



# Harit Sagar Samachar

March-April 2025 | Issue 2

## Welcome Note

Welcome to the second issue of Harit Sagar Samachar (previously titled "*Green Ports & Shipping Insights*")

We are pleased to present the latest edition of **Harit Sagar Samachar**, your go-to source for innovations, updates, and best practices in sustainable maritime operations. This publication is designed to inform, inspire, and connect professionals dedicated to reducing the environmental footprint of ports and shipping activities.

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# Propelled by the Sun

The Honourable Prime Minister of India spearheads the country's commitment to clean energy. In his address at the World Development Summit in New Delhi in February 2018, he referred to ISA (International Solar Alliance) as the single most important global achievement after the Paris accord on climate change.

The National Solar Mission or NSM aims to establish India as a global leader in solar energy. This aligns with India's Nationally Determined Contributions (NDCs) target to reduce the emission intensity of its GDP by 45% from 2005 levels by 2030.

Although research in solar energy has not been intense, India does have a few firsts to its credit. The Cochin International Airport in Kerala is the first and only airport in the world to be run on solar power for its non-critical operations. The Indian Railways has taken initiatives to harness solar power through solar roof panels to run the electrical appliances on trains.

We are witnessing a major transformation in the transport sector on land with the adoption of electric vehicles. A similar transformation is awaiting the shipping industry. A large RORO vessel, Auriga Leader, was launched by NYK Shipping as early as 2008. It used solar power to reduce the generator load for lighting. In 2010, Planet Solar, the



largest solar boat in the world, circumnavigated the globe.

India's first solar passenger ferry, Aditya, has been operating successfully in the backwaters of Kerala and has encouraged the state to transition more ferries from diesel to solar and electric power. The IWAI (Inland Waterways Authority of India) has launched pilot e-solar passenger boats along Ganga at Varanasi. Students from Kashmir have developed a prototype of a 2-seater boat that can ferry tourists on Dal Lake in Srinagar.

Solar power can find larger application in leisure and small passenger boats, fishing vessels, small harbour tugs and pilot boats, and coastal barges. It can be extended to sea-going ferries in inter-island transport in Andamans, and in Lakshadweep.

There are about 2 lakh small

boats that are engaged in fishing on the coast and inland waters. The government offers subsidies for purchase of the boat, and for petrol outboard motor (OBM) in the initial stage and also provide annual fuel subsidy for the operation.

The operational costs of solar-powered vessels have proven to be negligible. Financial viability studies ought to compare life cycle costs of the boats—fuel oil versus solar power. Comparable subsidy can be offered for CAPEX of solar ships. Environmental cost benefit analysis will strongly favour the solar powered boats.

Choices need to be made regarding the appropriate category of vessels that can run on solar or solar hybrid energy, and the relative benefits of newly built solar ships vis-à-vis conversion of ships to solar power. The option of



solar photovoltaic versus solar thermal power also needs to be assessed for the chosen category of vessels.

Regulatory incentives and focus on solar research have ensured that cost of solar power generation has plummeted over the last decade. With environmental issues tending to take centre stage, solar-powered boats will have immense potential in eco-tourism in places such as short trips to the Mud Volcano in Andaman Islands, the Dal Lake in Kashmir, Sunderbans Sanctuary in West Bengal, Pykara Lake near Ooty and Chilika Lake in Odisha.

Currently, vessels plying near the coast, including fishing vessels, are a source of both water and air pollution, and this has a deleterious effect on health and environment of the coastal population. While the International Maritime Organization regulates marine pollution through international conventions such as MARPOL, we need to find practical solutions to counter the ill-effects of fossil fuel propelled ships near habitations.

With a long coastline and ample source of solar energy, the time is ripe to propel solar-powered coastal and fishing boats. Solar energy tariff has become competitive; there has been tremendous improvement in battery storage capacities. With the right financial model and incentives, solarization of ships can be a viable alternative.

**Dr Malini Shankar**  
**Vice Chancellor, Indian**  
**Maritime University**

### Green flag to carbon tax in the shipping sector

During the 83rd Maritime Environment Protection Committee (MEPC) session from April 7–11, 2025, IMO finalized a \$100 per tonne carbon tax on ship emissions which is set to take effect in 2028. In order to reach the net-zero target for shipping sector, this step marks the first global tax on GHG emissions. Starting in 2028, ships will be required to either switch to lower-emission fuels or pay a fee for the pollution they produce. 63 nations including India, China, Brazil, Japan, Singapore, etc., were in favour of the shipping carbon tax imposed. [Read More...](#)



## News Highlights

### IMO confirms methane pathway's role in decarbonization

April 15, 2025 |  
Source: Safety4sea

SEA-LNG welcomes the International Maritime Organization's (IMO) agreement on a regulatory framework to cut GHG emissions, offering clear guidance for decarbonizing global shipping. The framework supports fair competition among fuel options, boosting confidence in LNG-dual fuel investments and recognizing methane as a valid path to decarbonization. [Read More...](#)

### Fincantieri and Viking launch world's first hydrogen-powered cruise ship; ink deal for two new units

April 8, 2025 |  
Source: Offshore Energy

Italian shipbuilder Fincantieri and Swiss cruise line Viking have unveiled the world's first cruise ship powered by hydrogen stored onboard for both propulsion and electricity

generation. Named Viking Libra, the ship is currently under construction, with delivery expected in late 2026. It will operate with zero emissions, utilizing a hydrogen propulsion system. [Read More...](#)

### Further progress on IMO net zero framework in working group

April 2, 2025 | Source: IMO

The inter-sessional working group on reduction of greenhouse gas emissions from ships (ISWG-GHG 19) met for its 19th session from March 31 to April 1, 2025, chaired by Mr Sveinung Oftedal. Member states discussed mid-term measures to reach net-zero emissions by 2050, including a fuel standard and emissions pricing. [Read More...](#)

### Singapore and India eye green and digital shipping corridors

March 31, 2025 |  
Source: Offshore Energy

Singapore and India have signed a letter of intent to work together on





maritime digitalization and decarbonization initiatives. The collaboration involves identifying key stakeholders to support the effort and aims to establish a formal partnership through a memorandum of understanding for a green and digital shipping corridor. [Read More...](#)

#### **Ports of Rotterdam and Singapore working zealously on green and digital shipping corridor**

March 25, 2025 | Source: Offshore Energy  
The Maritime and Port Authority of Singapore and the Port of Rotterdam have signed an agreement to strengthen their collaboration on the

Rotterdam-Singapore Green and Digital Shipping Corridor, promoting decarbonization and digitalization. Their goal is to reduce greenhouse gas emissions from large container vessels by 20–30% by 2030 and enhance port call efficiency with global standards. [Read More...](#)

#### **Japanese partners advance designs for large ammonia carrier**

March 14, 2025 | Source: The Maritime Executive  
A Japanese partnership involving Mitsubishi Shipbuilding Co., Mitsui OSK Lines, and Namura Shipbuilding Co. is working on developing ammonia transport

as a fuel for industry and the maritime sector. The designs received initial approval from ClassNK, which reviewed the basic design drawings and risk assessment. The project focuses on market potential as a transitional fuel for power plants and the maritime sector, as well as a hydrogen carrier. The design includes a large ammonia carrier with an engine using ammonia as the main fuel source, aiming to reduce greenhouse gas emissions. The ship is designed to be larger than conventional vessels, enhancing marine transport efficiency

[Read More...](#)



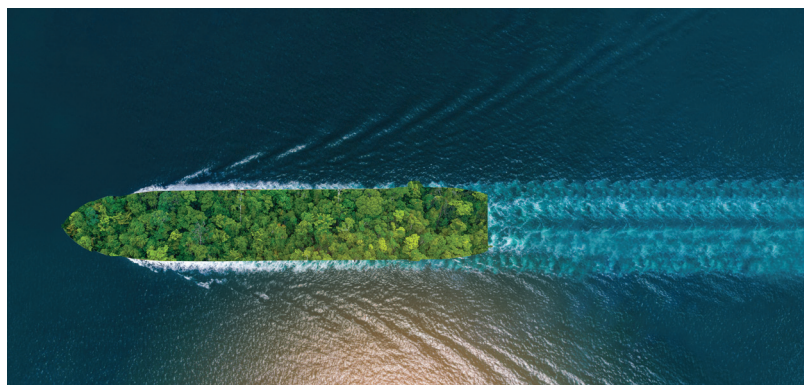
#### **India hits major milestone in Inland Water Cargo Transport**

India reached a milestone of 145.5 million tonnes in cargo movement on inland waterways during FY 2024–25, a significant increase from 18.1 million tonnes in FY 2013–14, reflecting a compound annual growth rate (CAGR) of 20.86%. This achievement was supported by extensive infrastructure development, including the construction of multi-modal terminals (MMTs), inter-modal terminals (IMTs), community jetties, floating terminals, and the adoption of green technologies such as hybrid electric and hydrogen vessels. [Source: PIB India](#)

## **Charting a Sustainable Course**

### **Green Practices transforming Indian Ports**

India's rapid economic growth and expanding maritime trade have placed tremendous pressure on port infrastructure and surrounding environments. Recognizing the urgent need to align development with sustainability, several Indian ports have taken significant steps to reduce environmental impacts and promote green



operations. From energy efficiency to waste management and clean fuels, green practices are increasingly becoming a part of core strategies across the sector.

One of the most prominent initiatives has been the implementation of shore power (cold ironing) at select ports such as Mumbai and Visakhapatnam. By allowing ships to plug into electricity while docked, rather than running diesel engines, this practice significantly cuts down emissions of SO<sub>x</sub>, NO<sub>x</sub>, and particulate matter. As shipping is one of the least-regulated sectors for air quality, this move represents a giant leap forward in reducing port-side pollution.

Energy-efficient lighting systems, such as LED-based high mast towers and solar-powered lights, have also been adopted widely. Jawaharlal Nehru Port Authority (JNPA), for instance, has installed rooftop solar panels on administrative buildings and warehouses, helping offset conventional power usage and reduce its carbon footprint.

Solid and liquid waste management has seen considerable improvement. Ports such as Cochin and Kandla have established systems for handling bilge water, oily waste, and garbage from ships as per MARPOL guidelines. Additionally, dry waste segregation, composting units, and plastic recycling centres have been introduced in collaboration with municipal bodies and

environmental agencies.

Another innovative step has been the promotion of electric vehicles (EVs) and e-cargo handling equipments within port premises. Paradip Port and Chennai Port have piloted EV-based transport systems and are planning to expand their electric fleets, leading to reduced diesel consumption and quieter, cleaner internal transport networks.

On the water side, mangrove conservation and afforestation programmes have been introduced to protect natural buffer around ports. Projects along the eastern coast have included the creation of green belts, bio-shields, and mangrove replantation to enhance biodiversity and mitigate erosion and flooding risks.

Digitization also plays a key role. Port Community Systems (PCS) and digital dashboards have been deployed to monitor emissions, track cargo movements, and streamline vessel turnaround times, thereby reducing idling and unnecessary fuel burn. The use of IoT sensors for environmental monitoring, including air and water quality, is allowing ports to stay compliant with CPCB and IMO regulations while proactively addressing those issues.

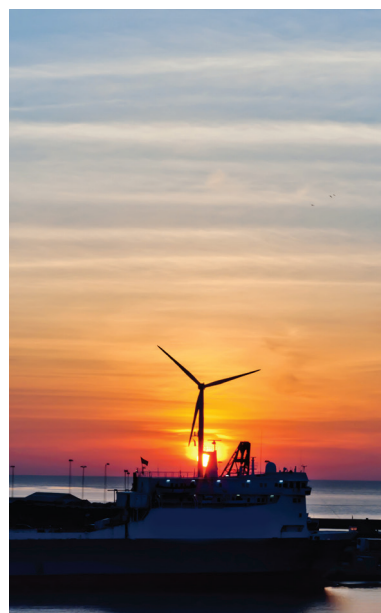
Several ports have received recognition under the Ministry of Ports, Shipping and Waterways' Green Port Guidelines, which assess sustainability metrics including

water conservation, noise reduction, energy usage, and stakeholder engagement.

The transition to a green port ecosystem is not without challenges—high initial costs, lack of skilled manpower, and operational inertia persist. However, the success stories emerging from Indian ports reflect a growing commitment to sustainable development. The integration of environmental responsibility into port operations not only safeguards ecosystems but also enhances efficiency, attracts eco-conscious trade partners, and positions India as a global leader in green maritime infrastructure.

With sustained efforts and collaborations between government, industry, and academia, the vision of carbon-neutral and climate-resilient ports is becoming a tangible reality.

**Ms Chaitali Chandrakant Thali,**  
**PhD Research Scholar, Indian**  
**Maritime University, Chennai**





# Green Initiatives

## National Initiatives

Deendayal Port Authority has deployed four SDLG L956HEV electric wheel loaders by Swayam Shipping Services Pvt. Ltd SDLG to promote greener port operations. This initiative reflects DPA's strong dedication to cutting its carbon emissions, enhancing energy efficiency, and supporting environment-friendly cargo handling practices.

[Source: India Shipping News](#)

DG Shipping and the Company of Master Mariners of India (CMMI) have signed an MoU aimed at strengthening maritime documentation and analysis. This partnership centres on developing essential reports, verifying casualty data, and upholding international standards, with the goal of boosting transparency and supporting informed decision-making in the maritime industry.

[Source: India Shipping News](#)

Mumbai Port is working on installations of providing shore-to-ship power supply, i.e., 200 kW, 415-volt, 50 Hz at five locations and has planned installations for the future as well, which is a great initiative taken in order to reduce GHG emissions while the vessels are moored at the port.

[Source: Mumbai Port](#)

V O Chidambaranar Port Trust has unveiled India's first pilot-scale port decarbonization project by laying the foundation stone. The project emphasizes the use of green methanol as a fuel source, as stated

in a release. This initiative, created in partnership with V O Chidambaranar Port Authority and RINA India, aims to cut carbon emissions in vessel propulsion, port operations, and bunkering facilities by 2030.

[Source: Offshore Energy](#)

To promote the use of green energy, New Mangalore Port has produced 52.31 million units of solar power as of March 2025.

[Source: New Mangalore Port Authority](#)

The Sagar Aankalan – Ranking of Indian Ports for 2023 Report has been released on February 27, 2025, by the Ministry

of Ports, Shipping, and Waterways. It aims to assess port performance, improve efficiency, and bolster India's trade connectivity.

[Source: MoPSW](#)

On March 12, 2025, the Indian Ports Association (IPA) and PTC India Ltd signed a Memorandum of Understanding (MoU) to advance sustainable and green initiatives within India's maritime sector. This collaboration aligns with the country's Net Zero 2070 goal and the Maritime India Vision 2030, aiming to foster a cleaner and more sustainable maritime future.

[Source: India Shipping News](#)



## DID YOU KNOW?

### V.O. Chidambaranar (VOC) Port: India's First to Launch a Green Port Policy!

#### Policy Highlights:

- Green-certified buildings across the port
- EVs and full electrification of cargo equipment
- Renewable energy adoption
- Water audits, recycling, and rainwater harvesting
- Expanding green cover with native species
- Sustainability awareness for staff and stakeholders
- Regular policy reviews to align with global standard



## International Initiatives

Claimed to be the world's first bunker vessel to run entirely on bio-LNG, *Avenir Ascension* of Malta (Europe) is projected to cut annual CO<sub>2</sub> emissions by over 3,500 tonnes. Starting April 1, the 7,500 cubic meter *Avenir Ascension* will operate using 100% bio-LNG for its propulsion until the end of 2025, as announced by the company.

[Source: Offshore Energy](#)

Japanese shipping company NYK has executed construction and charter agreements for its first methanol-powered Very Large Crude Carrier (VLCC). The 310,000 dwt VLCC, set to be delivered in 2028, will feature a dual-fuel methanol main engine and a large shaft generator. The vessel aims to achieve a reduction of up to 40% in GHG emissions.

[Source: Offshore Energy](#)

Piezo-electric energy generation is used in Busan Port to harness the pressure and vibrations produced by cargo trucks. This initiative is expected to result in 2,115 MW of electricity production annually which is enough to power 705 houses.

[Source: World Ports Sustainability Programme](#)

Six fully sustainable energy-powered fast-charging stations for goods transport electrification have been

opened by the Hamburg Port, Germany. The stations can handle articulated vehicles and have megawatt-level charging capability.

[Source: Port Technology International](#)

The Port of Gothenburg in Sweden has partnered with organizations such as the Swedish Transport Administration and local birdwatching groups to develop a shallow-water habitat for wading birds in Torsviken. This initiative represents a significant step towards preserving the marine ecosystem. The wetland serves as a means of ecological restoration following nearly four decades of area being used for dredged material disposal.

[Source: Port of Gothenburg](#)

Recent demonstration tests at the Port of Long Beach showed that it's possible

to capture both maritime emissions and carbon from docked ships. The project merges STAX Engineering's emissions control tech with Seabound's onboard carbon capture systems. Together, they provide a complete and affordable emissions solution for the shipping industry.

[Source: The Maritime Executive](#)

An Odfjell-operated product tanker has completed a low-carbon journey across the North Atlantic, showcasing the affordability of using sail power and biofuel. The vessel, *Bow Olympus*, sailed from the US Gulf Coast to Terneuzen using four suction sails and 100% biofuel. Impressively, it met future carbon targets set by Fuel EU Maritime and the IMO years ahead of schedule, without relying on expensive electro fuels.

[Source: The Maritime Executive](#)

## DID YOU KNOW?



**In 2023, Asia leads global shipbuilding, they produced 93% of new vessel tonnage, while Europe built just 2.5–3%, and the Americas contributed only 0.1%.**

[Read More...](#)





# Harit Shrey (Green Ship Incentive Scheme)

## Mormugao Port Authority Leading the Way in Sustainable Shipping

In line with the Harit Sagar guidelines issued by MoPSW in May 2023, which aim to reduce carbon emissions and foster an environment-friendly ecosystem, Mormugao Port Authority (MPA) introduced a green ship incentive scheme for vessels calling at the Port.

Mormugao Port Authority (MPA) introduced the green ship incentive scheme, '**Harit Shrey**' which was officially launched in October 2023. Since India did not have a standardized metric for awarding green ship incentives, the Environmental Ship Index (ESI) score from the International Association of Ports and Harbours (IAPH) was instrumental in facilitating its implementation.

The Environmental Ship Index (ESI) system, in operation

since January 2011, assesses the sea-going ships that exceed the air emission reduction standards set by International Maritime Organization (IMO). It evaluates vessels based on their emissions of nitrogen oxides (NOx), sulphur oxides (SOx), and carbon dioxide (CO<sub>2</sub>), assigning a score from 0 to 100. A score of 0 indicates compliance with the current emission standards of the International Maritime Organization (IMO). The ESI score serves as a valuable indicator of the environmental performance of ocean-going vessels, helping to identify cleaner ships effectively.

Under the **Harit Shrey** scheme, Mormugao Port Authority (MPA) offers discounts on port dues based on a vessel's ESI score,

encouraging ships with higher environmental performance. The discount structure is as follows:

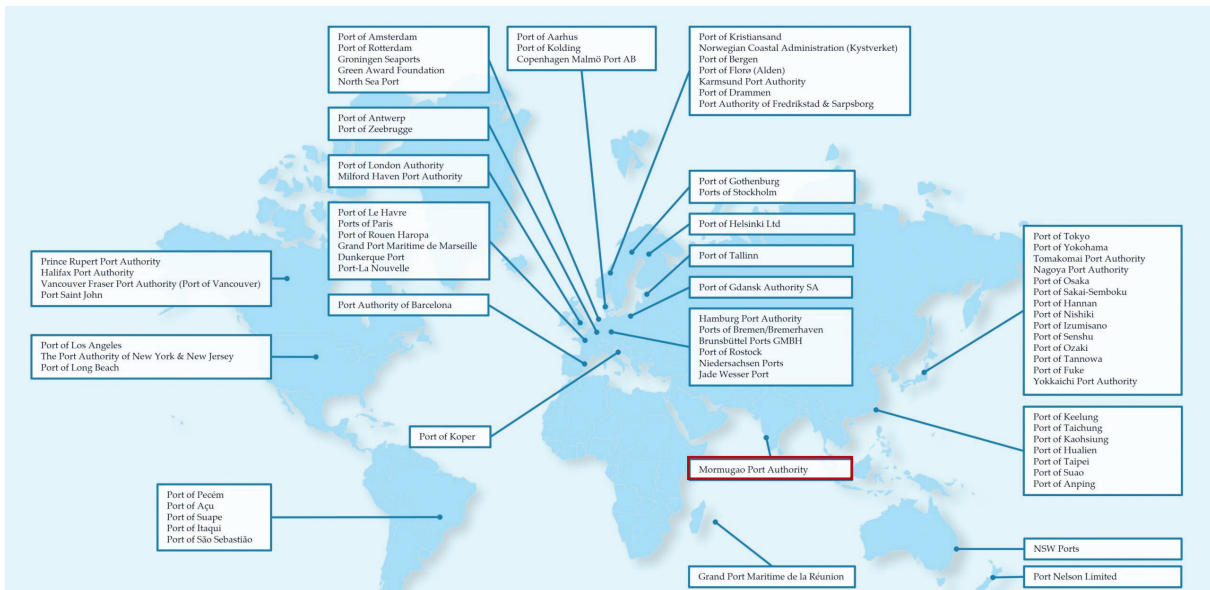
- ESI score of 20 or more but less than 30 → 1.0% discount on the port dues component of vessel-related charges.
- ESI score of 30 or more but less than 40 → 1.5% discount on the port dues component of vessel-related charges.
- ESI score of 40 or more → 2.0% discount on the port dues component of vessel-related charges.

The first vessel to receive this incentive was MV August Oldendorff, which arrived at Mormugao Port on October 30, 2023, with an ESI score of 43.18.



Chairperson MPA Dr. N Vinodkumar felicitating the captain of the MV August Oldendorff, the first vessel to receive the Harit Shrey Green Ship Incentive at Mormugao Port (Source: Mormugao Port Authority)





**Mormugao Port, the only Indian ports feature on the global map of incentive providers on the Environment Ship Index portal of IAPH (Source: Mormugao Port Authority)**



**Dr. Masahiko Furuchi, Secretary General, IAPH and the IAPH officials with Dr. N Vinodkumar, Chairperson MPA and MPA Officials during his visit to Mormugao Port on 27. 02. 2025 (Source: Mormugao Port Authority)**

Mormugao is the first Indian port to introduce the Green Ship Incentive Scheme. This initiative encourages cleaner and more efficient shipping practices, aligning with the *Harit Sagar* guidelines to advance sustainability in port activities and contributing to global efforts to reduce air emissions in maritime operations.

The Port also holds the distinction of being the only Indian port featured

on the global map of incentive providers on the Environment Ship Index portal of International Association of Ports and Harbours (IAPH) <https://www.environmentalshipindex.org>

During his visit to Mormugao Port on February 27, 2025, Dr Masahiko Furuchi, Secretary General of the IAPH, commended the Port's commitment to environmentally responsible maritime operations.

This acknowledgment marks a significant milestone in the Port's sustainability journey and reinforces its role as a leader in environmental stewardship within the maritime sector. By setting a precedent for other ports, Mormugao Port Authority continues to contribute to the broader global effort to foster cleaner and more sustainable shipping practices.

**Author: Mormugao Port Authority**





## Upcoming Events

### Argus Green Marine fuels Europe Conference

May 12–14, 2025, Antwerp, Belgium

[Read More...](#)

### 6th Decarbonizing Shipping Forum

June 25–26, 2025, Hamburg, Germany

[Read More...](#)

### International Conference on Port and Maritime Security (ICPMS)

July 3–4, 2025, Prague, Czechia

[Read More...](#)

### INMEX SMM India

September 10–12, 2025, Bombay Exhibition Centre, Mumbai, India

[Read More...](#)

### 17th Annual New York Maritime Forum

October 14, 2025, Metropolitan Club, New York City, USA

[Read More...](#)



## Launch of Electrolyzers for the upcoming green hydrogen plant at DPA

In a major step towards energy transition and fulfilling the goals of the National Green Hydrogen Mission, Shri Sarbananda Sonowal, the Union Minister of Ports, Shipping & Waterways, virtually launched the electrolyzers for the upcoming green hydrogen plant at Deendayal Port Authority (DPA) in Kandla port in March 2025. The DPA Kandla Green Hydrogen Plant is set to begin operations by July 2025, with a production capacity of 18 kg of hydrogen per hour, making it India's first port-based facility utilizing domestically produced electrolyzers.

[Source: PIB India](#)

## The first India-flagged containership, CMA CGM Vitoria welcomed in Mumbai

The first India-flagged containership, CMA CGM Vitoria, registered by a major foreign carrier has been welcomed by CMA CGM Group at Nhava Sheva Freeport Terminal, Mumbai. The vessel is part of the Group's BIGEX Network, providing direct weekly connections between India, the Gulf, and the Red Sea, with stops at Nhava Sheva and Mundra. Alongside CMA CGM Vitoria, the Group intends to register three additional vessels under the Indian flag in the near future, reinforcing its commitment to and presence in India's maritime industry.

[Source: MoPSW](#)

## Call for Contributions

Be a participant in the Next Issue of

### Harit Sagar Samachar

Send in your:

- Short articles • Case studies • Opinions
- Photos & infographics

**On themes such as** Port decarbonization strategies; Green shipping corridors; Alternative fuels (LNG, hydrogen, etc.); Digital tools for sustainability; and Gender leadership in green shipping

**Submit by:** May 30, 2025

**Send to:** [ncoegps@green-port-shipping.org](mailto:ncoegps@green-port-shipping.org)/[reetas@teri.res.in](mailto:reetas@teri.res.in)

## Together Towards a Greener Future

For feedback and contributions email us at: [ncoegps@green-port-shipping.org](mailto:ncoegps@green-port-shipping.org)