, but containers of ammonia may explode when exposed to high heat.

Production costs: Currently, green hydrogen production costs are higher compared to traditional marine fuels.

Technology costs: The technology for hydrogen fuel cells is still under development, and the initial investment costs might be high.

Maturity of technology: Hydrogen fuel cell technology for large ships is still evolving, and its long-term viability and performance at sea need further demonstration. 📌

THE JOURNEY TO CARBON NEUTRAL SHIPPING: METHANOL MOVES AHEAD

The transition to a sustainable industry is a complex one, but Methanol's simple solution is increasing in popularity.



By Gregory Dolan
CEO, The Methanol Institute



The shipping industry's energy transition is picking up speed and its leading players are choosing Methanol as the fuel that can deliver short term emissions savings and play a long term role in lowering carbon emissions. Methanol engines, fuel supply technology, and bunkering solutions are commercially available and leading shipping companies including AP Moller-Maersk, CMA CGM, COSCO, Waterfront Shipping, and Stena Lines have already chosen methanol.

As a result, methanol has staked a significant claim to be among the serious fuel choices for vessel designers, owners, and operators looking to make a start on their transition to sustainable operations. As the shipping industry continues its transition towards net carbon-neutral operations, owners are increasingly seeking to understand how methanol can help them progressively reduce emissions in line with regulatory targets. While there won't be a single low-carbon fuel solution, it is clear that methanol has advantages that combine to provide a pathway to lower carbon and ultimately carbon neutral operations. From a technical perspective, methanol

can be adopted for use onboard ships on a large scale now and is five to six years ahead of alternative marine fuels such as ammonia.

Year of transition

2023 could fairly be called the year that Methanol went mainstream, with new Methanol capable vessel orders ahead of those for other dual fuel ship types, according to classification society DNV.

DNV's Alternative Fuels Insight platform logged 298 ships with alternative fuel propulsion ordered in 2023 – an 8% increase year on year – and a further 298 vessels booked for retrofitting to enable them to run on alternative fuels. Methanol saw a sharp increase in orders to 138 putting it just ahead of LNG at 130, DNV said. It is interesting to note that the 138 vessels that are methanol-capable exclude orders for methanol carriers though it is skewed heavily to container ships, followed by bulk carriers and car carriers.

It's good news for an industry still coming to terms with carbon neutrality and the IMO's ambition of net zero carbon emissions from shipping by 2050 but it is not the cause for complacency.



If anything, the scale of the challenge ramps up now. We are not yet at an inflection point, but we know what needs to happen next. Methanol bunkering options are increasing as the green corridor concept takes hold, albeit with an urgent need for more capacity. Filling those bunker lines means more production of conventional, blue, and renewable methanol, either as blended “drop in” biofuels or a “neat” standalone fuel.

Increasing Fuel Supply

The increasing demand is a signal well noted by producers, who are working to bring on stream additional volumes of methanol, using existing natural gas-based assets, recycling CO₂, incorporating green hydrogen or renewable electricity, and exploring carbon capture and storage. Because conventional methanol can also be burned on the new vessels, owners do have the opportunity to blend blue and green methanol with grey as production ramps up and ‘dial in’ the desired carbon intensity and price point they are looking to achieve. In February 2024, MI announced a partnership with Finland’s GENA Solutions on the development

of a database of bio-methanol and e-methanol projects. The database identified 131 methanol production projects globally, with the total projected capacity rapidly expanding to 19.5 million tonnes by 2028. Just two years ago, MI was tracking 80 projects with a total announced production capacity of 8m tonnes by 2027. Now there are more than 130 projects in the joint database, topping 16m tonnes in 2027, and 19.5m tons by 2028. Adding low-carbon methanol projects brings the total to nearly 24m tonnes.

The anticipated demand for methanol as a marine fuel is driving much of the interest in expanding the supply of methanol from conventional and low-carbon feed stocks. In the methanol industry, GENA has conducted studies on over 500 renewable and fossil fuel plants and projects globally. The analysis methodology involves a diligent examination of technologies, material balances, costs, emissions, schedules, commercial, and financial strategies for every facility within the comprehensive database. The project statistics encompass projects from pre-feasibility to operational stages, excluding closed

or frozen projects, as well as concept stage projects. The MI website now has an interactive global map featuring key information on biomethanol and e-methanol projects including location, owner, project status, feedstock, year of start-up, and total capacity.

For marine industry users, the website overlays this data with a listing of ports with methanol storage capacity, as well as ports offering methanol bunkering supply for the growing fleet of methanol-fueled vessels. There are currently 251 methanol vessels on the water or in the order book, including large container ships, chemical tankers, ferries, car carriers, and bulkers. A single large 16,000 TEU container ship can consume 35,000-40,000 metric tons of methanol per year. No matter the production feedstock or process, the methanol molecule is the same. This means that vessel owners can use conventional methanol today, and blend in more blue and green methanol as production ramps up. Essentially, you can ‘dial in’ the desired carbon intensity and price point you are looking to achieve. This is how methanol facilitates the transition. Vessel owners are clearly

signalling the desire for more low-carbon and carbon-neutral methanol, and the producers are stepping up.

Ports and Corridors

Developments at the world's largest bunkering port last year will likely lead to methanol bunkering operations becoming increasingly commonplace. The Maritime and Port Authority of Singapore recently issued an Expression of Interest which invites parties interested in supplying methanol as a bunker fuel at the port to submit their proposals by the end of February 2024. This is a development MI applauds and we are working to support the port authority's initiative to help the international shipping community decarbonize. Singapore's Maritime and Port Authority is actively developing plans to incorporate methanol into its bunkering pool and is anchoring two of the largest green corridors globally, including the Port of Rotterdam to Singapore Green Corridor and the Silk Alliance Green Corridor, which spans from Shanghai to Singapore.

Together with partners, MPA is working to demonstrate proof of concept that can underpin the transition and be scaled up progressively over time. In Japan, Maersk, together with the City of Yokohama, and Mitsubishi Gas Chemical have signed a Memorandum of Understanding for the development of green methanol bunkering infrastructure at the Port of Yokohama. The bunkering facility will be located at APM Terminal's Minami-Honmoku container terminal. In the EU, Equinor is supplying bio-methanol on a mass-balance basis from its existing plant in Norway to Laura Maersk, the first methanol dual fuel feeder vessel which entered service at the end of 2023. Meanwhile OCI Global is providing bio-methanol to Xpress Feeder Lines for their fleet hitting the water in the first half of 2024. Taiwan's Evergreen which ordered a slate of dual-fuel ships last year has signed a memorandum of understanding with the Port of Shanghai to develop the supply of green methanol bunker fuel to its ships. Shanghai International Port Group will handle the physical supply and bunkering services for the dual fuel ships as part of a broader strategy to develop a green methanol industry chain.

"Supply chain maturity must accelerate for owners to have full confidence that product will be available in volume – this includes production and supply in ports as well as seaborne cargoes and more green corridors."


Shippers and container lines alike are backing the Hong Kong government's plan to develop the city as a regional bunkering hub for next-generation ship fuels to retain existing business and lure back lost container volumes. The initiative was laid out in the government's action plan on maritime and port development published in December. Globally, out of the 30 ports now capable of offering methanol bunkering, five are in China. The work that got us to this point began with methanol producers including Methanex who pioneered the journey of dual fuel methanol engines a decade ago with its Waterfront shipping company and then by Proman that helped pave the way by building chemical tankers meeting safety requirements, enabling the crew to gain vital operational experience and facilitating the maturity of the engines being ordered today. The maiden voyage last year of the Laura Maersk, the first carbon-neutral container ship, was made possible by the supply of bio-methanol produced by OCI Global, and then transported to Busan, Singapore, Suez, and Rotterdam. The willingness of AP Moller-Maersk not just to move the model into a mainstream shipping sector but also to secure its future fuel supply chain is a demonstration of the commitment the wider industry will need to make at scale, whichever fuel they choose.

Retrofits

The shipping industry is moving into an era when retrofits and conversions to alternative fuels become practical. As one of the two alternative fuel options available today Methanol can now be used in a broader range of

newbuildings and vessel applications. In the longer term, the ability to convert conventionally fuelled engines to Methanol provides an additional level of future proofing. With the potential to build, as well as convert and retrofit to Methanol for both two and four-stroke engines, owners can make decisions with an increased degree of optionality and flexibility, knowing that conversion to Methanol will be a realistic option in the future. In the longer term, the conversion of a two or four-stroke engine to Methanol may not be the final stop on the journey as onward fuel flexibility increases and OEMs enable shipowners to look at other net carbon-neutral fuels as they become available. Methanol is already a powerful option. It has been proven as a safe, practical, and viable marine fuel on vessels from the very first conversion, Stena Germanica, to multiple product tanker newbuildings. New applications - from tugboats and crew transfer vessels to windfarm installation vessels, tankers, bulk carriers, and containerships - demonstrate that owners can place orders with confidence that their choice is a sustainable one.

Looking ahead

The signs are certainly positive; methanol provides a practical, implementable pathway for the maritime industry in terms of timescale, regulation, and fuel production. The technology is in place: proven, approved, and straightforward to implement in practice. More broadly, there remains the need to extend the net zero carbon toolset to onboard carbon capture, but this is true across the industry. Supply chain maturity must accelerate for owners to have full confidence that product will be available in volume – this includes production and supply in ports as well as seaborne cargoes and more green corridors. As the IMO develops its own GHG lifecycle emissions guidelines this year, it will be important to adopt a transition approach that facilitates the contribution of conventional, blue, and green fuels towards targets for low carbon and for net carbon neutral emissions. A market mechanism will ultimately be essential and is something the industry needs to work together to promote. 



THE PIONEER IN MANUFACTURING GREEN VESSELS

Cochin Shipyard Ltd (CSL) was in the national limelight recently when Prime Minister Narendra Modi inaugurated ₹4,000-crore worth infrastructure projects in Kochi. He expressed confidence that the port city in Kerala would soon become South Asia's largest ship-repair centre, with the addition of a new dry dock and international ship repair facility at a cost of around ₹2,800 crore. The recent expansion at CSL is in line with the central government's Maritime India Vision 2030, to position India among the world's top 10 shipbuilding and ship repair destinations.

Madhu S Nair, Chairman and Managing Director, CSL says, "Opportunities abound in the shipbuilding market, given the growing demand globally. The shipbuilding sector is set for greater growth primarily due to the challenges faced by ageing fleets the world over in meeting the new regulatory requirements, thus accelerating the demand for fleet replacements. Going by the order intake over the past 2-3 years at CSL and other yards in the country, we could be looking at much better numbers in the coming years."

Cochin Shipyard's share in the Indian ship repair market is about 50 per cent. The yard's new international ship repair facility adds about 25 per cent capacity.

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The new dry dock at CSL is 310 m long; the international ship repair facility is equipped to hoist vessels weighing up to 6,000 tonnes. The large capacity will not only buttress Kochi's prowess in shipbuilding and repairs but also facilitate the development of a business ecosystem in the region that encompasses micro, small and medium enterprises, as well as ancillary facilities. Larger vessels like aircraft carriers and LNG carriers can be accommodated, thereby cutting India's dependence on foreign nations for their construction and repair.

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The yard has built India's first hydrogen fuel cell ferry, which was recently launched virtually by PM Modi. It is undergoing trials. The new indigenous technology vessel has been developed by CSL in collaboration with Indian technology partners and would be propelled by an indigenous fuel cell, Nair explains.

Europe is set to become a major market for green vessels and CSL is already flooded with queries from companies primarily from Western Europe looking to transition to green shipping as part of their commitment to reduce carbon emissions. Madhu S Nair sees two types of demand—one from European short sea vessels, which are various type of cargo, multipurpose vessels plying largely within Europe; and the second from Commissioning Service Operation Vessel (CSOV) for offshore wind farms.

The shipyard has also delivered two autonomous electric barges for ASKO Maritime in Norway. This, along with the Kochi Metro vessels, has burnished Cochin Shipyard's credentials in the West European green shipping circuit. The shipyard has also developed India's first fully indigenous hydrogen fuel cell catamaran ferry vessel as a pilot project which was flagged off by Prime Minister Narendra Modi a few days ago.

The shipyard is actively participating in various green vessel programmes for domestic and international clients with alternative fuels. The component of green projects in the commercial order book of Cochin Shipyard is about 52%. Cochin Shipyard's transformative efforts on the innovative and new technology front are enabling the public sector unit to achieve new highs. 



A HYDROGEN HUB IN THE MAKING

Deendayal Port Authority (DPA) in Kandla has received 13 Expression of Interest (Eoi) to global call for applications to develop a green hydrogen hub at the port.

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s decarbonisation in maritime operations has picked up momentum in the recent years, the International Maritime Organisation (IMO), the United Nations specialized agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships has been pressing

the need for energy transition in shipping and preparing various global regulatory measures and guidelines for its member countries to curb growing carbon and other climate changing emissions through targeted mandatory timelines.

In its recently concluded Marine Environment Protection Committee

(MEPC 81), IMO made progress towards delivering its revised Greenhouse Gas (GHG) strategy, and illustrated how MARPOL Annex VI could be amended to accommodate an IMO netzero framework within the regulation, including the creation of a new Chapter 5 titled “Regulations on the IMO net-zero framework” which contains sections on both a goal-based marine fuel standard regulating the phased reduction of marine fuel GHG intensity and an economic mechanism to incentivise the transition to netzero.

Energy Transition Measures in Indian Shipping

Joining the IMO’s regulatory pursuit for netzero transition in shipping, India too has adopted various measures for the green transition in shipping. In May 2023, the Ministry of Ports, Shipping & Waterways has launched ‘Harit Sagar’ Green Port Guidelines 2023 to achieve its vision of zero carbon emissions. The guidelines aim to align with the ‘Working with Nature’ concept, minimize the impact on the biotic components of harbour

ecosystems, and promote the use of clean/green energy in port operations. Under Harit Sagar programme, Centre aims to cut down on waste through the 4Rs – reduce, reuse, repurpose, and recycle – and achieve zero waste discharge from port operations and promote monitoring based on environmental indicators.

As part of energy transition the Ministry of New and Renewable Energy is implementing the National Green Hydrogen Mission, launched by the Government in January 2023, with an outlay of Rs 19,744 crore. The overarching objective of the Mission is to make India the Global Hub for production, usage and export of Green Hydrogen and its derivatives.

The Union Minister for New & Renewable Energy and Power has informed that under the National Green Hydrogen Mission, the tender for selection of Green Hydrogen Producers for setting up Production Facilities for Green Hydrogen in India under the Strategic Interventions for Green Hydrogen Transition (SIGHT) Scheme (Mode-1-Tranche-I), has been awarded in January, 2024 to 10 companies for a total capacity of 4, 12, 000 tonnes per annum.

India currently ranks as the world's second-largest hydrogen consumer, consuming approximately seven million tonnes of gray hydrogen annually. The nation's hydrogen demand is projected to surge, with estimates suggesting it could reach 12 million tonnes by 2030 and an impressive 28 million tonnes by 2050. This escalation aligns with India's ambitious commitment to achieving net-zero emissions by 2070, as declared during the 26th UN Climate Change Conference.

The Ministry of Ports, Shipping and Waterways has identified three major ports viz. Deendayal, Paradip and V.O. Chidambaranar (Tuticorin) Ports to be developed as hydrogen hubs.

Two areas have been identified as thrust areas under the pilot projects. First is retrofitting of ships to enable them to run on green hydrogen or its derivatives. The second is the development of bunkering and

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The setting up of green hydrogen manufacturing, storage, and bunkering facilities may enable Indian ports to increase direct port calls as shipping lines may prefer a source of clean fuel for their onward journey, thereby aiding overall reduction in emissions.

refuelling facilities in ports on international shipping lanes for fuels based on green hydrogen.

Green Initiatives at Deendayal Port

Green initiatives at DPA began in May 2023 with the announcement of 'Panch Karma Sankalp' programme launched by MoPSW, which offers 30% financial support for the promotion of Green Shipping. DPA under the Green Tug Transition Programme will procure two tugs. MoPSW also proposed to develop Deendayal Port as Green Hydrogen Hub.


Deendayal Port Authority (DPA)

in Kandla has received 13 Expression of Interest (EoI) to global call for applications to develop a green hydrogen hub at the port in November 2023. The EoI is for 7 million metric tonnes per annum (MMTPA) of green ammonia production.

In October 2023, Jakson Green inked an initial pact with Deendayal Port Authority to develop Rs 2,400 crore (\$0.29 bn) green ammonia plant at Kandla Port in Gujarat. This landmark project marks a significant milestone in India's sustainable energy transition, a company statement said. The agreement was signed on the sidelines of the Global Maritime India Summit (GMIS) 2023. The green ammonia facility, situated at Kandla Port, Gujarat, will be developed in a phased approach, with a projected annual production capacity of 1,33,000 tonnes of green ammonia.

Deendayal Port Authority (DPA) and renewable energy developer Statkraft have signed a non-binding Memorandum of Understanding (MoU) in November 2023. The primary goal of this collaboration is to identify suitable sites for the establishment of green hydrogen production facilities within Kandla Port, Gujarat. The agreement was formalized during the Global Maritime India Summit 2023 in Mumbai on October 17, 2023. It marks the initial step toward establishing a future green hydrogen hub at the Deendayal Port.

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India's endeavor to embrace green hydrogen not only aligns with its commitment to a sustainable future but also positions it as a frontrunner in the burgeoning global hydrogen economy. As the nation seeks to harness the potential of green hydrogen, collaborations like the one between DPA and Jakson Green, DPA and Statkraft are likely to play a pivotal role in this ambitious journey. 



SHOULD INDIA DEVELOP A DOMESTIC P&I CLUB?

While Indian tonnage is miniscule, but domestic P&I services can retain the insurance premium going outside the country, also expediting claim settlement.

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he Indian economy is intricately linked to shipping because 90% of exim cargo by volume and 70% by value moves through shipping routes. In the Amrit kal vision there are multiple stands on how the maritime interests of the country are being addressed. The first is the human element, wherein the plan is to take India's contribution to the global seafarer pool from 12%, to about 20%, the second major focus is towards a concerted effort in furthering the Indian tonnage, the third main objective is a complete shift in ease of doing business, reduction in the logistics cost and ensuring port-led industrialisation. Shyam Jagannathan, IAS, DG Shipping says,

"The situation in which one operates today, prima facie in shipping is not secure. When you have risk prone operating environment, how do you hedge the risk? This is where the entire connect of insurance part comes in. During GMIS 2023, Honourable Finance Minister had given clear cut mandate for establishing a P&I Club. But the question remains is the establishment of an Indian P&I Club justified?"

Let's look at the global insurance scenario, globally, there are 12 P&I Clubs which cover 90% of the global tonnage. So, how can India participate in this? Indian flagged tonnage is close to 13 million tonnes, of which, major players like SCI and Great Eastern

Shipping cover 50% of Indian flagged tonnage overseas.

As the size of Indian tonnage is so miniscule, Shyam Jagannathan adds, "Where is the case for an Indian P&I Club? Under the present dispensation of the Merchant Shipping Act, which is on the anvil of being revised to suit the requirements of blue economy and national maritime interests, we are also looking at carving out a dispensation for the new institutions such as the GIFT City. There more focus is on ship leasing and ship financing, subsequently. The essence is for third party liability coverage and we have been initiating under the committee multiple players in the insurance purview after the deliberations of the insurance sector to cover maritime risks. The focus essentially should be towards fine tuning the scope and terms of reference on how this Indian P&I has to be provisioned for and what should be the roadmap ahead?"

Adding further, Captain Manish Kumar, Nautical Surveyor- cum-Deputy Director General of Shipping says, "Indian tonnage is about 0.8% of the world tonnage and the premium paid to foreign P&I clubs is about Rs.120Cr, which is very miniscule as compared to the premium being paid to IG clubs. The Indian market is not so huge to go

for a P&I club, as Countries like Japan, China and South Korea have their own P&I clubs, underwritten by respective governments. The P&I insurance market is dominated by Western clubs primarily located in the UK where most major shipping companies are based. As the Indian market is not a major one, there are other options available like fixed premium, which some of the non-IG companies are providing on a fixed premium basis. This can be looked upon as an alternative till we have enough tonnage.”

Hariharan Subbiah, Senior Manager, SCI, P&I cover shares, fixed premium concept has gained popularity over a period of time as some group clubs have started this facility. The concept of India P&I is best placed to succeed with the existing marine insurance underwriters of India serving as its backbone. GIC can play a lead role along with sovereign assistance to cover catastrophic losses or larger claims.

But the fact remains, the market is dominated by IG clubs as they are providing most of the P&I coverage to ocean going ships. The reason is they provide utmost comfort to the charterer or the ship owner that at any point in time their coverage, reputation and capability of providing bank guarantee, moving vessels in troubled routes is not under question.

Taking a closer look at the Indian tonnage, another viable approach could be to bring the coastal shipping part first under the cover and then extending it to include the trips being done overseas.

The P&I Club will have major insurance verticals coming on a common platform. Other major elements to be planned for are the seed capital and underwriting by a sovereign guarantee, which is government of India and then handholding it to translate into an ecosystem which provides the first part of the coverage that is maritime insurance. “The other two aspects are of leasing where we are looking at avoiding the pitfalls of flags of convenience, undermining or cutting into the growth trajectory of Indian flag tonnage and ensuring that it grows. Ensuring the principles of Cabotage and right of first refusal

Shyam Jagannathan, IAS, DG Shipping

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remains with the Indian flag, allowing financial innovation and leasing for vessels, in specific focused entities like GIFTCity,” shares Shyam Jagannathan. To supplement this we also need to put in the support system of arbitration and also providing the seed capital along with skill sets to let this economy grow.

Advantages of having a local IG club


Ships operating in the coastal waters will have access to this P&I coverage, which can be customised for their requirements. The legal and arbitration matters can be solved in house. Claims settlement can be expected to be faster.

Challenges

Major challenges are the size of Indian tonnage, the insurance we are getting today is re-insured by the hydra market which is European. Fixed premium insurance companies are providing coverage but they are yet to provide a comprehensive coverage so that a large amount of liability can be covered such as oil pollution or wreck removal of an ocean going vessel. There are certain services beyond the P&I coverage such as the salvage operations, hiring an arbitrator, which need to be planned. The government should provide support in the form of regulatory framework. Currently we don't have the facility of mutual club insurance, but this can be introduced by amending of Insurance Act.

Protection indemnity covers include

- Liability in respect of damage to fixed and floating objects
- Collision liability (the one-fourth not covered under the marine hull policy)
- Liability for damage to vessel other than by collision
- Liability under towage contracts
- Removal of wreck
- Liability for loss of life, personal injury and illness
- Repatriation expenses in respect of crew

Marine insurance and arbitration are included under Vision 2047 of Amritkaal, wherein the government wants claim settlement to be decreased to a certain number of days by 2030. And by 2047, it should be further brought down to 15 days. The insurance premium from India that is going outside the country has to be retained within the country by increasing the insurance capacity. It also calls for optimum exploitation of P&I market. This can be done either by inviting all the P&I clubs to set up office in India or by setting up an Indian P&I entity. INSA, IRDAI and IFSCA are in talks with IG clubs and fixed premium companies, inviting them to set up business in GIFT City. A step in the right direction has been made, it's only a matter of time until Indian P&I market grows from strength to strength. 



LOWERING ADOPTION BARRIERS TO LOW CARBON FUELS

“There is a notable increase in the use of biofuel blends in Singapore and Rotterdam. While shipping’s experience with biofuels remains limited, the sector can leverage the learnings from road transport, which has used biofuels for more than two decades,” shares **Dr Sanjay C Kuttan, Chief Technology Officer, Global Centre for Maritime Decarbonisation**

What is the role of Global Center for Maritime Decarbonisation? Who are your partners and what is their contribution?

Setting up the Global Centre for Maritime Decarbonisation was a recommendation the International Advisory Panel for Maritime Decarbonisation submitted to the Singapore Government in April 2021. GCMD was established in August 2021 founded by six industry partners namely: BHP, BW Group, Eastern Pacific Shipping, Foundation Det Norske Veritas, Ocean Network Express and Seatrrium (formerly Sembcorp Marine). GCMD also receives funding from the Maritime and Port Authority of Singapore (MPA) for qualifying research and development

programmes and projects. GCMD’s mission is to support decarbonisation of the industry to meet or exceed the IMO goals for 2030 and 2050 by shaping standards, deploying solutions, financing projects, and fostering collaboration across sectors. GCMD actively seeks stakeholders who are willing to accelerate the deployment of scalable low-carbon technologies while lowering the adoption barriers by closing the gaps in infrastructure, safety, operations, and financing.

Tell us about your collaboration with companies for testing sustainable fuels and conducting fuel trials?

GCMD initiated a pilot in July 2022 to establish an assurance framework for drop-in green fuels, starting with biofuels.

This pilot, comprising 6 supply chain trials spread across 3 major bunkering ports - Singapore, Rotterdam and a port in the US, aims to establish an assurance framework for ensuring the supply chain integrity of green marine fuels.

To date, we have completed 3 supply chain trials with biofuels blended with conventional marine fuels at 24% (B24) and 30% (B30) and have deployed a swath of tracing techniques, including the use of physical tracers, carbon dating, chemical fingerprinting and a lock-and-seal methodology to track sustainable biofuels from their production facilities to their consumption onboard vessels. Additionally, industry-recognised documents validating their sustainability standards and certifications were also collected.

Upcoming in our pipeline, we have two other supply chain trials being planned: one out of the Port of Rotterdam with a different tracer and the other out of a port on the west coast of the US, testing a different supply chain. The data collected from these three completed trials will form the basis for our assurance framework for drop-in green fuels, which aims to provide emissions abatement assurance to shipowners/ charterers

when it comes to paying a premium for green fuels over fossil fuels. In addition, we are exploring the use of crude algae oil (CAO), a third generation biofuel as a drop-in biofuel for shipping sector. With a high productivity yield i.e., 10-25x, of oil per unit of area/ land, it has the potential to increase the supply of biofuels. CAO also has the potential to meet or exceed MEPC 80's 65% GHG emissions reduction requirement. Since the life cycle assessments (LCA) of CAO is highly dependent on the feedstock, we will be leveraging field data from the producer to evaluate emissions reduction potential of different alternatives. GCMD is studying the properties of CAO, consistency of CAO quality from a variety of sources, the specifications of CAO and CAO-blended VLSFO against ISO 8217 and its compatibility with engine OEMs.

How is Singapore positioning for bunkering of sustainable fuels or multi-fuel bunkering?

Just last month, Vitol has taken delivery of a specialised IMO type 2 notation bunker vessels that can bunker up to B100 biofuel blends based on customer needs. The use of biofuels, combined with the use of fuel-saving energy efficiency technologies, will also help to meet IMO 2030 requirements.

In addition to biofuels bunker vessels, LNG bunker vessels are also in operation and this established value chain can pave the way for the introduction of bio-LNG in the near future, where bio-LNG can be available as a drop in green fuel. However, for LNG, one must be cognisant over the issue of methane slip. To quantify both upstream and fugitive emissions, LCAs are necessary to achieve emissions reduction targets.

As for future green fuels i.e., bio-methanol, green methanol, green ammonia, we have a mixed scenario. The methanol bunker vessels construction has already been commissioned, following the methanol bunkering trial in 2023 and the deployment of methanol fuelled engines. Meeting the IMO 2030 requirements would depend on the LCA of the methanol being supplied which could depend on the acceptance of mass balance accounting methodologies or the use of drop-in green / low carbon methanol.

To date, we have completed 3 supply chain trials with biofuels blended with conventional marine fuels at 24% (B24) and 30% (B30) and have deployed a swath of tracing techniques, to track sustainable biofuels from their production facilities to their consumption onboard vessels.

What are the technical challenges to the adoption of low carbon fuels?

Their volumetric energy density is significantly lower than VLSFO or MGO i.e., LNG is about 2x, Methanol ~2.5x, Ammonia ~2.8x and Hydrogen ~4.5x.

Flammability and/ or toxicity properties will require special design e.g., double walled piping, handling and safety procedures as well as training for seafarers and bunker operators. Cryogenic nature of LNG and Hydrogen will also increase the technical requirements to handle embrittlement. Other key considerations, alongside the price point of low-carbon fuel alternatives are also crucial, such as: Adherence to life cycle analysis of Well-to-Wake GHG emission footprint taking into account of methane slip, nitrous oxide and other GHG to qualify for emission reduction efforts.

High dependency on green hydrogen and biogenic carbon, or effective sequestration or other carbon capture systems dictates low carbon fuels production

How far have the bunkering companies and shipping lines come to terms with biofuel blending?

There is increase in use of biofuel blends in two major bunkering hubs (Singapore and Rotterdam). Bunkering volumes rose from a negligible amount in 2020 to a combined volume of 0.3 million MT in 2021, 1 million MT each in 2022 and 2023.

However, the sale of biofuel blends


account for only ~1.7% of total bunker sales at these two bunkering hubs. In 2022, biofuels accounted for 0.11% of all fuels consumed by vessels 5,000GT and above; this volume represents only 0.6% to 0.7% of the global annual biodiesel production. While shipping's experience with biofuels remains limited, the sector can leverage the learnings from road transport, such as trucking, which has used biofuels for more than two decades.

What are the technologies for carbon capture and storage onboard ships? How can shipping lines benefit from this process?

Essentially the technologies can be pre-combustion or post-combustion capture technologies using membrane, chemical or cryogenic methods of CO₂ separation. While land-based carbon capture solutions are available, the marinising of these solutions is a challenge and require the following to be considered:

The difference in the installed environment (land vs shipboard) Suitability of the chosen carbon capture solutions and storage options Management of the captured CO₂. Selection of the different systems and capture targets affects the economic consideration of the installed OCCS system. The OPEX is influenced by the operating fuel, energy, consumables and CO₂ offloading activities while the CAPEX is directly linked to the installed configuration of the pre- or post-combustion treatment system and the onboard storage for the consumables and captured carbon dioxide

It is challenging to meet the IMO 2030 target because zero-carbon marine fuels will not be available at scale or at pace globally. It is forecasted that a sizable portion of the two-stroke fuel-mix for large merchant vessel will still be based on a single fuel (fossil and drop-in biofuels) i.e., 85% in 2030 and 34% in 2050.

It is anticipated that before alternative fuels become widely available, these future-ready vessels will still need to operate on existing available fuels. This presents an opportunity for onboard carbon capture and storage systems to assist with the GHG emission reduction. 



"Bunker suppliers and users need to conduct early trials. Don't treat the new green fuels as the same as fossil fuels which they are not. Understanding these new fuels is very important and then building the required quality control measures and management practices is key," suggests **Capt. Rahul Choudhuri, President, Strategic Partnerships, Veritas Petroleum Services.**

Fuel complexities are changing with the sulphur limit regulations. How are they impacting fuel blending?

The primary Sulphur level changes came in 2020 with the global IMO implementation of 0.5% Sulphur limit. This has resulted in the advent of the so called Very Low Sulphur Fuel Oil or VLSFO which is now the most popular low Sulphur fuel for shipping. Our test records show that 60% of global fuels fall in this category. The VLSFO is a blended fuel to meet the lower Sulphur but come with other challenges such as cold flow & stability due to being more paraffinic in nature.

How is the scenario changing for fuel quality management in the coming days?

The greater the fuels are blended the greater the need to pay attention to how marine fuel are managed & used onboard vessels. Top quality shipowners have detailed quality control checks in place where they not only follow basic ISO Standards, but also conduct additional quality tests that are above and beyond these. We call these the Additional Protection Package (APS) & these are individually tailored to whether you are using the VLSFO, or other fuels types such as HSFO or MGO.

What will be the new challenges for bunker suppliers in adapting with low sulphur fuels? What will be the change in skillsets required?

This will really depend on the types of future green fuels that will come into the marine market.

Each type of green fuel such as Biofuels, Methanol or Ammonia will need a new set of skills. So, training and quality of seafarers will need to be upgraded substantially as the consequence of an accident or mistake e.g. using Ammonia as a fuel will be catastrophic.

What will be the new safety, technical and commercial challenges related to use of low sulphur fuels?

Let us take Biofuels as an example.

The use of Biofuels has picked up speed over the last few years. We have seen an increase in our testing of Biofuels more than double last year. The Biofuels volumes in the Port of Singapore grew almost 5 times last year. The Port of Rotterdam saw their volumes double. Overall last year global Biofuels supplied to vessels was about 3 million metric tons. Although this is still small in a marine industry where 300 million metric tons of fuels is supplied every year, the

momentum is picking up.

The safety, technical & commercial challenges will follow the new green fuels. Each will be different.

Again, if we take Biofuels as an example, we see that the key technical challenges will be related to fuel stability as they can form water emulsions & cause microbial growth & corrosion. So, storage period can be a constraint. But these are not insurmountable if proper quality controls of Biofuels are put in place. We call these the Biofuels-APS Program. But to reiterate, these Biofuels are not fossil fuels and a new understanding is needed.

Commercially the industry will need to pay more for e.g. Biofuels which presently have a 30-40% premium. Also, issues like lower energy content needs to be considered.

Five years down the lane which type of fuels will be largely in demand and available for supply? What type of fuel mix is expected to emerge in the coming years?

It does seem that Biofuels have an inherent advantage as they are an easy 'drop in' fuels and can be blended into existing marine fuels. This is like Biofuels blends used in the automotive industry for many years. So, the technology and use are already there.

Other green fuels such as Methanol and Ammonia are at various stages of development. e.g. The port of Singapore did the first Methanol bunkering middle of last year. We were also involved at that time, and were hired by Maersk, to do the end-to-end quantity & quality control. So, procedures are already being put in place.

Last month, the Port of Singapore conducted the first Ammonia as fuel bunkering operation.

What will be the advantages and risks for early movers in adapting the low sulphur fuels?

There is a big advantage for early movers. e.g. about 15% of our ship owning clients have already tried and tested use of Biofuels on their vessels. This allows them to understand the characteristics and behavior of these green Biofuels, so they are ready to adopt it at a larger scale quite quickly.

Biofuels - Technical & commercial challenges

The safety, technical & commercial challenges will follow the new green fuels. Each will be different. Again, if we take Biofuels as an example, we see that the key technical challenges will be related to fuel stability as they can form water emulsions & cause microbial growth & corrosion. So, storage period can be a constraint. But these are not insurmountable if proper quality controls of Biofuels are put in place. We call these the Biofuels-APS Program. But to reiterate, these Biofuels are not fossil fuels and a new understanding is needed.

Each type of green fuel such as Biofuels, Methanol or Ammonia will need a new set of skills. So, training and quality of seafarers will need to be upgraded substantially as the consequence of an accident or mistake e.g. using Ammonia as a fuel will be catastrophic.



There is also the green profiling and sustainable reporting that is gaining in importance.

The risk is probably linked to the commercial cost of such trials and additional management time and effort on all parties. But the benefits are obvious I would think.

As an expert, what is your advice to the bunker suppliers and users?

They need to conduct early trials. Be early movers and do your homework. As I mentioned, don't treat the new green fuels e.g. Biofuels as the same as fossil fuels which they are not. So, understanding these new fuels is very important & then building the required quality control measures and management practices is key.

Tell us about the role of Veritas Petroleum Services in providing cleaner alternative sources of fuel to the global market?

We are not a fuel supplier. VPS provides decarbonization services that looks at alternative fuel quality control in terms of testing, software solution to reduce emissions by energy efficiency & hardware solutions to measure all emissions as accurately as possible. Our tools will enhance the sustainability position of shipping companies in an era where this focus is fast becoming mandatory to survive the future decarbonization targets set by the IMO.

Visit VPS at <https://www.vpsveritas.com/>.



THE TRANSITION TO GREEN SHIPPING

“Training of seafarers in operating and maintaining Hydrogen-fuelled ships is a crucial aspect of transitioning to green shipping practices. IRS is also developing specific training programs for various alternate fuels for its surveyors and will also be very shortly offering such courses to seafarers,” informs **Vijay Arora, Managing Director, Indian Register of Shipping (IRS)**

We have the government as the regulator, then we have the bunker suppliers, shipyards and the ship owners/operators. Are all these parties on the same page with respect to emission compliance and how it is to be achieved step by step?

As a signatory to the Paris Agreement, Government of India (GOI) has outlined policies towards meeting the climate goals. GOI plays a crucial role in developing policies and creating an enabling environment towards emission reduction and providing frameworks for compliance. Initiatives like Maritime India Vision 2030 and Maritime Amrit Kaal Vision 2047 provide the roadmap for the future developments towards emission reduction.

There is a concerted effort among stakeholders to address emission

compliance and transition towards cleaner fuels. Shipyards, shipowners, operators, and other stakeholders in marine business environment all are increasingly recognizing the importance of emission reduction and are taking positive steps in their own way in their areas of business. This includes the adoption of cleaner fuels such as biofuels, and other alternative fuels, investing in technology upgrades to improve fuel efficiency & reduce emissions and building technology demonstration vessels.

Considerations such as cost implications, availability of alternative fuels, technological limitations, and infrastructure availability pose challenges that require collective effort to address which over a period of time will be taken care of.

Other than Cochin shipyard do

other shipyards have the capability to manufacture/retrofit ships to operate on green fuels? Do we have all the engine parts available indigenously or do we depend on imports for building green ships?

Several Indian shipyards both public & private sector possess the capability and are actively working towards construction of vessels using alternate fuels.

Regarding the availability of engine parts, while some components are sourced domestically, certain specialized parts may require importation. Efforts are ongoing to enhance domestic production capabilities to support the construction of green ships. Initially it is considered that it could cater to ships being built on battery systems and fuel cells.

How can we attract more green ships being produced to be registered under the Indian flag?

GOI has taken several measures over the years including Financial Assistance Policy, granting of infrastructure status for shipbuilding, disincentivising old ships, accelerating Make in India program, Green Tug Transition Program and amongst other initiatives.

Additionally, fostering a conducive environment for innovation and technology adoption can attract ship owners to register their vessels under the Indian flag.



Indian yards gear up

Several Indian shipyards both public & private sector possess the capability and are actively working towards construction of vessels using alternate fuels. Regarding the availability of engine parts, while some components are sourced domestically, certain specialized parts may require importation. Efforts are ongoing to enhance domestic production capabilities to support the construction of green ships. Initially it is considered that it could cater to ships being built on battery systems and fuel cells.

Among the green fuels available or being tested, which is the most cost efficient and easy to adopt for shipping lines?

Determining the most cost-efficient and easily adoptable green fuel for shipping lines involves assessing various factors such as fuel availability, infrastructure readiness, technological maturity, and regulatory compliance. While several green fuels are being explored, including LNG, ammonia, methanol and biofuels, the optimal choice may vary depending on specific operational requirements and regional considerations.


What is the current cost of compliance for ship owners in using Hydrogen fuel for bunkering as compared to conventional fuels?

The current cost of compliance for ship owners utilizing hydrogen fuel for bunkering compared to conventional fuels involves multiple variables, including fuel procurement costs, infrastructure investment, regulatory compliance expenses, and operational efficiency gains. As hydrogen fuel infrastructure and technology mature, cost differentials are expected to evolve, potentially narrowing the gap between conventional and hydrogen-based fuels. The initial focus will be on mandatory requirements hence the cost is likely to be high which will subsequently reduce as the market matures.

Efforts are ongoing to enhance domestic production capabilities to support the construction of green ships. Initially it is considered that it could cater to ships being built on battery systems and fuel cells.

The training of seafarers in operating and maintaining hydrogen-fuelled ships is a crucial aspect of transitioning to green shipping practices. Currently, initiatives are underway by various training institutes to develop specialized training programs and courses tailored to the unique requirements of alternative fuels.

What is the current scenario of training to seafarers in operating and maintaining hydrogen fuelled ships?

The training of seafarers in operating and maintaining hydrogen-fuelled ships is a crucial aspect of transitioning to green shipping practices. Currently, initiatives are underway by various training institutes to develop specialized training programs and courses tailored to the unique requirements of alternative fuels. These programs aim to equip seafarers with the necessary skills and knowledge to ensure safe and efficient operation while adhering to stringent safety protocols and regulatory standards required by alternative fuels. IRS is also developing specific training programs for various alternate fuels for our surveyors and will also be very shortly offering such courses to seafarers. 



SHIP BUILDING IS THE MOST PROMISING CAREER

"With the regulatory framework and the demand increase, more than 50,000 ships are to be built in less than 30 years. That is a lot of work to be done!" says **Antony Prince, President & CEO, G T R Campbell Marine Consultants Ltd.**

Does a ship design has a far reaching impact on the entire lifecycle of the ship? Please explain?

Yes indeed. I always tell my team and Clients that "the profitability of a ship building project is decided on the drawing board". Ship design has a significant impact on the entire lifecycle of the vessel. Some key points which are decided by design are:

Performance and Efficiency

The design determines the ship's performance characteristics, such as speed, maneuverability, cargo carrying capacity, stability, habitability, and fuel efficiency. A well-designed ship can operate more efficiently throughout its lifespan.

Construction & Operational Costs

A good designer considers construction aspects from early stages of the design, including material availability, weight and space limitation of yard facilities, optimum block arrangement, accessibility during construction, etc. Design choices also impact maintenance requirements, repair costs, and operational efficiency over the ship's lifespan. Factors such as selection of equipment, accessibility for maintenance, ease of repair, and the use of durable materials all contribute to the cost-effectiveness of the vessel.

Lifecycle Environmental Impact

Ship design influences environmental factors such as emissions, noise pollution, and

ecological impact. A sustainable design can minimize the environmental footprint of the vessel throughout its lifecycle.

Adaptability and Upgradability

A well-thought-out design allows for future modifications, upgrades, and retrofits to adapt to changing regulatory requirements, technological advancements, and operational needs. This flexibility extends the ship's useful lifespan and enhances its value over time. For example, one of the most perplexing questions to a ship owner today is what fuel he should consider for his new building projects. Five years ago, we came up with 'alternate fuel ready' concepts for handysize bulk carriers which would give clear pathways for retrofit of multiple fuel options.

In the recent past there has been a trend of ordering huge mega sized vessels to bring down the logistics cost and the current trend is towards developing ships that run on green fuels. Over the years what has changed in the ship designing with these trends?

Many things have changed in ship designing over the years. The

regulatory environment has become stringent over the years and the awareness of environmental impact have increased tremendously. The two aspects – trend of ordering mega sized vessels and trend towards developing ships that run on green fuels are having significant influence on the ship designs.

Some key points are - Mega sized Vessels:

The major challenges for mega vessels are stability, strength, and control systems. Advanced stability control systems, dynamic positioning technology, and enhanced navigational aids are being integrated to improve the safety of mega-sized vessels.

The structure design gets extremely challenging with complex cargo loading and unloading requirements, environmental loading and fatigue considerations, weight distribution and stability, and requirement of designing with plates and stiffeners of very high scantlings.

Mega ships present operational challenges related to navigation in confined waterways, port access limitations, berthing restrictions, and interaction with other vessels in congested shipping lanes. Designers must account for these operational constraints.

Apart from new builds a lot of ship owners are going for retrofitting or re-engineer ships to meet new regulations, improve efficiency & versatility, enhance capacity, or even convert the vessel type. How do you help these customers?

Improving the efficiency of the existing fleet is a major challenge. The average age of the world commercial vessel fleet is over fifteen years now and it is important that we operate them in the most efficient way for the next five to ten years.

We help our customers in evaluating their options for suitable technologies, equipment, and solutions for retrofitting or re-engineering purposes, taking into account the specific requirements and constraints of the vessel, technical feasibility, cost effectiveness, and

A well-thought-out design allows for future modifications, upgrades, and retrofits to adapt to changing regulatory requirements, technological advancements, and operational needs.

regulatory compliance. This may include propulsion system upgrades, emission control systems, fuel efficiency improvements, structural modifications, and more.

Does a ship design influence the charter rates of a ship?

Yes, ship design can indeed influence the charter rates of a vessel, and a better-designed ship can often command higher charter rates.

Some key points are as listed below.

Efficiency and Performance

The possibility of design optimisation with various engineering techniques including CFD, FEA, etc. have improved tremendously over the years. A vessel with optimized hull design, advanced propulsion systems, and fuel-efficient engines can consume less fuel and operate more cost-effectively, leading to lower operating expenses for the charterer.

Cargo Capacity and Flexibility:

This has been my trademark for all my designs. The design of the ship's cargo holds, loading/unloading equipment, ballasting / de-ballasting system and overall layout can affect its cargo capacity and flexibility. A vessel that can accommodate a wide range of cargo types, sizes, and loading/unloading methods will be more appealing to charterers, especially in dynamic market conditions where cargo requirements can vary.

Could you share some latest technology trends in ship designing?

Some of the latest technology trends in ship designing include:

Advanced Computer-Aided Design Software for design, analysis, and detailing. Virtual Reality (VR) and Augmented Reality (AR) which gives a much more immersive experience to various parties involved in the project.

Usage of advanced materials and construction techniques including usage of high strength, low weight materials and robotic building techniques. Digital twin technology, Smart ship system and automation, alternate propulsion technology like wind assisted propulsion. Artificial intelligence - AI and machine learning algorithms are being applied to ship design and operation to optimize performance, predict maintenance needs, and improve decision-making.

Where do Indian shipyards stand in the global scenario in terms of quality, expertise and use of technology?

Except for cruise vessels, most of the commercial vessels are being built in China, Korea, and Japan. India's capabilities and capacities are no way comparable to these countries when it comes to commercial ship building. Personally, I feel, we can build quality vessels. My experience at Cochin Shipyard has been excellent. They built vessels which outperformed those built in China for the same design. However, I don't think it can be generalised to Indian ship building industry.

We have to go a long way when it comes to planning, skill development, usage of technology, engineering, infrastructure development, and project management.

Does this sector offer a promising future for aspiring candidates?

I have been in the ship building industry for more than 52 years and I have never come across such an exciting time for the industry. With the regulatory framework and the demand increase, more than 50,000 ships are to be built in less than 30 years. That is a lot of work to be done! Combined with all the technologies and challenges we discussed; I believe the industry providing a promising future for aspiring candidates. 🇮🇳



PIONEERING DECARBONISATION OF LOGISTICS

“We want to achieve a 50% reduction in emissions intensity for ocean transportation and 25% of ocean transportation to be with green fuels by 2030. Similarly, there are interim 2030 targets for air freight, our logistics facilities and our terminals,” shares Vikash Agarwal, Managing Director, Maersk South Asia

What is more important – should decarbonisation be driven by intention or incentive?

At A.P. Moller – Maersk, decarbonisation is driven by intention. We believe that our industry’s impact on the climate is significant, and at Maersk, we have taken a firm leadership position in pioneering the decarbonisation of logistics.

Shipping lines target is now 20% reduction in emissions by 2030, 70% reduction by 2040 and complete decarbonisation by 2050. How is Maersk gearing up to meet these targets?

We committed to decarbonising logistics in 2010, long before the business case for net zero existed. We did this because it was the right thing to do.

We have set ambitious targets for the entire A.P. Moller - Maersk business to achieve net zero GHG emissions in 2040 – one decade ahead of our initial 2050 ambition. Our ambition is to reduce the scope 1, 2 and 3 emissions to zero or to a residual level that is consistent with reaching net-zero emissions at the global or sector level in eligible 1.5 degrees Celsius-aligned pathways. To achieve this goal, we have set interim targets, too, which will allow us to stay on track and gradually but surely reach where we want to be. For example, we want to achieve a 50% reduction in emissions intensity for ocean transportation and 25% of ocean transportation to be with green fuels by 2030. Similarly, there are interim 2030 targets for air freight, our logistics facilities and our terminals.

In ocean transportation, we have started ordering dual-fuel vessels that can run on green methanol. The world's first such vessel was already delivered to us last year, and in February, the first large vessel that can run on green methanol was put in service on the Asia-Europe route. Further, we have 23 more such vessels in our order books, all of which will be delivered and enter service within the next couple of years.

When investing in landside assets such as warehouses, we are exploring all opportunities to use renewable energy. We are deploying electric vehicles for our middle and last-mile distribution.

Should shipping lines absorb the entire decarbonisation cost or should it be distributed evenly across the stakeholders?

We believe decarbonising our operations is the right thing to do and an obligation that we have as a company. Sustainability is also increasingly becoming a strategic imperative for many customers. Almost 70% of our top 200 customers have now set their own net-zero targets. So, we believe that our customers are also invested in the ambition to decarbonise logistics.

With our decision to introduce green fuel-enabled vessels, we want to show the customers that we mean business and are ready to shoulder our part of the extra cost. At the same time, we need the ecosystem across the entire value chain to invest in this, all the way to the customers, whose commitment is very important. From our initial dialogues, we see our customers joining us in this.

Ultimately, we are also expecting the regulations to play their role. We need to close the price gap between green and fossil fuels – right now, with a financial mechanism effectively levelling out the price difference. We need to ensure a well-to-wake approach that is science-based and results in genuine emissions reduction.

How is the response from the cargo owners, do you see a demand from cargo owners to make their supply chains greener?

Globally, 23% of companies have established internal carbon pricing to improve investment decisions, and the trend is expected to grow to 45%

We committed to decarbonising logistics in 2010, long before the business case for net zero existed or before a technical path was clear. We did this because it was the right thing to do.

over the next couple of years. Several multinational companies working with us are already committed to only using net-zero emissions ships to transport their cargo by 2040. Almost 70% of our top 200 customers have their own net-zero targets, up from about 50% a little over a year ago. The number of customers buying our ECO Delivery product that offers low-emissions shipping is growing. All this clearly shows that there is a demand from cargo owners to make their supply chains greener.

However, in cost-sensitive markets such as India, smaller customers are still not willing to pay the extra buck for sustainability, and this has to change. This is also why we need a financial mechanism to level out the price difference between green fuels and fossil fuels in order to achieve scale and get everyone on board the journey to net zero.

Among the available fuel mix which eco-fuels is Maersk preferring to use?

Our fuel of choice for the new vessels is green methanol. We have chosen it considering speed, scalability, and cost.

Speed: We must act now to meet customers' demands and address the problems of our planet. Methanol engines are available in the market, so there is already experience with their safe operation.

Scalability: The green fuel quantities needed to propel our entire shipping fleet are gigantic. The technology for producing green methanol is mature

enough to scale, and several pathways for the production of green methanol are currently in use.

Cost: The long-term cost picture for the different fuels is not fully clear. Green methanol can be 2-3 times the price of fossil fuels based on foreseeable oil prices. However, with a growing demand, almost 200 green methanol-powered vessels have been ordered in the industry. Production is expected to scale, and the cost is expected to decrease.


Shipping industry will need 30% to 40% of the global supply of the carbon neutral fuels, if we are to reach the IMO 2030 targets. Going by the bunker supply scenario, will supply meet the demand?

With almost 200 green methanol-enabled vessels on order today, we expect production to move faster than we had dared hope for when we placed the first order for a green fuel vessel. We are also seeing increased activity in this space, with new, promising projects being established across geographies from a wide range of players.

It is still uncertain which fuels will breakthrough and succeed in the future. In this scenario how do the shipping lines make crucial investment decisions in adapting new technologies?

As mentioned earlier, we have chosen green methanol as our green fuel and are committed to investing based on speed, stability, and cost. In the next few years, we will have as many as 25 brand-new vessels in service that will be able to run on green methanol. In the meantime, the research for all alternatives will continue to take shape and guide us in the future.

How do shipping lines ensure safety of seafarers while adopting newer fuels and technologies?

Methanol's flammability issues require dedicated fuel systems and tank design. A proven technology is available for this, and it has also been applied to methanol-powered vessels in operation and those that have been ordered. Methanol is toxic to humans if ingested, but interestingly, it is not a marine toxic. All our crew members who are taking charge of methanol-powered vessels undergo adequate training beforehand. 



“Given the lack of clarity around which technologies and fuels will mature and become dominant, investing in fuel flexibility today is the most financially viable way to avoid the risk of stranded assets in the future,” suggests **Sachin Kulkarni, Head Marine Business Sales (South Asia) Wartsila India.**

How is Wärtsilä helping the maritime sector in emission compliance and transitioning to eco-fuels?

The shipping industry needs to transform into a form of green transport. The IMO has put regulations in place to drive this transformation. Last year, the 80th session of the IMO’s Marine Environment Protection Committee (MEPC 80) adopted a revised GHG Strategy. The revised strategy aims to significantly curb GHG emissions from international shipping, with an ultimate goal of achieving net-zero emissions by 2050.

The path towards decarbonisation is complex with factors like – ambitious targets, indexes compliance, local and international regulations, infrastructure needs, geopolitical considerations, as well as technological maturity. That’s why it’s important to create a

unique decarbonisation strategy for ship owners. After all, ‘de-risking’ the investment, or even repositioning the fleet, is a journey that needs to be done with careful planning.

We work closely with many ship owners to create a tailor-made decarbonisation strategy which supports their sustainability ambitions. Our approach allows for an open and honest conversation in which we can apply our expertise and seek out the best possible solution for ship owners, helping them take steps along their decarbonisation journey.

Starting with the existing fleet first, data-led advice is a valuable way to reduce and lower overall emissions. Our Decarbonisation Services can help ship owners find their decarbonisation path with three simple steps: analysis of current fleet, modelling and data analysis, followed by the selection of the

appropriate solutions.

What’s more, one of the core elements preventing fleets from acting on decarbonisation is uncertainty. There is a sea of unknowns, particularly in relation to future fuels – so, fleets are worried about investing and getting locked into the ‘wrong’ solution. For existing vessels, the Wärtsilä feasibility study outlines the modifications needed to accommodate engines capable of combusting a ship owner’s future fuel of choice as well as the related fuel storage and auxiliary systems.

Turning to newbuild vessels, Wärtsilä works with ship owners around the world to future proof their newbuild vessels. There are a wide range of options for future-proofing new vessels including opting for future-proof propulsion systems, choosing efficient, multifuel or alternative fuel engines, leveraging electrical solutions such as

hybrid, shore power or shaft generators. Energy-saving technologies and digital solutions can also improve efficiency and cut fuel costs and GHG emissions.

However, looking longer-term, given the lack of clarity around which technologies and fuels will mature and become dominant, investing in fuel flexibility today is the most financially viable way to avoid the risk of stranded assets in the future. We are committed to delivering environmentally sustainable technologies that will accelerate the transition to carbon-free shipping. The development of engines capable of running on future fuels is crucial to that and we are investing in all the new fuels and developing flexible technologies for the benefit of the maritime industry.

What are the main challenges for zero-carbon energy transition for shipping in India?

Globally, measures have been taken to reduce emissions from shipping, with the IMO, for example, announcing its revised strategy in July 2023 to reduce the industry's GHG emissions to zero by or around 2050. With 2050 less than one vessel lifetime away, the industry is under increasing pressure to accelerate their decarbonisation journey.

However, the future of shipping is uncertain, which is one of the core challenges preventing fleets from acting today. The regulation and policy landscape in particular are ever evolving, both at an industry and regional level. There's also confusion around the scale of change that's needed, and a fear of making the wrong decisions. However, one thing is for certain: inaction is the costliest action that fleets can take today.

Another unique challenge for the industry is the lack of clarity around which technologies and future fuels will mature and become dominant. Shipowners, however, cannot wait for one fuel to become dominant, they simply do not have the time. It's critical to begin today and prepare for multiple fuel options, lowering the risk of stranded assets and accelerating the opportunity to unlock the business

There is a sea of unknowns, particularly in relation to future fuels – so, fleets are worried about investing and getting locked into the 'wrong' solution.

benefits of decarbonisation.

We are starting to see great results with methanol, ammonia and hydrogen but they will all require more infrastructure to scale up. It will be vital to develop a green shipping infrastructure where 1.) ports provides onshore power, charging facilities, adequate bunkering facilities for sustainable fuels; 2.) we see national infrastructure for producing, distributing, and bunkering sustainable fuels; 3.) we see a buildup of green corridors as this will encourage ship owners to invest in green shipping.

There is also a need for developing maritime clusters where increased co-operation amongst maritime stakeholders throughout the value chain can be facilitated.

There seems to be a lot of confusion in choosing the right eco-fuel. How can the shipping lines decide the right fuel for them?

Because new fuels are not readily available yet, it is difficult for shipowners and for the maritime industry to predict which is going to be the prevailing fuel in the future. All alternative fuels have their unique advantages and disadvantages. Therefore, each ship owner will have to map its own transition path to new alternative fuels.

Fuel flexibility and the ability to convert to alternative fuels will be crucial in ensuring that operations continue uninterrupted. The choice that makes the most sense is a set-up that does not depend on the availability of a single fuel type. At the same time, ship owners will want to ensure the environmental

performance of their vessel or fleet. The requirement for flexibility applies to newbuild vessels and existing assets alike.

Fuel selection will impact vessel design, CAPEX, OPEX and revenue generation potential of individual vessels. All alternative marine fuels – LNG, ammonia, biofuels, methanol and hydrogen, to name the main contenders – can reduce carbon emissions from shipping. How environmentally friendly they are depends on how they are produced. A lifecycle approach to ship-generated emissions takes the entire value chain of the energy source into account – from well to wake.

All-in-all, it will be important to consider the following three points: firstly, taking a well-to-wake approach when calculating emission reduction. As an example, the Fuel EU Maritime initiative demands a well-to-wake approach, and others are expected to move away from tank to wake. Secondly, investigating the current, and future, availability of fuel on a planned route. And finally, ensuring that crew are trained to handle any new fuels intending to be used.

Is retrofitting a good option? In which scenarios can a vessel owner opt for retrofitting an existing vessel? What factors need to be considered while deciding for retrofitting a vessel to operate on clean fuels?

In the short term, efficiency improvements and energy-saving technologies can help. But to hit tough regulatory targets in the longer term, more operators are converting their vessels to run on lower carbon fuels. Modifying a ship running on traditional fuels to make it compliant with sustainable fuels can vary much depending on the type of fuels, load and operating profile, certification and safety requirements. In most cases, modifications are not limited only on engine. The whole fuel storage and supply system will need to be adapted depending on fuel selection.

There are a few factors to consider with a marine fuel conversion, including:

1. The business case:

To ensure a successful conversion to alternative fuels, you need to create a business case. What is the target you need to reach and how will a fuel conversion enable you to reach that target? What fuels are being considered and what impact will the conversion have on your vessel and its operations? Is the CAPEX recoverable in the vessel's remaining operational lifetime?

2. Fuel Choice:

One of the main factors to consider when evaluating which alternative fuel to choose are your emission reduction targets and the availability of each fuel along the route that your vessel operates. Also, taking a well-to-wake approach when calculating emission reduction is important.

3. Engine conversion:

You also need to check if your engine can be converted to run on alternative fuels or if you need to replace it. Because of availability limitations for alternative fuels, the most popular choice is to convert the engine so that it can use the new fuel in addition to the existing fuel. This allows you to use the alternative fuel when available and your traditional marine fuel when not.

4. Finding room on board:

Alternative fuels like hydrogen, ammonia and methanol are less energy-dense than conventional marine fuels, which means bigger fuel tanks are needed. When converting to a fuel-flexible engine a double fuel supply system might be needed. This requires more room than the current setup.

5. Scheduling:

You will need to consider the best time to undertake a conversion and what steps need to be taken. Installing the new fuel tanks and fuel handling system is carried out in a drydock, so is best timed for when your vessels have its scheduled drydocking. The engine conversion itself can be done separately, does not require drydocking and can usually be carried out while the vessel is in service. The whole conversion doesn't need to be completed at once, which gives you more flexibility.

There are a wide range of options for future-proofing new vessels including opting for future-proof propulsion systems, choosing efficient, multifuel or alternative fuel engines, leveraging electrical solutions such as hybrid, shore power or shaft generators.

What are the retrofitting solutions offered by Wärtsilä?

Our Wärtsilä Fit4Fuels, which is a retrofit technology platform converting 2-stroke diesel engines to run on future fuels. The ground-breaking hybrid combustion concept maintains engine power density and eliminates fuel slip, providing a viable and flexible pathway towards a decarbonised future. It also increases the commercial value and lifetime of existing vessels.

To enhance this solution further, last year we introduced our new radical derating retrofit solution – Wärtsilä Fit4Power – which extends the emissions-compliant lifetime of merchant vessels by providing the existing two-stroke fleet with leaner, healthier and more optimised engines.


Another example is our Wärtsilä 32 engine which is available for newbuild or retrofitting. Our Wärtsilä 32 methanol engine does not require any technical conversion when starting to run on methanol. However, it is important that there is a methanol supply system in place along with the adequate safety measures taken in the engine room and tank space. That's why, we developed a dedicated fuel supply system for methanol, MethanolPac. More recently, we introduced another four methanol engines to our portfolio, setting a new industry benchmark with the broadest methanol engine portfolio on the market. Of these new additions, Wärtsilä

is developing the corresponding methanol retrofit capabilities for the Wärtsilä 31, Wärtsilä 46F and Wärtsilä 46TS.

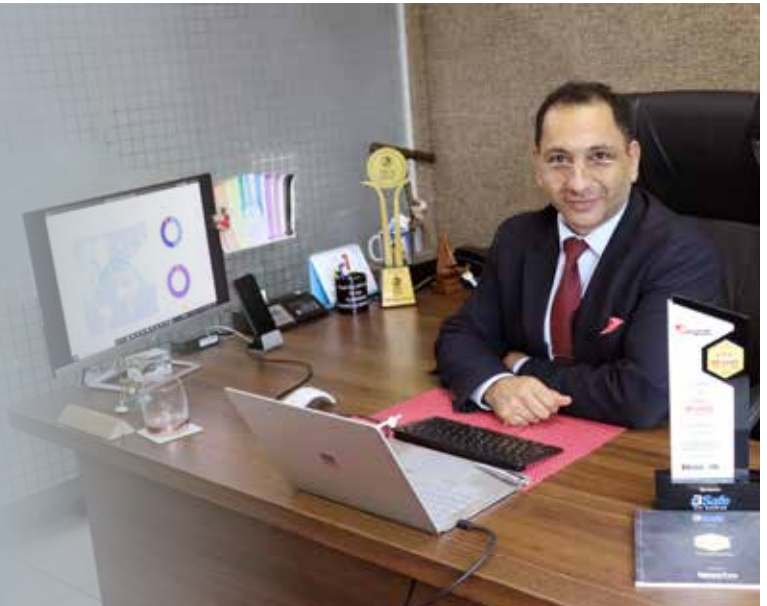
We also offer a number of services to ensure that vessels operate in an optimal way. For example, our service agreements can help ship owners and operators to decarbonise, cut emissions and stay compliant. We deliver repairs, field services, technical advice, performance optimisation, environmental solutions, crew training and full lifecycle solutions anytime, anywhere. Our data, AI and voyage solutions are designed to connect and optimise the entire ecosystem, from propellers to ports, and beyond.

Can decarbonisation be fast-tracked by implementing carbon levy?

We welcome any initiative that accelerates decarbonisation. The challenge is not downstream, it is upstream. Today, we already have the know-how and the technology to drastically reduce maritime emissions and set the industry on an upgrade path towards complete decarbonisation. But technology in silo does not decarbonise maritime alone – action from both the market and regulatory side of the maritime industry is crucial to incentivise investment, build infrastructure, favour the development of the needed fuel supply chain, and legislate to accelerate the adoption of these technologies. Decarbonising maritime will take more than technology, it needs active collaboration across the entire marine ecosystem.

Fleet emissions will have direct consequences on access to capital (e.g. Poseidon Principles), on chartering conditions with Sea Cargo Charter, and even on operating expenses due to carbon tax. Businesses and consumers will take steps, such as switching fuels or adopting new energy saving technologies, to reduce their emissions so they can limit, or eliminate altogether, the amount of tax paid. This means that carbon tax could act as an incentive to get businesses to avoid the use of fossil fuels and would act as a pressure for accelerating the energy transition process in marine. 

SUSTAINABLE LONG-TERM LOGISTICS SOLUTIONS



Starting with a humble beginning in India, Chartering RoRo Freight Systems has expanded across the globe, growing multi-fold. The company is currently focusing on the US market, offering door-to-door solutions, shares **Capt. Parmeet Singh Bawa, Executive Director.**

Tell us about the genesis of Chartering RoRo Freight Systems and how the company has grown over the years?

Chartering RoRo freight Systems was established with the objective to remain close to the customer, while serving the shipper consignee, leveraging the relationships and domain expertise in the process. Following the establishment of operations in India we expanded to the US market and through a network of partners in China, Middle East, Africa and Europe. The company has been growing in multiples annually over the last five years, rising from an MSME to become an SME.

Let's talk about the current scenario – the Red Sea crisis. What are the challenges freight forwarders are facing in the current scenario? What has been the impact on the containerised trade, as ships are travelling

longer routes around the Cape of Good Hope?

Red Sea disruption pivoted the sliding freight rates which had corrected by 90% over the 2022-23 level. If freight rates maintained at that low level the survival of liners would have become difficult. Looking back at the 2018-2020 period, there was a meltdown of a few carriers under the massive financial pressures including major restructuring across biggest players in the trade – Maersk, Hapag Lloyd, Hamburg Sud, UASC, NYK, MOL, Kline, HMM and Hanjin. Soon there were new survival strategies of mergers and acquisitions across the Container spectrum. Then came the unprecedented demand of consumers during the Pandemic and the freight levels spiked to an unjustifiable level - obviously instrumented by leading players - modifying supply demand scenario.

The brunt of it all was passed on

to the shipper and Consignee. Liners announced profits and double bonuses while the shippers bled. At the end of the day there were interventions and the freight levels corrected to 80% lower.

In 2023, reduced demand and increased supply had put liners in a jeopardy since they had committed for ocean freight and charter rates. Until December 2023, the ocean freight levels were reasonably steady and were expected to correct, but the Red Sea crisis increased the rates with ships imposing as much as \$500 per container increase in charges, going around the Cape of Good Hope. The freight rates had increased almost 2X going to the US East Coast in 2024 January. However the shipping lines have not stopped but added another peak season surcharge making it 3X, eventually the freight levels touched \$5000 for 40" high cube going to US East Coast. This is almost 3 1/2 times of

what a shipper had normally paid same time last year. Earlier, Indian exports to the US market had cost less compared to Chinese exports, but in the current scenario, the freight rates from China to US declined from \$6000 to \$3500 over past two months, while freight rates from India reduced from \$5000 to \$4200. As a result, Indian exports are now more expensive on a teu basis to the United States, compared to China.

The Freight broker business is also impacted. This business is not done on a percentage commission, but it is only on a fixed fee which is right now negligible. The sustainability and survival of a lot of small/medium sized freight brokers will be under question within the next 6 months to 1 year. Unless situation improves, alternate routes and cheaper costs is something that we need to work on without which sustainability is questionable.

How will these ongoing wars and restrictions to shipping routes alter the supply chains in the future?

Wars and crisis situations actually bring about an opportunity for logistics but in a very niche segment, which means the demand is definitely restricted. However, the supply on a unique segment with very few players is available. Therefore the cost of service goes up margins are not very clear and the customer lands up paying much more for the same cost and service. So the services into the ongoing Russia Ukraine sector has only made an incremental impact on the cost of doing business for Shipper and consignee. They are the ones who are paying the differential increment while the Freight Brokers take coverage with the shipping lines to pass the cost and possible marginal increase in their margins to the shippers. So as a trade it becomes responsibility of the service providers to offer sustainable long-term solutions, which ensures growth for the Shipping business and also support to the customers in the crisis situation.

What are your expectations with respect to the freight rates for the coming quarters?

Traditionally, the freight levels are high through the first quarter

Our business just post Covid was 60% based on exports and 40% on the imports revenue. However, 2023 saw a shift in the balance of our revenue making it 50-50 and eventually by end of 2023 we realised that our revenue is 75% on the import side and only 25% of the export side. This is obviously due to the corrected ocean freight levels.

of the year January through March, as this is the financial closing for most businesses, pushing volumes outwards to achieve target set for the year. Usually from end of March towards end of May, the businesses do have achieved the targets and all the rollovers are clear. The demand reduces greatly. The aggro season is not on. Eventually the business is sustaining for the shipping lines on 25% to 30% of their volumes which is industrial Cargo. Therefore the contract season for end of March is usually set on the coming year to lock prices down for the long-term.

However the Freight levels do see a correction at 5% to 10%, post the contract signing season which is what is expected in 2024 as well. The deviation through Red Sea Crisis, the wars of Ukraine, Russia, the financial imbalance in China are all leading to a focus on India as a service provider to the US and Europe. The cost of energy in Europe is also higher, raising cost of production. Hence India still remains as a preferred consumption manufacturing location for Europe also. We see there is stability in the rate levels, perhaps 10% lower than current in the first six months of 2024, there after the crop season will bring the seasonal increment back in

place for the shipping line. It is quite unpredictable but we hope there is some sense in this chaos.

Could you elaborate on your presence in the US and European markets?

In 2021, Chartering Ro-Ro identified an opportunity to offer door-to-door solutions in United States. Through the year of 2021 -22 we established relationship with most trucking companies and warehouse providers in United States. Especially in the East Coast, we signed up with trucking companies to ensure that the customers from India are able to export, providing them door-to-door solutions. Post COVID opportunities increased for 3PL solutions as well, especially for those available on both ends with an integrated solution. Our businesses just post Covid was 60% based on exports and 40% on the imports revenue. However, 2023 saw a shift in the balance of our revenue making it 50-50 and eventually by end of 2023 we realised that our revenue is 75% on the import side and only 25% of the export side. This is obviously due to the corrected ocean freight levels and the margins that they generate for us. However the US outbound has been reasonably stable and sustainable. We foresee a growing support from the customers in the United States.

Recently, there has been a lot of shake up among the shipping alliances. How will these changes impact the trade movement?

The service strategies of the shipping lines and the alliance restructuring is an ongoing process of cost optimisation, shipping lines no longer compete on price alone, they also know that the cost of operations has a direct impact on their revenues, so identifying reliable partners with compatible service levels is being sought after. The increase in ship size from 8000 standard to now 13 to 16,000 teus is only an indicator of cost optimisation. Therefore the likes of smaller players will come together and form alliance in shorter coastal sectors while continuing to buy smaller space from the main players on the long haul sectors.

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