Harit Sagar Samachar

July-Aug 2025 | Issue 5

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Welcome Note

Welcome to the Fifth Issue of Harit Sagar Samachar.

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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The Energy and Resources Institute
Creating Innovative Solutions for a Sustainable Future

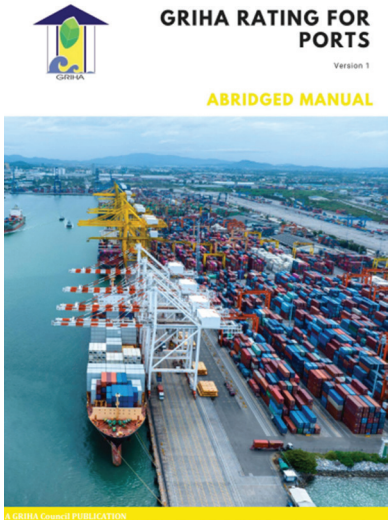
GRIHA Rating for Ports

Supporting Low-Carbon and Resilient Maritime Growth

India's maritime sector is a cornerstone of the nation's economic development, with India's target of Net-Zero emissions by 2070, facilitating sustainable practices across vital infrastructure sectors. The maritime sector plays a pivotal role in this transition, as ports are emerging as key enablers of low-carbon development with continuous rise in cargo movement earmarking the need for sustainable practices in port infrastructure.

Indian maritime infrastructure has witnessed significant growth in recent years, guided by national frameworks such as the Maritime India Vision (MIV) 2030, Harit Sagar guidelines and the Sagarmala Programme. These initiatives, launched by the Ministry of Ports, Shipping and Waterways, Government of India, aim to enhance the capacity of ports along with integrating sustainability at their core. With the integration of environmental considerations into the planning, design and operation phases, it is essential to lower the GHG emissions, optimize resource use, and maintain regulatory compliance over time. Reflecting this commitment, the Ministry of Ports, Shipping and Waterways has led proactive efforts, with 12 major ports implementing over 150 sustainability-driven measures focused on emission control and environmental enhancement.

Launch of GRIHA Rating for Ports during 16th GRIHA Summit



GRIHA Rating for Ports

GRIHA Council has developed a dedicated rating for Ports, to support maritime sector of India in becoming environmentally responsible, resource-efficient and resilient. The GRIHA Council, India's national green rating system jointly established by the Ministry of New and Renewable Energy (MNRE), Government of India and The Energy and Resources Institute (TERI) is a specialized framework designed to evaluate and guide the sustainability performance of port projects. The GRIHA Council has an experience of more than 20 years in the field of developing sustainability frameworks, assessing building performances and providing

rating and certifications, accordingly. This specific infrastructure rating for maritime sector was launched in November 2024, during 16th GRIHA Summit.

Globally, ports are advancing towards carbon neutrality targets for 2040–2050, with green certifications becoming increasingly important for Environmental, Social, and Governance (ESG) compliance and international competitiveness. In this context, adopting a structured sustainability rating system will help India benchmark its performance, reduce greenhouse gas (GHG) emissions, and position its maritime sector to attract climate-aligned investments. GRIHA Rating for ports will help elevate environmental and operational standards across ports, aligning them with international green port protocols and enhancing India's global trade competitiveness. The framework serves as a robust tool to attract green finance and ESG-linked investments, while also contributing to the reduction of lifecycle costs and environmental liabilities. There are multi-fold benefits for shipping sector:

- **Environmental Benefits:** Reduces emissions of SO_x, NO_x, CO_2, and particulate matter, leading to cleaner air and healthier marine ecosystems. It promotes efficient waste and energy management and supports biodiversity by minimizing the impact on marine habitats. It also aligns with Paris agreement, focusing on reducing global greenhouse gas emissions to limit global warming.
- **Economic Benefits:** Enables increased global trade and investment while reducing operational and energy costs. Different governments often provide incentives and financial support to promote such sustainable practices. Aligning with international standards like MARPOL Annex VI and Environmental Ship Index (ESI), helps meet regulatory goals and opens high end maritime market. It also strengthens national climate commitments and boosts ESG performance with improved global rankings. It also reduced the operational cost with the implementation of measures related to efficient fuel consumption, reduction in leakages, reduced energy and water consumption, improved maintenance, etc.
- **Social Benefits:** A cleaner environment enhances public health and supports better infrastructure and urban development. It encourages positive engagement with local communities and stakeholders. It also supports marine community by providing international opportunities for local fisheries, trading, local markets, etc.

The rating is aligned with global climate goals and directly supports the United Nations Sustainable Development Goals (SDGs), particularly SDG 13: Climate Action, by promoting clean energy and low-carbon operations; SDG 14: Life Below Water, by encouraging pollution control and the protection of marine ecosystems; SDG 9: Industry, Innovation, and Infrastructure, by driving the modernization of port infrastructure through sustainable practices; and SDG 7: Affordable and Clean Energy, through the integration of solar, wind, and other renewable energy sources within port facilities.

In addition to sectoral benefits, this rating system also offers strategic advantages for the Ministry of Ports, Shipping and Waterways, positioning it as a key leader in India's green transition. By institutionalizing sustainability across port infrastructure, the Ministry can achieve multiple objectives spanning climate action, policy integration, and international collaboration. Additionally, there are a few key benefits of adopting this rating for the Ministry of Ports, Shipping and Waterways, Government of India:

- **Demonstrates Climate Leadership:** Marks the Ministry as a proactive contributor to India's Net-Zero by 2070 target and global climate agreements like the Paris Agreement.

- **Supports Policy Implementation:** Reinforces national initiatives such as Maritime India Vision (MIV) 2030, Harit Sagar guidelines, and the Sagarmala Programme by embedding sustainability into core port operations.
- **Enables Benchmarking and Standardization:** Offers a structured framework to assess and compare the sustainability performance of ports, ensuring transparency and regulatory alignment.
- **Attracts Green Finance and Investments:** Helps unlock access to ESG-linked investments and climate-aligned funding by showcasing environmental responsibility and governance readiness.
- **Boosts Global Trade Competitiveness:** Enhances international credibility by aligning with global green port protocols and standards like MARPOL and ESI, thereby increasing access to high-end markets.
- **Reduces Operational Costs:** Promotes efficient use of energy, water, and materials, lowering lifecycle costs and improving resource optimization across port operations.
- **Encourages Innovation and Technology Adoption:** Facilitates the use of smart monitoring systems, clean technologies, and best practices for sustainable operations and maintenance.
- **Improves Stakeholder Engagement and Public Perception:** Strengthens trust among local communities, industry stakeholders, and international partners through a visible commitment to environmental stewardship.
- **Fosters Inter-Sectoral Replication:** Sets a precedent for other infrastructure sectors under the Ministry's purview to adopt similar sustainability frameworks and practices.

The rating is applicable to a wide variety of port projects, covering a range of functional spaces. This includes parking areas, commercial zones like terminals and business parks, and dockyards, accommodation facilities and infrastructure such as walkways, roads, and harbour areas. Each component is evaluated for sustainability under GRIHA criteria. The rating system evaluates both new ports and existing ports (with retrofit) based on measurable sustainability indicators. This rating is a part of GRIHA's ongoing efforts to create sector-specific frameworks that foster sustainable development across India's diverse built environment.

Ports with site area exceeding 10 hectares (inclusive of both land and harbour area) are eligible for this rating. It is designed on a percentile-based framework with a total of 100 points, where projects scoring between 25–40 percentile receive, 1 star; 41–55 percentile receive, 2 stars; 56–70 percentile receive, 3 stars; 71–85 percentile receive, 4 stars; and those scoring above 86 percentiles are awarded a 5-star rating. The rating is structured around 12 key criteria: Sustainable Site Planning, Project Management, Social and Environmental Aspects, Sustainable Materials, Climate Action, Energy Management, Occupant Comfort, Water Management, Waste Management, Carbon Assessment, Operation, and Maintenance and Innovation. It is a combination of prerequisite and requisite parameters that must be addressed in the pursuit of becoming a 'Green Port'. This framework offers a structured and transparent approach to identifying sustainability gaps, tracking progress, and incorporating best practices in environmental stewardship within port operations. The features of the rating are:

- **Preservation of natural site features:** Involves conserving existing vegetation, natural landforms, and water bodies to minimize ecological disturbance during construction and operation. This helps

protect native ecosystems, prevent soil erosion, and maintain the site's natural character.

- **Enhancement of ecological assets:** Focuses on increasing green cover, developing biodiversity zones, and restoring degraded areas to strengthen ecological resilience. These efforts support local flora and fauna, improve air quality, and enhance the visual appeal of the site.
- **Improving aquatic life:** Focuses on protecting marine and freshwater ecosystems within and around port areas. This includes measures such as preventing water pollution through effective run-off management, controlling sedimentation, restricting wastewater drains and reducing hazardous spillages.
- **Passive design strategies:** Incorporating elements like cross ventilation, courtyards, shaded open spaces, elevated structures, capture of prevailing winds in the building, permeable surfaces and vegetation, high thermal mass, improved daylighting, etc., reduces reliance on mechanical systems. These strategies enhance indoor comfort while significantly lowering energy consumption.
- **Integration of clean energy solutions:** Incorporating renewable energy sources like solar, wind, or biogas reduces dependence on fossil fuels. Clean energy integration cuts greenhouse gas emissions and enhances energy resilience.
- **Energy and water use optimization**: Using efficient fixtures, automation, and smart design minimizes energy and water consumption. This reduces operational costs and environmental impact, contributing to sustainability goals.
- **Efficient wastewater and solid waste management:** Implementing on-site treatment of wastewater along with effective segregation, recycling, and disposal systems for solid waste enables reuse, reduces environmental pollution, and minimizes the burden on landfills. These integrated waste management practices support resource recovery and promote sustainable, responsible handling of both liquid and solid waste.
- **Reducing carbon footprint:** Sustainable site planning, energy-efficient systems, low energy material selection, and low-emission construction practices all contribute to minimizing carbon emissions. This helps mitigate climate change and aligns with global sustainability goals.
- **Promoting the use of sustainable and low impact materials:** Prioritizing the use of locally available, recycled, low-impact, and certified sustainable materials to reduce the environmental footprint of construction. This approach conserves natural resources, lowers embodied energy, and supports a circular economy in the built environment.
- **Ensuring occupant comfort:** Designing for thermal comfort, indoor air quality, noise control, and natural lighting enhances the well-being and productivity of occupants.
- **Adoption of green operation and maintenance protocols:** Implementing sustainable O&M practices with advanced monitoring tools ensures efficient resource use. Real-time data helps identify inefficiencies, reduce wastage, and maintain environmental compliance.

The rating follows a comprehensive and integrative process that begins at the Design Phase with a feasibility check and online registration. After this a detailed orientation workshop is conducted by GRIHA Council. Followed by Construction Phase, GRIHA officials conduct a series of

Due Diligence site visits: Due Diligence I focuses on site management compliance, while Due Diligence II verifies infrastructure and equipment. Subsequently, documents are submitted to GRIHA for preliminary evaluation, followed by Due Diligence III, which involves a final site visit. At the final stage during Operation Phase, final documentation is reviewed, and the GRIHA Council carries out the final assessment before awarding the rating.

As India accelerates its climate action journey, ports should adopt GRIHA guidelines to maximize the impact, ensure capacity building among stakeholders on sustainability practices, and leverage technology for real-time monitoring and optimization. Furthermore, strengthening policy incentives and mandating green certifications can accelerate adoption. GRIHA's commitment remains steadfast in enabling low-carbon, sustainable and climate-resilient infrastructure. With ports positioned as critical nodes in India's economic and environmental landscape, the rating empowers stakeholders to lead responsibly from the forefront.

Going forward, ports should set ambitious targets for carbon neutrality, actively attract ESG-linked investments, and collaborate with global green port networks. Continuous innovation, stakeholder engagement, and transparent reporting will ensure India's ports lead the way in fostering a sustainable blue economy.

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For more information, visit us; https://www.grihaindia.org/sites/default/files/pdf/Manuals/GRIHA_Rating_for_Ports_updated.pdf

Cleaner Oceans and Greener Ports

Tech-Driven Oil Spill Mitigation in the Decarbonization Era

Oil pollution in oceans has long posed a serious challenge to marine ecosystem and coastal communities. As the world moves towards sustainable maritime practices through port decarbonization, green shipping corridors and alternative fuels, the ability to respond swiftly and effectively to oil spills remains a critical part of this transformation. While efforts to manage oil spills date back centuries, recent innovations in technology, environmental science and digital tools have redefined how we approach marine pollution and making oil spill mitigation an integral part of the broader sustainability agenda.

In ancient times, oil spills were rare and typically natural resulting from surface seeps rather than industrial accidents. Civilizations such as the Mesopotamians and Egyptians had firsthand experience with natural oil products like bitumen, which they used for waterproofing and construction. These early communities observed how oil behaved on water and often collected it manually during transport or accidental leakage. Others, like early Greek or Roman seafarers, used makeshift methods such as reed mats, floating logs, or sand barriers to contain oil slicks. In many cases, oil washing ashore was seen as a natural or spiritual event, not necessarily requiring technological intervention. Instead, people responded through rituals or by avoiding the affected areas.

The rise of the Petroleum industry in the 19th century brought a dramatic increase in oil shipping and extraction with more frequent oil spills. During this early industrial period, spill response was mostly hands-on. Crews used nets, buckets, and absorbent cloths to skim oil off the surface of the water. Primitive containment booms made from logs, metal or burlap were placed around harbours to try and limit the spread. One particularly bold strategy still used in limited scenarios today involved setting the oil slicks on fire, a process known as in-situ burning, to reduce the volume of oil on the water surface.

The late 20th century marked a pivotal moment for oil spill response, driven by major disasters such as the 1967 Torrey Canyon spill and the 1989 Exxon Valdez catastrophe. These events catalyzed global awareness and regulatory reforms, ushering in modern technologies and new methods of response. One major innovation was the use of chemical dispersants, which break oil into smaller droplets to aid microbial degradation. While early versions were harmful to marine life, modern dispersants like the Corexit series are more effective and less toxic though their long-term environmental impact is still debated. Advanced mechanical systems also emerged, including oil skimmers such as weir, oleophilic, and vacuum types, which can be mounted on vessels or autonomous platforms. Around this time, bioremediation also gained prominence, utilizing naturally occurring or introduced microorganisms to break down oil in a more environmentally friendly way. Techniques like bio-stimulation, which enhances existing microbes using added nutrients, and bioaugmentation, which introduces specialized strains are still evolving today.

The 21st century has brought rapid advancements in oil pollution control, especially in the context of global

sustainability and digitalization. Remote sensing technologies, including satellites, drones and autonomous underwater vehicles (AUVs) enable real-time spill detection and tracking. These systems feed into artificial intelligence models that simulate oil spread based on wind, current, and weather conditions allowing responders to deploy equipment proactively rather than reactively. Green chemistry has also entered the picture, with researchers developing biodegradable dispersants made from plant-based materials alongside eco-friendly sorbents like sawdust, peat moss, cotton fibre, and cellulose-based aerogels. These materials are not only effective in cleanup but also align with the goals of reducing toxic waste in marine environments.

Nanotechnology represents another leap forward. Magnetic nanoparticles coated with hydrophobic substances can selectively attract oil and be retrieved using magnetic fields, offering a clean and recyclable solution. Meanwhile, smart materials are being designed to respond to environmental stimuli such as pH changes or temperature allowing targeted oil capture and reducing unintended ecological impacts. Robotics has also transformed the field, with robotic swarms now capable of autonomously deploying sorbents or forming containment barriers. These technologies reduce human risk, enhance precision and support scalability in large spill events.

Importantly, oil spill response is increasingly being integrated into the broader framework of port decarbonization and green shipping initiatives. Cleaner oceans are not just about reacting to spills they're part of proactive environmental stewardship. The technologies used to manage oil pollution now overlap with those used for emissions monitoring, smart logistics and climate resilience in maritime operations. Digital platforms that once tracked fuel consumption are now being expanded to include environmental sensors for early spill detection. Furthermore, as green shipping corridors and alternative fuels like liquefied natural gas (LNG), hydrogen and ammonia are explored, the industry must still prepare for potential spill scenarios involving mixed fuel systems and evolving risks.

In this new era, gender leadership is also emerging as a driving force behind marine environmental protection. Women scientists, engineers, and policymakers are increasingly taking leading roles in developing sustainable maritime strategies, including oil pollution mitigation. Their participation adds diverse perspectives and strengthens the global movement towards inclusive, resilient, and environmentally sound ocean governance.

In conclusion, our approach to oil spill mitigation has come a long way from floating logs and bucket brigades to AI-guided drones and magnetic nanomaterials. As the maritime industry embraces decarbonization and sustainability, oil spill response must evolve alongside. Cleaner oceans and greener ports are not mutually exclusive goals they are deeply interconnected. By investing in innovative, tech-driven and inclusive solutions, we move closer to a maritime future that is not only efficient and resilient but also respectful of the oceans that sustain us all.

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Renewable Energy-Powered Green Ports

Advancing Maritime Sustainability

Why Ports Must Take the Lead in Sustainability

As the globe grapples with the effects of climate change, ports, being critical engines of international trade, are particularly positioned to boost sustainable energy adoption. Port operations, which have traditionally relied on fossil fuels, such as cargo handling, reefer container storage, and vessel berthing, are energy intensive. This dependence contributes to greenhouse gas (GHG) emissions and poor air quality in coastal areas. To counter this trend, Indian ports are progressively integrating renewable energy sources, including solar, wind, and hybrid systems. These changes are helping ports become more economically and environmentally viable as well as more energy-efficient. As stated in the Harit Sagar guidelines and the Maritime India Vision 2030, the movement aligns with India's larger goals for sustainable growth.

India's Rising Renewable-Powered Ports

Several Indian ports have emerged as front-runners in the green energy transition. The Jawaharlal Nehru Port Authority (JNPA), for example, has installed 4.2 MW of rooftop solar, meeting 15–20% of its electricity needs and lowering carbon emissions by around

4,200 tonnes per year. Plans are ongoing to increase the capacity to 8 MW by 2030. VO Chidambaranar Port (VOCPT) has taken a bigger step by switching to 100% renewable energy since 2021, using a combination of wind (6.75 MW) and solar (5 MW) systems. This change cuts VOCPT's electricity costs by a lot and cuts CO_2 emissions by more than 10,000 tonnes a year. Mumbai Port is now looking into floating solar panels and making port crafts run on electricity. These steps are in line with India's goal of providing 200 MW of renewable energy to 12 major ports by 2030, up from the more than 90 MW that are already in use.

Innovations Lighting the Way

Ports are experimenting with a variety of renewable solutions to address location-specific difficulties. For example, Cochin Port installed a 100-kW floating solar plant above an interior water body, addressing the issue of limited land availability. Aside from producing clean electricity, the floating panels help to prevent water evaporation and algae growth. A pilot project for shore-to-ship power (also known as cold ironing) at Chennai Port is saving up to 30–40 litres of diesel per hour in docked vessels. Similarly, Paradip Port has installed a smart grid-based energy management system that monitors real-time use and savings, increasing efficiency by about 12%.

Kandla Port (Deendayal Port Authority) has a hybrid microgrid with 2.5 MW of wind and 1.8 MW of solar power. This assures continuous electrical supply and decreases reliance on diesel, particularly during peak demand. Visakhapatnam Port refurbished its terminal with solar roofs, LED lighting, and electric cars, reducing its carbon footprint by 35% in just three years. India's Directorate General of Lighthouses and Lightships (DGLL) has also solarized over 190 coastal lighthouses and navigational buoys, ensuring sustainable energy access even in the most isolated marine regions.

Challenges in the Green Transition

Despite apparent improvement, significant challenges persist. Urban ports such as Mumbai and Kolkata have limited space for installing solar or wind infrastructure. Rooftop and floating solar solutions are being investigated, but they require careful planning and large initial costs. Another issue is the intermittent nature of renewable energy. Solar and wind energy are weather sensitive, making it impossible to provide regular electricity without battery storage or smart microgrids. Many smaller ports lack access to modern technology.

There is also a shortage of skilled workers. Energy forecasts, smart grid operation, and renewable system maintenance frequently require specialized training for engineers and personnel working at ports. System reliability may be jeopardized if capacity is not increased. Furthermore, regulatory uncertainty persists around shore power rates, open access regulations, and leasing requirements for placing solar or wind equipment on port land. Logistics delays and procurement concerns have slowed the implementation of renewable energy, particularly in island areas and the northeast region.

Pathways for a Sustainable Maritime Future

To hasten the shift, ports must conduct site-specific energy audits and create detailed green energy roadmaps. Public-private partnerships (PPPs), sovereign green bonds, and corporate social responsibility (CSR) funds can all help to drive investment. Energy reliability should be improved by integrated battery storage and flexible hybrid grids. Renewable energy training programmes must be integrated into educational institutions such as the Indian Maritime University (IMU). Real-time dashboards can relate port energy use to Sustainable Development Goals (SDGs),

facilitating transparent ESG (Environmental, Social, and Governance) reporting. Government authorities must also streamline policies for floating solar projects, cold ironing infrastructure, and leasing frameworks in order to stimulate private sector engagement and innovation.

Conclusion: Ports as Gateways to a Greener Tomorrow

India's ports are more than just maritime gateways; they are also becoming beacons of sustainability and innovation. As we approach India@100, each step towards green energy adoption at ports takes the country closer to meeting its climate goals while also increasing trade resilience and coastal development. With strategic planning, supportive laws, and stakeholder participation, Indian ports can lead the globe in green maritime transitions, utilizing the power of the sun, wind, and waves to generate sustainable coastal futures.

Let India's ports power progress – not just ships, but a greener tomorrow.

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DID YOU KNOW?

Cargo traffic on National Waterways has increased from 18.10 million metric tonnes (MMT) to 145.5 MMT between FY-14 and FY-25, recording a CAGR of 20.86%.Read more:

News Highlights

Deendayal Port Authority seeks Bids for India's First Port-Integrated Bio-Methanol Plant

12th-Aug-2025 | Source: India Shipping News

The Deendayal Port Authority (DPA) has initiated a tender for India's first port-integrated bio-methanol production plant at Kandla. The facility, which will be built on an Engineering, Procurement, and Construction (EPC) basis, is designed to produce over 15,000 metric tonnes of bio-methanol annually by converting biomass through a gasification process. This initiative aims to significantly reduce greenhouse gas emissions, align with global decarbonization standards like those from the International Maritime Organization (IMO) and FuelEU Maritime, and establish Kandla as a pioneering green shipping hub in India. Read More

India embarks on indigenous green hydrogen shipbuilding mission

09th-Aug-2025 | Source: The Hindu

India had initiated the construction of its first green hydrogen-powered ships, Union Minister for Ports, Shipping and Waterways Sarbananda Sonowal announced. The Union Minister revealed that Cochin Shipyard Limited and Mazagon Dock Shipbuilders Limited were currently building one ship each, powered entirely by hydrogen fuel cells developed using indigenous technology. This strategic move will enhance India's use of clean and renewable fuels and help in drastically reducing pollution levels in sea routes," the Union Minister said. Read more

Mazagon Dock Shipbuilders gets MCZMA's nod for shipbuilding, launching facility at Nhava

5th-Aug-2025 | Source: India Shipping News

Mazagon Dock Shipbuilders (MDL) has received approval from the Maharashtra Coastal Zone Management Authority (MCZMA) to construct a floating dry dock with a launching facility at Nhava, near Mumbai. The new facility, which will address the lack of land-based shipbuilding infrastructure, will consist of six prefabricated blocks assembled at Nhava after being constructed in Gujarat. An Environmental Impact Assessment (EIA) found the site suitable with minimal ecological impact. MDL, a state-run shipbuilder, currently has orders for 31 defense vessels and plans to build next-generation destroyers, landing helicopter deck ships, and aircraft carriers. Read more

Visakhapatnam Port ranks among the world's top 20 ports, aims 90M tonnes by FY26

4th-Aug-2025 | Source: India Shipping News

Visakhapatnam Port (VPT) has been ranked among the world's top 20 ports due to strategic modernization and infrastructure upgrades that have improved its operational efficiency. At a Trade Meet in Hyderabad, Mr. N. Sridhar, Principal Commissioner of Customs, Visakhapatnam Port Authority (VPA), announced that the port is now the fastest among Indian ports, with a turnaround time of just 21.4 hours. The port has set a cargo handling target of 90 million tonnes (MT) for FY 2025–26, an increase from the 82.62 MT handled in the previous fiscal year. Read more

India commissions 1 MW green hydrogen plant at Kandla Port

31st- July-2025 | Source: Offshore Energy

India has inaugurated its first port-based green hydrogen plant at the Deendayal Port Authority (DPA) in Kandla. The 1 MW facility, a "Make in India" project developed by Larsen & Toubro (L&T), is the first phase of a larger 10 MW project and was completed in a record four months. It is capable of producing approximately 140 metric tonnes of green

hydrogen annually, which will initially be used to power 11 hydrogen buses and street lighting within the port. This initiative is a significant step toward the country's decarbonization goals, aligning with the National Green Hydrogen Mission and the Maritime India Vision 2030. Read more

India Opens 100% FDI in Shipping; Launches Maritime Development Fund and Digital Financial Reforms to Drive Amrit Kaal Vision 2047

July 24, 2025 | Source: PIB

Union Minister Shri Sarbananda Sonowal at Maritime Financing Summit 2025, highlighted that India now offers one of the most attractive investment ecosystem in maritime domain, with 100% FDI permitted in shipping under the automatic route, simplified customs clearance, and the strategic advantage of GIFT City IFSC. He also added that our goal is clear to make India a global maritime hub not just in trade, but also in finance, shipbuilding and green maritime infrastructure." Read more

Parliament clears 'Bills of Lading, 2025', replaces 169-year-old law

July 21, 2025 | Source: PIB

The Rajya Sabha passed the 'Bills of Lading, 2025' bill on the first day of the monsoon session, paving the way for Presidential assent to replace a colonial-era law. The new law replaces archaic terminology with clear and business-friendly language, streamlining rights and obligations for carriers, shippers and lawful holders; reducing ambiguity in shipping documentation to lower litigation risks as well as strengthening India's position in global trade by aligning with international norms. Read more

Singapore tops the list of world's maritime centres once again

July 14, 2025 | Source: Offshore Energy

Singapore, ranked among 43 maritime cities and regions, is cited as one of the busiest trans-shipment and bunkering hubs due to its consistent performance and established maritime services ecosystem. In 2024, Singapore handled a record-high 41.12 million twenty-foot equivalent units (TEUs) in container throughput and saw total vessel arrival tonnage exceed 3 billion gross tonnes. The Port of Singapore remains the world's largest bunkering port, providing 54.92 million tonnes of marine fuel last year. Read more

New water assessment study to support green hydrogen production at Port of Pecém

July 10, 2025 | Source: Offshore Energy

A strategic water assessment study is underway at the Pecém Industrial and Port Complex (CIPP), Brazil's flagship low-carbon development hub. The initiative aims to secure a reliable water supply for green hydrogen production—an essential step toward advancing clean energy goals.

The study is evaluating two key water sourcing strategies: the reuse of treated wastewater from sewage treatment plants in Fortaleza's western region and seawater desalination. Both approaches will be assessed for their technical feasibility, cost-effectiveness, environmental sustainability, and compatibility with existing infrastructure and regulatory frameworks.

Read more

Hydrogen Europe: EU's low-carbon rules improve, but still fall short of market needs

July 10, 2025 | Source: Offshore Energy

Hydrogen Europe, an association representing the European hydrogen industry, has acknowledged improvements in the final version of the European Commission's Low Carbon Hydrogen Delegated Act, but noted that the rules still fall short of market needs. Read more

Green Initiatives

National Initiatives

The Ministry of Ports, Shipping and Waterways (MoPSW) and the Centre for Development of Advanced Computing (C-DAC) have signed an MoU to establish a Digital Centre of Excellence (DCoE) for the maritime sector. This landmark initiative, announced in New Delhi, aims to accelerate digital transformation in India's maritime industry. The DCoE will provide advanced IT solutions, foster innovation, and guide the modernization of port operations and shipping logistics through emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and Blockchain.
Source: PIB India

The Minister laid foundation stones for six projects with a total investment of more than ₹116 crore with an aim to build new capacity for Visakhapatnam port. Key initiatives include the construction of a B-Ramp within the port area (₹33.49 crore) and a new finger jetty and wharf in the fishing harbour (₹32.61 crore) to boost cargo handling and support the local fishing community. Further enhancing operational efficiency, the port will see two additional breasting dolphins at OSTT (₹20.87 crore) and an additional ramp linking the Ambedkar Centenary Flyover to the L-17 corridor (₹8.31 crore). To promote cruise tourism and public engagement, a public promenade near the cruise terminal (₹15.90 crore) will be developed, alongside the construction of toilet blocks at 15 locations across the port area (₹5.50 crore), improving amenities and accessibility. Together, these projects aim to strengthen Visakhapatnam Port's role as a modern, inclusive, and globally competitive maritime hub.
Source: PIB India

The Union Minister of Ports, Shipping & Waterways, Shri Sarbananda Sonowal announced multiple initiatives by the Government to boost the waterways and maritime sector in the region. With an investment of ₹5,000 crore earmarked, the Union Government has drawn up major initiatives in this regard.
Source: PIB India

International Initiatives

The French Port of Rochefort-Tonnay-Charentes has deployed Canadian dynaCERT's hydrogen-based technology, HydraGEN, for the first time on a crane in an effort to reduce greenhouse gas (GHG) emissions from port tools, machinery, and equipment.

Read more

Japanese ship equipment manufacturer Mitsui E&S has replaced the conventional diesel engine generator set installed on a near-zero-emission rubber-tired gantry crane (RTG) – previously delivered to Utoc Corporation at the Yokohama Port Minami-Honmoku Pier Container Terminal – with a hydrogen fuel cell power pack, as part of an on-site zero-emission cargo handling equipment trial.

Read more

The integrated green methanol demonstration project of Shanghai Electric, a Chinese power generation and electrical equipment manufacturing company, has completed the first delivery of green methanol.

Read more

South Korea's classification society Korean Register (KR) and compatriot shipbuilding majors HD Hyundai Mipo and HD KSOE have launched a joint initiative to enhance the safety and sustainability of tank design for green ships.

Read more

Green Corner

Hydrogen – Powering a Cleaner Shipping Future

The Challenge

- Current global production of green hydrogen is <0.1 million tonnes/year, far below the 95 million tonnes/year needed to fully decarbonize shipping.
- Over 460 green hydrogen projects are underway globally, requiring $200 billion investment by 2030 for infrastructure development.

Cost & Policy Outlook

- Hydrogen-powered ships are currently 3x more expensive than conventional vessels.
- With supportive policies, carbon pricing, and targeted subsidies, cost parity could be achieved by 2050.

Potential Impact

- Hydrogen could meet up to 19% of shipping's energy demand by mid-century.
- This could help avoid up to 80 gigatonnes of CO_2 emissions.

Real-World Examples

- H_2 Barge 1 & 2: Operating on the Rotterdam–Antwerp–Duisburg corridor.
- MV Sea Change (USA): A hydrogen-fuelled catamaran in San Francisco Bay that emits zero emissions and converts exhaust into clean drinking water.
- Lithuania: Building a hydrogen-powered waste collection vessel for Klaipéda port.

DID YOU KNOW?

Shipping contributes nearly **3% of global CO_2 emissions.** Green hydrogen, along with its derivatives like **green ammonia** and **methanol,** offers a **near-zero carbon alternative** to conventional marine fuels. Read more

Upcoming Events

17th Annual New York Maritime Forum
October 14, 2025,
Metropolitan Club, New York City, USA
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Digitalised Smart Ports Conference
October 15–16, 2025,
Valencia, Spain
Read More

Zero Emissions Cruising Conference
November 17–18, 2025,
Bergen, Norway
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International WorkBoat Show
December 3–5, 2025, Morial Convention Center, New Orleans, Louisiana, United States.
Read more

Offshore Energy Exhibition & Conference (OEEC) 2025
November 25–26, 2025, RAI Amsterdam Europaplein 24, Amsterdam, 1078 GZ Netherlands.
Read more

Maritime Policies & Guidelines

International Safety Management Code (ISM Code)

The International Maritime Organization is strengthening the implementation of the ISM Code, which serves as the global benchmark for the safe management and operation of ships, as well as for pollution prevention. The code also reflects a growing focus on seafarer welfare, addressing critical issues such as fatigue, adequate rest, and protection from harassment, bullying, and assault onboard vessels.

Source: https://www.imo.org/en/ourwork/humanelement/pages/ismcode.aspx

Hong Kong International Convention, 2025

The Hong Kong Convention, that came into effect on June 26, 2025, introduces binding global standards for ship recycling. Adopted under the International Maritime Organization (IMO), it outlines rules for the design, construction, and operation of ships to ensure they are dismantled in a safe and environmentally responsible manner. It also regulates ship recycling facilities and establishes enforcement protocols such as certifications, inspections, and reporting systems.

Source: https://www.imo.org/en/mediacentre/hottopics/pages/recycling-of-ships-and-hong-kong-convention.aspx

DID YOU KNOW?

For the first time in history, both the Paradip Port Authority (PPA) and Deendayal Port Authority (DPA) surpassed the 150 million tonnes cargo handling mark, reinforcing their status as pivotal hubs in India's maritime trade. Additionally, the Jawaharlal Nehru Port Authority (JNPA) set a new record by handling 7.3 million twenty-foot equivalent units (TEUs), reflecting a 13.5% year-on-year growth. Read more

Latest Announcements

- A Memorandum of Understanding (MoU) was signed between DP World, Deendayal Port Authority (DPA), and Nevomo to explore potential opportunities in autonomous magnetic rail freight movement in India. This collaboration aims to revolutionize cargo transportation within port ecosystems by implementing Nevomo's proprietary MagRail technology. The initiative will see a 750-metre pilot project of MagRail technology at Deendayal Port in Kandla, Gujarat. This will be the first time such a self-propelled freight movement system is demonstrated in a live port environment in India.
  Source: India Shipping News
- Larsen & Toubro Ltd (L&T) has unveiled plans to invest ₹1,000 crore in expanding its shipbuilding complex at Katupalli, Tamil Nadu, aiming to achieve its full production potential. Although the facility secured Environment and Coastal Regulation Zone clearances in 2009—permitting annual output of 50,000 tonnes for its Modular Fabrication Facility (MFF), along with 25 ship constructions and 60 repairs—the current infrastructure has proven insufficient to meet these targets. To bridge the gap, L&T intends to initiate further development activities at the Katupalli site. Source: Maritime Gateway
- In order to investigate long-term cooperation in shipbuilding and maritime development, Cochin Shipyard Ltd. (CSL) and HD Korea Shipbuilding & Offshore Engineering (KSOE) of South Korea signed a Memorandum of Understanding (MoU). KSOE is well known throughout the world for its proficiency in the design and construction of offshore infrastructure, naval platforms, and commercial ships. Source: Maritme Gateway

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• 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: August 30, 2025

Send to: ncoegps@green-port-shipping.org/reetas@teri.res.in

Together Towards a Greener Future

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