

J M BAXI GROUP

TIDINGS

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From the Quarter Deck

Dear Friends and Colleagues,

As we sail through the currents of time, paraphrasing a recent hindi film song "Apna Time Aagaya", our time has arrived.

We in India can take great pride at the successful soft landing of the Vikram and Pragyan Lander/Rover Combination on the South Pole of the Moon. The only nation to have done so and the only one of the four nations to land a mission on the moon, as well as congratulations to Neeraj Chopra, who won the gold medal in the javelin throw event at the World Championships, and to R Praggnanandhaa, our 19-year-old prodigy, who won the silver medal in the FIDE World Chess Cup 2023. As has been said several times and reiterated by the Hon'ble Prime Minister of India, Shri Narendra Modi, this is India's century.

Closer to home, though we saw a late onset of the monsoon due to El Nino effect, but, fortunately, by the beginning of August, the average quantum of rainfall was back to normal. We hope that we will close the season with normal average rainfall, and normal agriculture produce.

Climate change and El Nino are causing global challenges, such as draft restrictions in the New Panama Canal, resulting in ships having to discharge up to 1500/2000 containers to seek a safe transit through the canal. This is due to water scarcity in surrounding lakes, affecting the canal and locks. Abnormal events highlight the need to address climate change, global warming, and pollution.

Most parts of the world have seen inflationary trends and rising food prices. This makes it even more critical that we have a normal agricultural crop to keep foodgrain stability. As a preventive action, against price rise, the Government of India has temporarily banned and/or restricted exports of rice and sugar. While such a move may help the domestic market, it does

disrupt international trade and India's reputation as a reliable exporter.

The past three months have seen dramatic changes in the shipping ecosystem. Global trade volumes have taken a dip, additional ships have entered the market. China has slowed down. Bulk carrier rates have dropped, Tanker rates are declining, and Container freight rates are fast sliding down. Some of the smaller container shipping companies have announced losses for the 2nd quarter of 2023. Lease rentals for containers have gone down substantially, and the stocks of empty containers at most locations in the world are increasing. Bottomline is that everyone knew the boom times would not last forever and that low tides will eventually ground a lot of boats.

One of the advantages of this past period has been the development that has happened across almost all geographies in the port sector. Up until the recent past, due to inadequacies in port development in the under-developed world, Indian trade had to use hub ports to ship its EXIM traffic. Due to improved infrastructure, Indian trade now uses direct services between Indian ports and foreign destinations resulting in better transit times, lower costs, and improved handling. The next 12 months are likely to see a high growth in the number of container ships being deployed to India.

Two pillars loom large on the horizon: India's manufacturing resurgence and infrastructural transformation. The "China Plus" strategy unlocks a realm of possibilities for India:

- Amplified manufacturing
- Energised import-export channels.
- Accelerated technological prowess.
- Employment upsurge
- Fortified supply chain capabilities

In forthcoming editions, TIDINGS will seamlessly integrate our regular themes with the tenets of ESG.

Business pathways are increasingly getting aligned with this holistic



framework. A wave of new ship orders, propelled by cleaner technologies, forecasts a shipping capacity surge of over 10% annually. Ports' role is evolving - provisioning green electricity (LNG, Methanol and Green Methanol) to visiting ships, fostering ecologically pristine port cities.

At JMBL, as port and terminal operators, it is incumbent upon us to provide green electricity to ships that populate our berths. We have set ourselves a challenging target to achieve this by 2025. The promising journey of JMB Rail joins the mission for greener transport, riding on specialized freight corridors, which use greener energy as compared to road haulage, where fossil fuel is expected to be used for a much longer period.

With the war in Russia and Ukraine, China's economic difficulties, inflation, and an increase in capital costs, global dynamics are disrupted, requiring businesses to be debt-averse, thrifty and frugal.

In summation, two constants remain:

- Our unwavering fiscal acumen remains our compass. We need to continue exercising a disciplined approach to Capital usage and its deployment.
- We continue and double our efforts towards cost control and productivity.

The approaching months of 2023 promise revelation for the next few years, however our unchanging values of hard work and honesty will always bear fruits of joy.

Krishna B. Kotak
Chairman - J M BAXI GROUP



Marine Services

Exploring Green Ship Fuels In The Maritime Industry For A Greener Earth

The last ten years have seen big changes in marine fuels, even more than the previous seventy years.

Post World War II, ships started using Heavy Oil in advanced engines, which was available everywhere and made ships sail faster and more efficiently. This change shifted ships from using Steam Engines to Heavy Fuel Oil and Diesel Engines, which most ships use now.

Global warming has become a major concern for our planet. Governments and environmentalists are insisting industries to reduce Greenhouse Gas (GHG) emissions. Many countries work together in the United Nations to set rules, with the most recent meeting called COP 27 held in November 2022. These meetings set up targets and means to achieve environmental goals. The Maritime Environment and Protection Committee of the IMO, works on setting up guidelines for the maritime industry. At its 80th session held in July 2023, the committee adopted a landmark resolution called MEPC80 to reduce GHG emissions from ships. They set new targets :

- 20% reduction in emissions by 2030
- 70% reduction in emissions by 2040
- Net Zero emissions by 2050

(These targets compare the amount of emissions made by ships in 2008.)

Achieving these objectives presents a colossal challenge for the maritime sector, with Heavy Oil historically gaining favor due to its abundant supply and cost-efficient nature. An entire ecosystem has been developed over the years, whereby ship operators



could reliably find bunkers meeting international standards anywhere globally. This also allowed cargo ships to efficiently carry loads with minimal bunkers during long international voyages, thus optimising commercial considerations. Any alternate fuel aspiring to replace Heavy Oil will thus require worldwide availability to enable acceptance.

Currently, over 98% of the world's cargo fleet relies on Heavy Oil. Nonetheless, signs of a changing scenario are imminent, with approximately 21% of ships currently on order are being built with options to burn alternative fuels. These ships incorporate modern engines designed to use new fuel types or have dual engines capable of burning multiple fuel types. This signifies a quantum shift as more shipowners recognise the benefits of cleaner energy sources. It is expected that within the next five years, orders for ships using alternate fuels will surpass those opting for traditional fuels only.

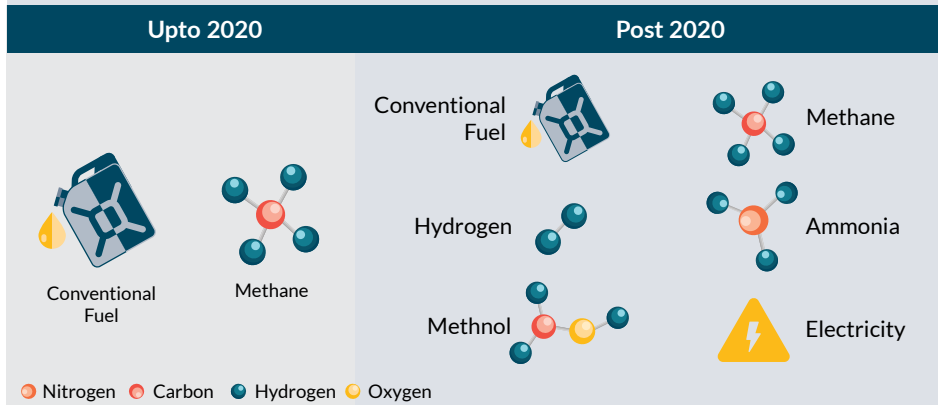
The race to find cleaner fuel started a while ago when ships planned

around reducing their Sulphur Dioxide emissions. The IMO's 2020 marine fuel regulation was a pivotal step in driving this decision. They mandated capping SOx emissions from ships at 0.5% (down from the previous 3.5%). Despite this significant technical and commercial change, the supply chain for bunkers remains the same. The introduction of a Very Low Sulphur Fuel Oil (VLSFO) provided an alternative form of Heavy Oil, utilising existing bunkering infrastructure. This made it easier for ships to change to new fuels without any big problems. Ship operators either installed scrubbers in engines, or opted for low-sulfur fuels, posing technical and commercial challenges but maintaining existing fuel supply.

However, the landscape is evolving with the emergence of various new alternative fuels. Setting the supply infrastructure for these new fuels, however, poses a substantial task for the maritime sector. Until recently, commercial ships primarily relied on two types of bunkers - Heavy Oil/Very Low Sulphur Oil and LNG. However, ongoing efforts have explored new alternatives, offering ships the choice

Marine Services

MARINE FUEL OPTIONS



between conventional fuel, LNG, Hydrogen, Ammonia, Methanol, or even Electricity.

The use of Liquefied Natural Gas (LNG) as bunker fuel has gained prominence, particularly among LNG ships/carriers, and has witnessed increased adoption among other ship types in the past decade. Notably, LNG's availability along major trade routes and the increase of bunkering facilities and vessels contribute to its popularity. A snapshot of LNG's status as a bunker fuel reveals:

- 426 operational non-LNG carrier ships using LNG as fuel
- 536 ships under construction planning to use LNG as fuel
- 114 ports worldwide providing LNG bunkers
- 34 LNG bunkering vessels available globally

While LNG stands out as a cleaner alternative to Heavy Oil, it remains a fossil fuel. While debates regarding the search for alternative fuel with zero carbon emissions rather than settling for lower emissions still carry on, research continues into new alternatives, leading to the emergence of options such as Hydrogen, Ammonia and Methanol.

Hydrogen emerges as the best alternative due to its emission-free nature, with only water as a byproduct. In India the government has come up with a policy document and is encouraging companies to set up

establishments for supply of Hydrogen to various industries and various geographies. However, challenges concerning Hydrogen storage and supply, along with varying methods and sources, categorize Hydrogen as green, blue, grey, or brown. Achieving access to Green Hydrogen remains the ultimate goal, though this transition is anticipated to take several years.

Brown hydrogen	Grey hydrogen	Blue hydrogen	Green hydrogen
Hydrogen produced as a product of industrial processes	Hydrogen produced using fossil fuels	Hydrogen produced using fossil fuels but CO ₂ is captured	Hydrogen produced using electrolysis powered by renewable electricity or nuclear
Higher carbon		Lower carbon	Zero carbon

Similarly, there are multiple projects exploring Ammonia and Methanol as future ship fuels. While both have multiple advantages, commercial viability and availability to the global merchant fleet will require substantial time. At present, no commercial ships operate using Hydrogen, Ammonia or Methanol. Nonetheless, experimental voyages and studies have shown that these alternate fuels can replace Heavy Oil in the future. The enthusiastic engagement of the global maritime industry in these studies fuels rapid progress, indicating the shifting tides in the world of ship bunkers. However laying out the entire supply chain for these fuels for a global industry like shipping implies at least a couple of decades. Until then, Very Low Sulfur Fuel Oil (VLSFO) and LNG will remain

the preferred bunker fuels.

India has a very active maritime trade with its 200 plus ports witnessing over 40,000 ship calls annually. Although not yet a top-tier bunkering hub, India's geographic location provides an opportunity to emerge as a bunkering hub for LNG. With its strategic positioning along international trade routes and a steady supply of LNG, India could potentially establish itself as a LNG bunkering hub for ships. Existing LNG import terminals and upcoming Floating Storage and Regasification Units (FSRU) facilities could be developed into such hubs in the country. A successful LNG bunkering operation was conducted at the port of Cochin in 2017, demonstrating its technical feasibility.

As the largest Agency house in India, the J M Baxi group is gearing up to provide bunkering solutions to the

ships of the future. The group is involved in the transition to cleaner fuel alternatives by ships and would be part of the development of infrastructure whenever bunkering requirements for cleaner fuels would emerge in India. J M Baxi has been successfully handling LNG ships in India for many years. It was part of the first LNG imports to the country at the Port of Dahej and continues to handle such ships regularly at Dahej and few other ports in India. As part of its other decarbonisation exercise, J M Baxi continues to explore options for setting up clean fuel bunkering facilities in India. Whenever successful, this would be another of J M Baxi's contributions to a cleaner and greener planet.

In Conversation

With KAJAL FESTEN-PUROHIT

As a leading salvage provider in the world, including the Indian market, what trends do you see emerging?

The markets in India and overseas are both changing rapidly and demonstrating similar trends. Leading the way is the increased focus on Environmental, Social and Governance (ESG) initiatives, which calls on maritime companies to deliver greater transparency, commitments to society and of course the creation of a sustainable environment. Working at Marine Masters, which embodies many of these values – particularly given our focus on working closely with local contractors for salvage projects in order to support the economies of the countries we are active in and share best practice – allows me to see the benefits that this way of working delivers.

Another trend is the increasing diversity of the workforce. A lot has changed over my time in the sector and I am very pleased to see more women in the maritime sector – not just in support roles but also in C-suite roles. We do have a long way to go, and I look forward to expanding the conversations about diversity beyond gender since a truly diverse workforce will really accelerate our ability to deliver complex projects as well as our decarbonisation and digitalisation ambitions. More importantly, this is the only way to sustainably address industry concerns about recruitment and retention.

Shipping and other sectors are really working to deliver IMO's decarbonisation agenda and we are digitalising faster than ever before. This creates new opportunities – such as decommissioning of older structures – and necessitates greater collaboration to resolve challenges and seize opportunities. I am pleased to see that this is taking place.



Today Tidings is joined by Kajal Festen-Purohit from IndiMaritime Solutions, the Indian arm of Marine Masters, a Dutch marine services company. A leader with over 20 years of maritime experience, she is also a committee member for the India Netherlands Business Association (INBA) Mumbai and has long been a flag bearer for working women in the maritime industry.

You mentioned ESG as a trend, and we know that this is something that Marine Masters has a strong focus on. Can you tell us more?

While of course protecting the environment underpins all the work that salvors do, I think that Marine Masters is also extremely strong on the other two aspects of ESG. On the social front, we are known for collaborating with regional partners and working with local subcontractors and suppliers not just to secure salvage equipment but also to share knowledge and skills. Working this way provides operational agility, responsiveness and reduces transportation costs, but importantly it also supports local communities and economies by offering fair wages and internationally recognised training that benefits workers beyond the term of the salvage contract. 'Just transition' is increasingly being discussed throughout the maritime industry and I am proud to be associated with Marine Masters' approach and hope it will become more prevalent throughout the industry.

We are also extremely transparent with our customers and the stakeholders that we work with, which is essential when coordinating with insurers, governments, port authorities, local contractors and more – meaning that we are constantly refining our corporate governance. In most cases, our contractors come away impressed with our way of working and replicate this with their other customers. In essence, we are organically spreading ESG best practices.

Offshore wind turbines erected in the early 2000s are nearing the end of their envisaged 20-25 life cycle. Is the industry prepared to handle decommissioning, at scale?

Offshore wind farm decommissioning is in its infancy and it is imperative that the maritime industry develops cost-effective, sustainable and efficient strategies before the requirement outmatches our collective capabilities. As I mentioned before, there is a lot of overlap with the engineering skills and equipment needed for oil and gas decommissioning and salvage, meaning that we should be able to meet the challenge. However, I believe that we should remain agile when decommissioning as the situation is quickly evolving.

Currently the favoured method is to cut the monopile several metres below the seabed but not completely remove it, which minimises cost, reduces operational complexity and meets regulatory requirements – but can have long term impact. In the future, complete removal is likely using techniques such as hydraulic extraction. At Marine Masters, we are used to thinking out of the box when it comes to projects as we often use local equipment and unconventional methods to tackle work – meaning that we can bring an open

In Conversation

mindset to problem solving. This will allow us to deliver the best case scenario under fixed parameters such as cost, local regulations and of course seabed and weather conditions.

Experience has taught us that in addition to applying best practice methodologies and deploying appropriate technologies, it is also imperative to understand the local regulatory environment. Partnering with companies that have such knowledge is therefore a key enabler for the majority of decommissioning and salvage projects and a fundamental component of achieving a successful project outcome. Capable of providing vital non-technical support and facilitation, we regard J M Baxi as one such partner.

As maritime increasingly decarbonises, what issues do you see from a salvage perspective?

Once human life onboard a vessel in distress has been secured, the primary focus of any salvage operation is the safe containment and removal of pollutants to protect the environment and local economy. While salvors are experienced in handling Heavy Fuel Oil (HFO) and biofuels, the shift toward decarbonisation introduces new fuels and technologies that come with altered risks. In the case of ammonia, this is soluble and highly toxic to human life and the marine environment, it poses a significant hazard. We also know that thermal runaway is a serious concern with lithium-ion batteries.

Salvors will encounter vessels powered by different fuels and carrying different cargoes of fuel, making casualty recovery far more complex. Salvors will require detailed information about the ship's design and its cargo in order to plan and execute salvage – particularly if working close to an inhabited coast, within a Marine Protected Area or other sensitive locations.

Emissions should always be minimised. We do this by locally sourcing equipment, which is cost effective, will have a lower emission footprint vs being transported across the globe and can be deployed quickly. Using non-traditional equipment requires a detailed understanding of the proposed salvage method to mitigate risk, but we stand proudly by the record of zero incidents and no pollution in over 60 successful emergency responses.

Shipping is changing at a faster pace than ever before, how do you think stakeholders can best prepare for these changes?

During periods of rapid transition, it is possible to achieve more using less if information is shared and stakeholders work collaboratively. Given the scale of the climate emergency, we do not have the luxury of time that is usually required to take forward projects unilaterally – which also costs more.

We work with contractors all over the world and are eager to learn from others. I think it is beholden on international and regional organisations, national governments, and industry bodies to collaborate, where practicable, for the greater good and to better leverage the resources available to us. In this way, we can develop a suite of universal best practices to operate more sustainably. This collaborative attitude will also really deliver results if applied to policies, as information exchange between authorities can really speed up responses to incidents and minimise environmental impact. I see the value of this type of collaboration a lot in my work with INBA, which benefits organisations in both countries.

What technologies are you most excited about which are coming into maritime?

Digitisation and the ability to share and analyse data, utilising AI and machine

learning, is really revolutionising shipping. I believe that technological advances, properly harnessed, will reduce operational risk. We are already integrating underwater survey and high-resolution multibeam sonar technology with computational analytics and modelling to provide detailed 3D mapping of casualties.

Automation poses both challenges and opportunities but I am also excited about the possibility of being able to deploy uncrewed fire-fighting vessels, for example, which could remove the risk to human life posed by fire and gases, and extend mission endurance.

We recognise the importance of ESG, technology and innovation in salvage and decommissioning, but what benefits arise from the relationship between IndiMaritime and Marine Masters?

Businesses looking to sustain commercial growth often expand into new markets. This can be challenging unless they have the right degree of technical expertise combined with local knowledge of subcontractors, suppliers and, crucially, regulations. IndiMaritime has extensive maritime experience, including ship ownership and management, and managing offshore units, which complements Marine Masters' incredible technical salvage and offshore expertise. Our synergy provides a comprehensive service to our clients, particularly when we partner with established local companies such as J M Baxi, whose extensive local and regional networks can help to optimise our interventions. In other words, we can deliver international expertise with a local flavour to deliver the best possible outcome.



Ports & Logistics

INCHHAPURI GATI SHAKTI CONTAINER TERMINAL: Towards More Efficient Rail Transport

Revolutionizing Logistics with First Greenfield Gati Shakti Multi-Modal Cargo Terminal on Indian Railway Land, Indian Railway, under the Gati Shakti Masterplan for Multimodal Connectivity launched by Hon'ble Prime Minister Shri. Narendra Modi took the initiative of inviting private investment for developing terminals on Railway Land under the liberalised land usage regime.

The Inchhapuri Gati Shakti Cargo Terminal, situated at Inchhapuri Station on the Gurugram-Rewari section of the Delhi Division of Northern Railway, is set to become the first greenfield

Gati Shakti Multimodal Cargo Terminal (GCT) of the Delhi Division. This terminal is poised to usher in a new era of efficient and sustainable rail transportation in National Capital Region (NCR).

J M Baxi Ports & Logistics Ltd (JMBPL) has successfully established the greenfield Inchhapuri GCT in an impressive time frame of 8 months, surpassing the initial 18-month projection set by the railways. This achievement was made possible through a Concession Agreement between JMBPL and the Delhi Division of Northern Railway (NR). This multimodal cargo terminal

marks a significant milestone for both JMBPL and Delhi Division of NR in revolutionising efficient and sustainable multimodal cargo transportation in the NCR.

It is expected that proliferation of such Gati Shakti terminals across the Indian Railway Network will help provide intermodal transportation solutions for domestic trade in the manufacturing sector of India, ultimately reducing logistics costs.

Phases of Transformation

The Inchhapuri terminal development is divided into strategic phases,



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with a commitment to operational readiness by September 2023. The first stage of development includes the establishment of essential infrastructure as outlined:

- **Rail Siding:** The terminal will feature two state-of-the-art rail sidings, designed to facilitate seamless loading and unloading of cargo containers onto trains.
- **12,000 sqm Platform Area :** This area is designated for the efficient handling of containers.
- **Paved Stacking Area :** Covering 15,000 sqm, this area will be used for the storage of containers.
- **Terminal Approach Road:** A heavy duty bituminous approach road has been constructed to provide access to the terminal from existing district road.
- **Railway Services Building:** The Railway Services building will

house the FOIS and TMS Terminals and provide office accommodation for railway staff.

- **Electronic in Motion Weighbridge:** A 140-ton capacity Electronic In-Motion Weigh Bridge (EIMWB), will facilitate weighing of trains carrying containers to ensure safety and accurate freight computation.
- **Enhanced Yard Illumination:** The entire yard is well illuminated and enclosed by chain-link fencing for enhanced security and visibility.

Equipment and Capacity

This Gati Shakti Terminal is expected to have an annual capacity of 100,000 TEU. The terminal will be equipped with modern handling and transportation equipment for quick evacuation of containers.

Operational Benefits of Inchhapuri Terminal

The Inchhapuri terminal's capabilities are poised to transform operations in several ways:

- **Reduced Transit Time:** By reducing the turnaround time (TAT) for double stack trains between gateway ports and the Dedicated Freight Corridor (DICT) via Inchhapuri, efficiency will increase, leading to quicker movement of goods and a more streamlined trade process.
- **Handling Increased Capacity:** State-of-the-art infrastructure at the terminal will significantly boost its capacity to handle a larger number of double stack trains compared to current handling capacities. This enhancement is a testament to the terminal's



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commitment to accommodating the ever-growing demands of the industry.

- **Unlocking Export Potential (Outward Double Stack Trains):** A groundbreaking advancement on the horizon is the planned handling of outward double stack trains carrying exports. This crucial addition, previously unavailable from other locations, opens new possibilities for exporters and further cements the terminal's role in reshaping the trade landscape.
- **Savings through Reduced Dwell Time:** By reducing dwell time for import containers, the Inchhapuri Inland Container Terminal promises to minimize Port Ground Rent charges (PGR), resulting in savings for stakeholders and efficient resource allocation.
- **Improved Customer Satisfaction:** The terminal's advanced will

address a long-standing challenge—containers arriving at DICT in separate parts of the same Bill of Lading (BL), ensuring smoother and more consolidated cargo delivery.

- **Smoother Customs Process:** Part container delivery requests to customs are expected to decrease significantly, streamlining customs procedures and minimizing complexities in cargo handling. This improved process will expedite the movement of goods.
- **Collaborative Platform by Supporting Multiple CTOs:** Inchhapuri Inland Container Terminal will not be limited to its own operations; it will also function as a platform to handle double stack trains and domestic trains for other Container Train Operators (CTOs). This collaborative approach enhances efficiency across the board and contributes to

the industry's overall profitability.

- **Scaling Up Volume:** As the TAT of trains improves, the terminal's capacity to handle a larger volume of cargo per month will rise exponentially. This capacity boost further positions the Inchhapuri Inland Container Terminal as a pivotal player in driving efficient trade practices.

Overcoming Obstacles: Challenges Faced During the Construction Phase

In the ambitious endeavour to establish the first Gati Shakti Cargo Terminal on railway land, numerous challenges were encountered and skilfully mitigated through careful coordination, meticulous planning and a commitment to sustainable development. This has resulted in completion of the project in record time.

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Here are some key highlights of this remarkable achievement:

1. Seamless Coordination and Pre-Planning

- Coordination between the project team and railways was key due to land ownership by Railways and the various safety and regulatory aspects.
- Early planning ensured mobilization of resources before the targeted construction commencement.
- A strategic approach involved local villages in clearing dense bush scrub vegetation and a buffer zone from cultivated land.

2. Time Constraints

- The construction period coincided with the crop harvesting season, leading to a scarcity of land-filling material. Innovative strategies were implemented to secure the necessary materials while

minimising the disruption to ongoing agricultural activities.

- Challenges posed by the monsoon season were addressed through adaptable strategies to mitigate weather-related delays and ensure project continuity.
- Civil unrest in Haryana affected labour availability, intensifying pre-existing challenges. Disruptions in government offices and strikes led to delays in obtaining regulatory clearances and permissions from the pollution control board.

3. Embracing Sustainable Development

A sustainable approach was adopted through various measures:

- Distribution of cleared bush scrub vegetation to villagers for use as local firewood.
- Replanting of trees in the designated construction area, to enhance the local ecosystem.
- Extension of rail bridges and underpasses to facilitate villagers' movement and enhancing access.

- Reconstruction of a Divyang ramp towards station building, away from in the approach road, enhancing accessibility.

Future Expansion

J M Baxi Ports & Logistics is dedicated to delivering efficient, dependable, and environmentally conscious multimodal transportation services for the industry. The company is poised to embark on the terminal's second development phase, aimed at expediting train arrivals and departures from Inchhapuri Terminal, and providing additional container yard for in-transit storage of multimodal cargo. The Inchhapuri GCT Terminal established by J M Baxi Ports & Logistics has already garnered substantial attention from the NCR trade, as it synergizes with the Western Dedicated Freight Corridor, bringing both speed and cost advantages to the trade.



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J M BAXI HEAVY Delivers A Critical Deadline Solution



In today's fast paced world, safe and timely delivery of project goods is pivotal to the success of businesses across the globe. When a shipment becomes an intricate puzzle to solve, it takes a team of experts to piece it together. J M Baxi Heavy recently successfully executed a challenging complexity that not only saved costs but adhered to strict timelines.

The client Jindal Steel & Power Limited had missed the last dispatch plan for shipment due to transport hold up for its crucial back-up roll shipment, from Terni, Italy to its destination at Chennai, India. At first, glance, it might seem like a routine task, but the project was anything but ordinary.

Rerouting Due to Road Restrictions

The client initially sent road transportation with an Incoterm CIF agreement between the shipper and the consignee. However, due to a bridge collapse that led to the closure of a road and hence, transportation by road, the Italian Road Transport (RTO) prohibited it. As a result, the shipper opted to move the first roll by rail, which was of considerable height and not feasible. Consequently, the shipper insisted on converting the term to Ex Works.

Optimising Costs Through Innovation

Keeping in mind the client's budget constraints and timelines, one of the

most striking aspects was J M Baxi Heavy's innovation to transfer the cargo from the wagon to the saddle alongside the vessel without the requirement of a port gantry crane and the use of transport axles for loading, storage and shifting of cargo by 300m which would cost more than € 75000. To load it directly on the ship, a vessel with a higher crane capacity and lifting radius was required, picking up the cargo from the axle wagon at 18m from the vessel and placing it on the transport saddle. Once the cargo was lashed and chocked, it was loaded on the vessel.

Meeting Strict Timelines

Time was of the essence in this project, as the ship had to arrive just

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in time when the wagon reached, as holding either the ship or the wagon beyond certain timelines meant heavy demurrage charges. The plan faced other inherent challenges – the shipment was during the holiday season in Italy, where manpower is in short supply and we had to do multiple operations at port which we concluded in 7 hr. The team's dedication to adhering to these stringent timelines is commendable.

Mission Accomplished: On Time, Every Time

The successful execution of this project by J M Baxi Heavy is a testament to their commitment to delivering effective, safe, and timely solutions. Any delays in the project would have resulted in a waiting period of over a month for the next



available shipment slot. Thanks to their expertise and dedication, such a delay was avoided, ensuring that Jindal Steel & Power Limited received their critical back-up roll shipment without hiccups.

In conclusion, J M Baxi Heavy's recent transport project from Terni to Chennai stands as a noteworthy example of how innovative thinking, meticulous planning,

and unwavering dedication can overcome complex engineering challenges. As a trusted partner in delivering results, the team focuses on delivering results on their ability to find solutions where others encounter obstacles. In a world that demands agility and efficiency in logistics, J M Baxi Heavy provides customers with unique solutions, innovation, and expertise.



Legal Lens

Anchoring Legal Clarity: INDIA's Maritime Laws Explored

Welcome aboard! In this maiden voyage of our legal section, we embark on an exciting journey to unravel the intricate world of maritime law. The maritime industry, with its vast expanse and global reach, has always been a subject of fascination and awe. However, beneath the surface of towering ships and endless horizons lies a complex legal framework that governs every aspect of this industry, shaping its course and ensuring its sustainability.

Why do we need to adopt a legal lens when exploring the maritime industry?

The answer lies in the profound impact that comprehending legal nuances can have on decision-making. Maritime operations, whether national or international, are bound by a web of laws, regulations, and international conventions. Understanding and navigating this legal landscape isn't just advantageous, it's a necessity.

By viewing the maritime industry through a legal lens, we can make informed decisions that mitigate risks, ensure compliance, and drive innovation. It empowers us to proactively address challenges and seize opportunities, ultimately fostering a more resilient and prosperous industry.

Debunking Myths: The Simplicity in Complexity

Some may perceive maritime law as an insurmountable labyrinth of complexities. However, as we delve deeper into this legal world, we aim to debunk such myths. While maritime law is undoubtedly intricate, it is not an impenetrable fortress. Our mission is to demystify this realm and present it



in a comprehensible and approachable manner.

Rather than shying away from the legal intricacies, we invite you to embrace them, with this section of Tidings. As we navigate through various aspects of maritime law in the coming articles, you'll discover that clarity can emerge from complexity. Our legal section will focus on these essentials, equipping you with the knowledge and insights to comprehend maritime legal principles.

Maritime Law in India : An Overview

Maritime law, also known as admiralty law, constitutes a comprehensive body of legal principles governing matters related to shipping, cargo transportation, customs, port regulations, and disputes within the maritime realm. It encompasses a wide spectrum of issues, including cargo damage, delayed deliveries, lost packages, ship damages, collision, and more.

Genesis and Evolution of Maritime Law in India

India's maritime heritage dates back to ancient times when it engaged in

seaborne trade with Asia and the Middle East. Jurisprudence on maritime affairs in India began to take shape based on customs and trade practices of those involved in maritime commerce. However, the foundation of modern maritime laws in India was laid during the British colonial era.

While the British administration attempted to limit India's involvement in the shipping industry, they introduced several significant statutes that laid the groundwork for the country's maritime and admiralty framework. Key legislations such as the Indian Registration of Ships Act 1841, the Indian Ports Act 1908, the Indian Merchant Shipping Act 1923, and the Territorial Waters Jurisdiction Act 1878 were instrumental in developing India's maritime infrastructure and legal structure over time.

Today, India boasts a robust maritime industry with 13 major ports facilitating seaborne trade. It stands as one of the world's most organized shipping fleets, responsible for transporting more than 95 percent of India's merchandise trade by volume and approximately 68 percent by value through maritime transport.

Legal Lens

Significant Enactments

1. Merchant Shipping Act 1958:

Following India's independence, the need for a maritime law tailored to the country's unique requirements became evident. In response, the Indian Parliament passed the Merchant Shipping Act 1958. This pivotal legislation allowed for the registration of Indian ships, addressing a gap in the previous laws. The Act covers a wide array of provisions, including the establishment of a National Shipping Board, regulations for ship manning, engagement and repatriation of seamen, passenger and cargo ship safety, collision procedures, pollution control, limitation of shipowners' liability, and civil liability for oil pollution damage. Subsequent amendments in 2002 introduced provisions limiting shipowners' liability in cases of accidents with large claims exceeding the value of the ship and cargo.

2. Carriage of Goods by Sea Act 1925:

India adopted the Carriage of Goods by Sea Act in 1925, aligning itself with the Brussels Convention on Maritime Law, which featured uniform Rules of Bill of Lading derived from the Hague Rules of 1924. This Act governs the carriage of goods by sea under a bill of lading, whether between Indian ports or internationally. It outlines the responsibilities and liabilities of carriers, conferring rights and immunities to carriers of goods. The carrier's primary duty includes issuing a bill of lading and maintaining the ship's seaworthiness while caring for the cargo as per the agreed route.

3. Multimodal Transportation of Goods Act 1993:

India's approach to multimodal transportation has been progressive, incorporating provisions from the United Nations Convention on International Multi-Modal Transport of Goods held in Geneva in 1980. This Act

applies when two or more modes of transport are used during the transportation of goods from India to a destination outside the country. It establishes regulations for multimodal transportation operators (MTOs) and defines their liability for delays and damage to consignments. MTOs are held liable only when the damage, loss, or delay occurred while the consignment was in their charge. There'll be no liability if they prove that no fault or neglect on their part contributed to the loss.

4. The Admiralty (Jurisdiction and Settlement of Maritime Claims) Act 2017:

To modernize the outdated British laws governing maritime relations and claims in India, the Admiralty (Jurisdiction and Settlement of Maritime Claims) Act 2017 was introduced. Effective from April 1, 2018, this Act applies to all vessels within Indian territorial waters, with certain exceptions for foreign vessels with non-commercial purposes. It grants jurisdiction to all the High Courts for maritime claims related to vessel ownership disputes, co-ownership conflicts, mortgages, vessel construction, repair, conversion, sale, environmental damage, and more.

5. Major Ports Authorities Act, 2021:

Effective from 3rd November 2021, the Major Port Authorities Act, replaced the previous Major Port Trusts Act, 1963 which dealt with administration over ports and jurisdiction over ships in the port. The Act provides for regulation, operation and planning of Major Ports in India (currently regulating 12 out of 13 Major Ports) and vests the administration, control and management of such ports upon the Board of Major Port Authorities. The Act provides greater autonomy and freedom to Major Ports by enabling the fixation of its own tariff and scrapping the Tariff Authority for Major Ports or TAMP, the erstwhile rate regulator for state-run ports. These major ports have been

empowered to fix Scale of Rates for port services and assets. While the new PPP concessionaires (after the enactment of the Act) are free to fix tariffs based on market conditions, the Ministry of Ports, Shipping, and Waterways has set up a three-member panel to examine the issue of permitting the regulated older PPP cargo terminal operators to migrate to a market driven pricing regime. The panel is expected to suggest a set of guidelines for migrating the older cargo terminals to a market driven rate regime keeping in view the commercial and other aspects. Amongst other, the Act provides for constitution of an Adjudicatory Board which shall perform functions other than tariff setting, i.e., adjudicate and pass orders on the disputes between the Major Ports and PPP concessionaires within the framework of the Concession Agreement, appraise, review and suggest measures for revival of stressed PPP Projects.

Charting the Course Ahead

India's maritime law has undergone significant evolution, adapting to the changing needs of the maritime industry and promoting investment opportunities within the country. These legislative milestones have not only transformed India's maritime landscape but also contributed to the growth of its logistic sector, making it a vital player in global trade.



Environmental, Social & Governance

INCHHAPURI's Double-Stack Strategy: Smart Terminal, Less Carbon

In an era where environmental sustainability is no longer a buzzword but an imperative, businesses must adapt and innovate to reduce their carbon footprint. One such example of smart logistics planning is the Inchhapuri Inland Container Terminal, strategically located on the double-stack route of the Indian Railways. Inchhapuri Inland Container Terminal emerges as a common user facility with significant ESG benefits, reducing carbon emissions while efficiently managing cargo transportation in the near future.

Inchhapuri vs. Patli : A Comparative Analysis

Traditionally Patli Inland Container Depot held a pivotal role as the primary hub for cargo handling for Delhi

International Container Terminal. Despite the position of significance Patli International Container Terminal occupies in the logistics network, the limitations of singular dependency increased, allowing Inchhapuri Inland Container Terminal to emerge through the narrative of sustainability and intelligent design.

In our journey towards a more sustainable future, let's draw a comparison between Inchhapuri Inland Container Terminal and Patli Inland Container Depot to highlight why the former stands out as a better ESG alternative.

What do we learn from this?

- **Carbon Emissions Reductions**
In the realm of carbon emissions,

Inchhapuri makes a compelling case. The data speaks volumes. While Patli contributes 1863.69 t of CO₂ equivalent emissions, Inchhapuri produces a mere 53.568 t. This significant difference underscores the environmental benefits of strategically locating logistics hubs closer to the rail network, as Inchhapuri has done.

• Location Matters

Inchhapuri's strategic placement, just 10 kilometers from the Western Dedicated Freight Corridor (WDFC), allows it to be a hub terminal for multiple rail-linked terminals in the northern hinterland. This not only enhances efficiency but also reduces the need for long-haul transportation via trucks. In contrast, Patli's location necessitates a longer

tco2e container transport by Road from Patli to DICT



Trailers	10000
Distance (km)	100
Emission Factor (kgCO ₂ e)	0.76629
kgCo ₂ e	766290

Trailers	10000
Distance (km)	100
Emission Factor (kgCO ₂ e)	1.0974
kgCo ₂ e	1097400

Total KgCo₂e	1863690
Total tCo₂e	1863.69

Total tCO₂e units **generated** **1863.69 tCO₂e**
by Road transport

tco2e container transport by Rake from Inchhapuri to DICT



Tonne	4
Trips	10000
Distance (km)	124
Emission Factor (kgCO ₂ e)	0.0018
kgCo ₂ e	8928

Tonne	20
Trips	1000
Distance (km)	124
Emission Factor (kgCO ₂ e)	0.0018
kgCo ₂ e	44640

Total KgCo₂e	53568
Total tCo₂e	53.568

Total tCO₂e units **saved** **1810.12 tCO₂e**
by Rail transport

Environmental, Social & Governance



road journey, resulting in higher emissions.

The pursuit of environmental sustainability in logistics inevitably leads us to explore Modal Shift and Intermodal Connectivity (MSIC). The concept is simple yet powerful: shift transportation from road to rail, seamlessly connecting different modes of transport within an integrated logistics network. Some advantages of opting MSIC in logistics include -

- Reduced carbon emissions, making it an eco-friendly choice for transportation
- Cost savings in logistics operations
- Reduced congestions leading to smoother traffic flow and shorter commute times
- Enhanced safety with statistically fewer accidents compared to long-haul trucking
- High energy efficiency that moves cargo with less fuel consumption
- Preservation of land and natural habitat by reducing the need for additional road construction
- Reliability with fewer weather-

related disruptions compared to road transport

- Scalability by easily adapting to increasing cargo volumes, ensuring scalability in logistics operations
- Improved supply chain resilience that long-term sustainability goals, contributing to environmental and social objectives
- Competitive advantage for business through cost savings and sustainability
- Government incentives for MSIC adoption, further boosting its economic benefits

Inchhapuri embodies the essence of MSIC, It's proximity to the rail network encourages more cargo to be transported by train, significantly reducing carbon emissions associated with truck transportation, This shift not only decreases the carbon footprint but also alleviates the strain on road infrastructure and reduces traffic congestion.

The importance of MSIC cannot be overstated. By fostering a modal shift, we can create a logistics ecosystem

that seamlessly integrates road, rail, and other transportation modes. This interconnectedness not only enhances efficiency but also contributes to a substantial reduction in overall carbon emissions.

Inchhapuri Inland Container Terminal serves as an example of ESG-first logistics planning with a focus on practicality. Its strategic location, efficient operations, and commitment to reducing carbon emissions make it a clear choice for businesses aiming to minimise their environmental impact. As we navigate the challenges of the modern world, embracing the principles of Modal Shift and Intermodal Connectivity is imperative. By doing so, we not only enhance our efficiency but also take a significant step towards a more sustainable and environmentally responsible future. It's time for businesses across industries to follow the lead of Inchhapuri and embark on a journey towards reducing their carbon footprint for the benefit of our planet.



Technologies

J M BAXI's PARADIP Terminal Leverages Digitalisation To Reduce Carbon Footprint

Ports are gateways to the economy and therefore are naturally a flurry of varied activities. However, fuel is one of the biggest expenses that keep port terminals running. In a bid to manage and monitor fuel costs, Paradip Multipurpose and Clean Cargo Terminal with the help of J M Baxi's technology company - Portall, set up a technology system, replete with sensors and integrated software to capture data on fuel disbursement and usage.

Fuel management systems are designed to monitor and control of fuel consumption within the fleet – port equipment and heavy vehicles. They accurately measure and track fuel inventories and how fuel is dispensed. This vital data is stored in the system and can be reviewed through connected web portals and mobile apps.

The components of fuel management systems are – the tank, the pump, the tank gauge, the fuel management application system and the fuel access device and hardware. All of these components are integrated via sensors and a gateway and software platform.

The sensors are fitted to fuel tanks to monitor fuel levels. The sensors continuously capture and transmit this data real time to a centralized platform.

Whenever the fuel level goes low or there's a sudden fluctuation in the fuel level, an alarm is initiated from the platform to the user notifying them to refuel or warn of any suspected leakage or pilferage/theft. Additionally, users can also generate daily, weekly and monthly reports to verify and compare the refuelled volumes with the reported fuel entry log to stop malpractices.

A cause for change

Apart from manual process which can lead to grave inaccuracies, there were several reasons which egged the team on to adopt this change:

- J M Baxi's Paradip terminal is a multipurpose clean cargo one. This means that a variety of over 90 equipment types being handled simply because the terminal caters to different types of cargo.
- 60 percent of the equipment is owned and the rest is hired
- Fuel and equipment are major components of operational expenditure
- On average over 120 kilolitres of fuel is being consumed per month to meet the operational requirements
- Receiving and distribution of fuel is a completely manual process
- Equipment engagement and monitoring are carried out manually by the operations team
- Kilometre Reading (KMR) and Hour meter Reading (HMR) is captured manually through a log sheet
- Fuel consumption and tracking is done manually by the operations and engineering teams

- Idle time of equipment is captured and calculated manually

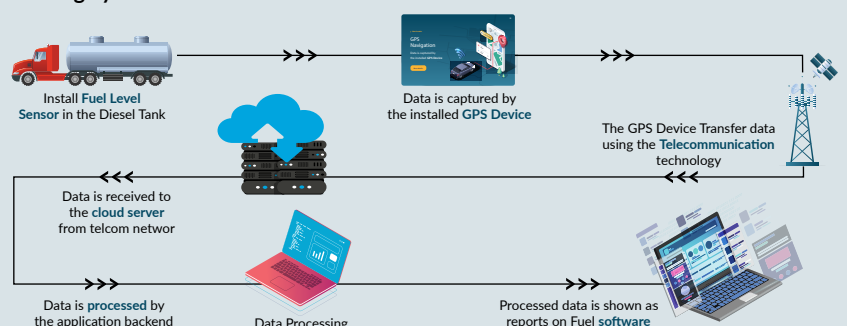
The impact

All the manual processes related to fuel management are now automated – fuel receipt, distribution and consumption, utilization per equipment, equipment maintenance and idle time. All these data points now rest in the fuel management system and can be extracted and customized for generating reports to be studied.

To ensure seamless operational management, the working area is geofenced enabling live tracking of the equipment. Fuel utilization can be controlled with real-time monitoring of fuel in the equipment's tank. Other Artificial intelligence (AI) features help users to effectively plan the ability of the equipment to handle more volume with less engagement.

It is expected that this exercise which began in May 2023 will reduce fuel consumption by 5-10 percent, and will eventually help reduce the carbon footprint.

IoT Based Equipment Monitoring System Fuel Monitoring System Work Flow



Weights And Measures

LPG In INDIA – Trends And Opportunities



The Indian government's efforts to ensure access to clean cooking fuel for every household have made India the world's second-largest LPG consumer, with consumption reaching 28.5 million tonnes in FY 23. The Pradhan Mantri Ujjwala Yojana (PMUY) has played a pivotal role in this achievement, with beneficiaries increasing from 159.9 million in 2018-19 to 344.8 million in 2022-23. LPG consumption is projected to increase to 32 million tonnes by 2025 and further rise to 42.5 million tonnes by 2040. The government has undertaken several initiatives to encourage LPG use

across the country, particularly in rural households, with the aim of shifting them away from traditional, health hazardous, and polluting fuels.

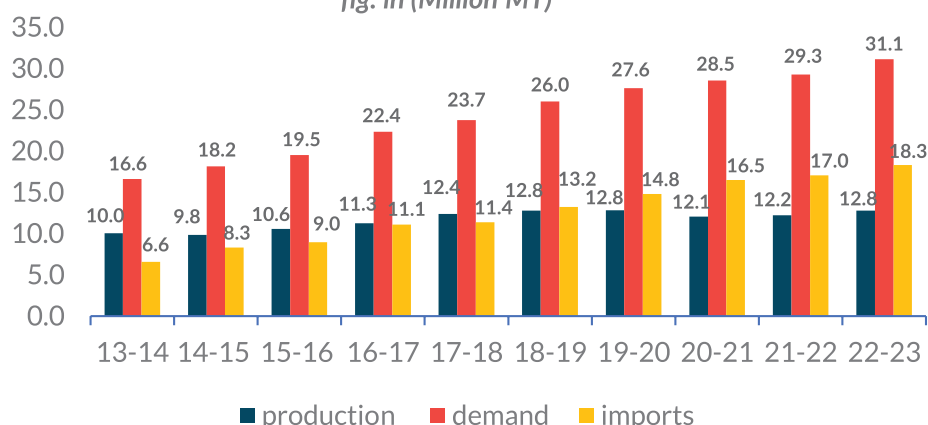
LPG consumption in India is expected to reach new highs in 2023, with a growth rate of 1.5-2%, according to forecasts from several sources, including the state-controlled refiner IOC, Crisil and ICRA. LPG demand increased by 2.9% to 28.7 million tonnes in 2022, following a 1.5% increase in 2021, but it grew by 8.5% per year in 2016-19. In August 2023, the government announced a reduction of Rs 200 in LPG prices, along with an additional subsidy of Rs 200 for

Pradhan Mantri Ujjwala Yojana (PMUY) beneficiaries. This move is expected to stimulate increased LPG consumption. Additionally, infrastructure development, such as the Kandla-Gorakhpur LPG pipeline and a new LPG import terminal in Andhra Pradesh, will play a role in the industry's future.

Imports

Refineries wise LPG Production FY 22 (000'mt)		
Company	LPG	% of total
IOCL	3,066	25.1%
Jamnagar Refinery, RIL	1,898	15.5%
Kochi Refinery, BPCL	1,428	11.7%
MRPL, Mangalore, ONGC	1,049	8.6%
Vadinar-Nayara Energy Ltd.	1,006	8.2%
Punjab, HPCL-Mittal Energy Ltd.	983	8.0%
HPCL	561	4.6%
CPCL, Manali Refinery	296	2.4%
BORL, BINA	257	2.1%
NRL, Numaligarh Refinery, Assam	44	0.4%
Subtotal	10,588	86.5%
Fractionators	1649	13.5%
Total	12,237	100.0%

LPG Supply Demand – Outlook
fig. in (Million MT)



India's dependence on imported liquefied petroleum gas (LPG) has risen significantly, reaching 64% in 2022-23, up from 49% six years earlier. This increase is attributed to a 32% growth in LPG consumption, while domestic production only grew by 14%. The country's domestic LPG customer base has more than doubled in the past decade, reaching 314 million households, leaving very few without access to LPG due to government initiatives.

Industry experts suggest that the import dependence may soon plateau, as further significant growth in local demand is unlikely. Many existing customers are

Weights And Measures



expected to shift to piped natural gas (PNG), reducing the demand for LPG cylinders. Private sector imports of LPG, which once accounted for around 7.8% of total imports in 2010-11, have fallen to zero in 2022-23.

Regarding LPG import sources, the Middle East countries, including Qatar, Saudi Arabia, and the United Arab Emirates (UAE), have remained the top suppliers to India. However, the share of the Middle East in India's LPG imports has decreased from over 99% in 2012-13 to about 92% in 2022-23. Despite a reduction in its share, Qatar continues to be India's largest LPG supplier.

In the fiscal year 2022-23, India imported 18.3 million tonnes of LPG valued at US\$13.8 billion. LPG imports accounted for 41% of total petroleum

product imports in terms of volume and 51% in terms of value.

Indian refiners have not ramped-up LPG production capability. LPG produced by Indian refineries was only 4.2 percent of total crude processing capacity in 2022-23. Indian refineries are more optimally designed to produce petrol and diesel and have lower LPG yields, limiting domestic LPG production.

LPG - Industry Use

In India, LPG is mainly associated with household cooking, but it offers precise temperature control and low emissions, making it valuable in various industrial processes like metalwork, food production, and petrochemicals. It has high controllability, a high calorific value and enhances product quality, especially

in glass and ceramic manufacturing. LPG is also used in road construction, sign lighting, and as a propellant in aerosol products. However, industrial and service sector LPG consumption in India is less than 10% of the total, primarily due to a strong focus on household cooking. Promoting LPG's industrial use aligns with economic and environmental goals, offering a clean, versatile fuel option with modular packaging and transportation capabilities.

LPG – Automotive Fuel

LPG (Liquefied Petroleum Gas) offers advantages as an automotive fuel in India, with a higher-octane rating than petrol, leading to improved engine efficiency and reduced emissions. However, despite its cost-effectiveness and environmental benefits, auto LPG

Particulars (As on 1st of April 2023)	UNIT	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 (P)
LPG Active Domestic Customers	Lakh				1486	1663	1988	2243	2654	2787	2895	3053	3140
LPG Distributors	No.	11489	12610	13896	15930	17916	18786	20146	23737	24670	25083	25269	25385
Auto LPG Dispensing Stations	No.	652	667	678	681	676	675	672	661	657	651	601	526
Bottling Plants	No.	184	185	187	187	188	189	190	192	196	200	202	208
Gross Tankage	000' MT	711	771	777	781	869	878	912	929	978	994	1088	1178

Weights And Measures

consumption in India has declined over the years, accounting for less than 0.3% of total LPG consumption in 2022-23. To boost the use of auto LPG and reduce pollution, policy initiatives that simplify access to auto LPG and reduce regulatory burdens could be instrumental in its promotion as a cleaner transportation fuel.

Indian LPG- Distribution Infrastructure

The Ujjwala program has boosted India's LPG supply chain to meet rising demand, which relies heavily on imports (over 60%). To accommodate this, new import terminals in Mundra and Haldia have been added, with more planned on east and west coasts. This will provide flexibility as import requirements are set to reach 20-21 MMTPA in the next 2-3 years. Over 4000 km of product pipelines are being laid for cross-country transport. The bottling infrastructure is expanding with over 30 new plants to increase capacity near demand hubs. Currently, the industry's recorded bottling capacity is 22.2 MMTPA, with utilisation ranging from 120% to 140% across 208 plants. The transportation fleet has also grown to support more distributors and larger supply areas.

The establishment of LPG Pipeline infrastructure is carried out by the Public Sector Oil Marketing Companies (OMCs) based on techno-commercial feasibility studies. LPG Pipelines are laid from refineries to LPG bottling plants. The Petroleum and Natural Gas Regulatory Board (PNGRB) established under the PNGRB Act, 2006, in the year 2007, is the authority to grant authorization for laying of LPG pipelines. Entities that propose to lay, build, operate or expand a pipeline apply to the Board for obtaining authorisation under the Act.

The total length of LPG Pipeline network in the country is 8,296 km comprising of the following pipelines: -

India has a total of 31.4 crore domestic LPG consumers, with 9.6 crore being beneficiaries of the Ujjwala scheme, leaving 21.8 crore non-Ujjwala



LPG PIPELINES

SN	Pipelines	OMC	Length (Kms)	Rated Capacity (MMTPA)
Existing Pipelines				
1	Jamnagar - Gand	ISIL	1201	2.58
2	Visakhapatnam - Srisaileshwaram	ISIL	589	1.11
3	Panipat - Jalandhar	IOC	273	0.78
4	Mangalore-Hassan - Mysore	HPC	356	3.55
5	Paradip-Haldia-Durgapur	IOC	710	1.31
Under Implementation Pipelines				
1	Durgapur - Barauni - Patna - Musaffarpur	IOC	568	2.00
2	Uran - Chakan	HPC	168	1.00
3	Kochi - Coimbatore - Erode - Salem	IOC & BPC JV	458	1.53
4	Kandla - Gorakhpur	IOC/HPC /BPC JV	2400	6.00
Proposed Pipelines				
5	Mundra - Kandla	IOC/HPC /BPC JV	90	4.00
6	Hassan - Chertipally	HPC	350	1.50
7	Ennore - Trichy - Madurai	IOC	615	0.98

consumers. Government data reveals that the average LPG refill rate for Ujjwala beneficiaries in FY23 was 3.71 cylinders, while non-Ujjwala consumers averaged 6.65 cylinders. This results in a total domestic LPG consumption of 180.6 crore cylinders per year based on FY23 data. Assuming the Rs 200-per-cylinder reduction remains for a year, the cost savings would amount to Rs 36,117 crore. Additionally, the annualized cost of benefits for the 75 lakh new connections under the Ujjwala scheme is estimated at Rs 1,113 crore. This brings the total cost of the two announcements to approximately Rs 37,230 crore for a year.

Out of the ten busiest LPG ports in the world, five of them are in India and in terms of LPG ports with the longest waiting times, five of the ten globally are also in India. This congestion slows down LPG delivery, increases costs, and is inefficient. India's LPG import terminals are located at Kandla, Mundra,

Dahej, Pipavav, Mumbai, J N Port, New Mangalore, Visakhapatnam, Ennore, Paradip and Haldia. Of these, Haldia is a significant import facility on the Eastern coast from where the LPG cargo is transported to most of India's heartland.

The significant growth opportunities for LPG in India include its use as a feedstock in the petrochemicals industry and as a fuel in the automobile sector. In countries like China, Korea, and Japan, a substantial portion of LPG imports is directed towards the petrochemicals industry, accounting for up to 40 percent of their total LPG imports. In contrast, in India, this figure is only 8 percent. Another promising sector for LPG growth is the automobile industry. LPG is a cost-effective and cleaner alternative to diesel and other fossil fuels. Currently, only three-wheelers and trucks use LPG, representing a mere 2 percent of the total imports. This share has the potential to increase to 10-15 percent.



Port Statistics

SHIPPING AND CARGO PERFORMANCE

QUARTERLY UPDATES ON INDIAN MAJOR AND MINOR PORTS (QTY IN MILLION TON)
APR - JUN 2023 V/S APR - JUN 2022

	LIQUID COMMODITIES & GASES									
	CRUDE OIL & OIL PRODUCTS		CHEMICALS & LUBES		EDIBLE OIL & MOLASSES		ACIDS		LIQUIFIED GASES	
	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022
No of Ships Called	861	792	547	506	317	306	173	149	540	550
Total Cargo handled	70.63	70.21	3.85	3.88	3.64	3.38	2.00	1.71	10.87	10.58
Export	12.07	13.48	1.02	1.06	0.20	0.34	0.00	0.00	0.11	0.16
Import	58.56	56.73	2.83	2.82	3.44	3.04	2.00	1.71	10.76	10.42
	FINISHED FERTILISERS & FERTILISER RAW MATERIALS									
	UREA		SULPHUR		ROCK PHOSPHATE		DAP		MOP	
	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022
No of Ships Called	34	31	16	17	67	49	43	18	29	22
Total Cargo handled	1.29	1.2	0.54	0.53	2.78	2.24	1.91	0.78	1.06	0.64
Export	0.03	0.0	0.22	0.34	0.03	0.03	0.00	0.00	0.00	0.00
Import	1.26	1.2	0.32	0.19	2.75	2.21	1.91	0.78	1.06	0.64
	COAL AND COKE									
	NON COKING COAL		COKING COAL		MET COKE		PET COKE		OTR GRADES OF COKE	
	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022
No of Ships Called	478	449	495	415	20	11	64	52	77	53
Total Cargo handled	32.99	33.79	26.36	20.97	0.51	0.33	2.79	2.13	4.13	2.94
Export	0.07	0.53	0.06	0.20	0	0.02	0.08	0.06	0.01	0.04
Import	32.92	33.26	26.3	20.77	0.51	0.31	2.71	2.07	4.12	2.90
	OTHER BULK & BREAK BULK CARGO									
	CEMENT		MINERALS		IRON ORE		STEEL PRODUCTS & PROJECT		GRANITE	
	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022
No of Ships Called	8	17	427	396	161	91	482	446	50	44
Total Cargo handled	0.28	0.48	16.89	16.82	9.71	5.74	3.59	3.33	0.95	1.03
Export	0.08	0.11	5.18	5.26	7.81	4.91	2.07	2.14	0.95	1.03
Import	0.2	0.37	11.71	11.56	1.9	0.83	1.52	1.19	0.00	0.00
	AGRICULTURAL PRODUCTS & EXTRACTIONS									
	SUGAR		RICE		SOYA BEAN MEAL		RAPE SEED MEAL		COPRA EXPELLER CAKE	
	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022	APR-JUN, 2023	APR-JUN, 2022
No of Ships Called	27	66	26	82	2	4	5	7	4	5
Total Cargo handled	0.74	1.99	0.69	1.69	0.07	0.04	0.22	0.24	0.02	0.04
Export	0.46	1.95	0.67	1.67	0.07	0.04	0.22	0.24	0	0
Import	0.28	0.04	0.02	0.02	0.00	0.00	0	0.00	0.02	0.04

* Total Cargo Includes Liquid Cargo , Bulk Cargo and Other Cargoes and Excludes Containers

Port Statistics

INDIAN PORT PERFORMANCE

APR - JUN 2023 V/S APR - JUN 2022
CARGO THROUGHPUT (QTY IN MILLION TON)

Ports	Types of Ports	NO. OF SHIPS		LIQUID CARGO		BULK CARGO		CONTAINERS (TEUS)		TOTAL CARGO *	
		APR-JUN 2023	APR-JUN 2022	APR-JUN 2023	APR-JUN 2022	APR-JUN 2023	APR-JUN 2022	APR-JUN 2023	APR-JUN 2022	APR-JUN 2023	APR-JUN 2022
KANDLA	PUBLIC	565	550	3.03	3.80	8.40	9.49	121,279	127,849	11.43	13.29
MUMBAI	PUBLIC	407	416	6.45	7.03	2.13	2.28	1,395,089	1,363,702	8.58	9.31
JNPT	PUBLIC	152	152	1.00	1.56	0.00	0.00	0	0	1.00	1.56
MORMUGAO	PUBLIC	98	96	0.11	0.16	3.41	4.06	0	0	3.52	4.21
MANGALORE	PUBLIC	252	221	5.78	6.87	2.30	2.12	0	0	8.08	8.99
COCHIN	PUBLIC	194	192	4.69	5.26	0.11	0.10	172,672	159,119	4.80	5.36
TUTICORIN	PUBLIC	128	188	0.38	0.36	2.74	2.69	37,460	199,364	3.12	3.05
CHENNAI	PUBLIC	159	154	3.06	3.68	0.74	0.90	376,596	400,844	3.80	4.57
ENNORE	PUBLIC	118	104	0.55	1.17	3.52	3.08	155,203	113,517	4.07	4.24
VISAKHAPATNAM	PUBLIC	333	434	3.53	4.25	8.97	9.53	176,194	126,389	12.50	13.79
PARADIP	PUBLIC	392	276	8.66	10.14	11.69	9.61	2,706	2,640	20.35	19.74
HALDIA	PUBLIC	403	361	2.61	3.08	5.77	5.14	28,268	48,123	8.38	8.21
KOLKATA	PUBLIC	15	17	0.01	0.02	0.01	0.03	149,271	142,473	0.02	0.05
GANGAVARAM	PRIVATE	91	98	0.00	0.00	7.38	6.58	0	0	7.38	6.58
PIPAVAV	PRIVATE	73	68	0.23	0.22	1.22	1.01	199,433	149,952	1.45	1.23
MUNDRA	PRIVATE	869	883	6.32	7.05	7.76	10.78	1,554,227	1,605,672	14.08	17.83
BEDI	PRIVATE	12	14	0.00	0.00	0.85	0.67	0	0	0.85	0.67
DAHEJ	PRIVATE	135	140	4.71	6.12	2.61	3.56	0	0	7.32	9.68
HAZIRA	PUBLIC	195	148	0.99	0.59	4.43	4.11	194,880	172,781	5.42	4.70
NAVLAKHI	PUBLIC	45	34	0.00	0.00	2.27	2.29	0	0	2.27	2.29
KAKINADA	PRIVATE	141	159	0.39	0.59	3.12	3.24	10,415	1,212	3.52	3.82
SIKKA	PRIVATE	336	321	30.61	33.55	0.00	0.00	0	0	30.61	33.55
VADINAR	PRIVATE	47	35	0.00	7.67	0.00	0.00	0	0	0.00	7.67
KRISHNAPATNAM	PRIVATE	194	156	0.27	0.30	9.53	7.16	42,745	83,836	9.80	7.46
KATTUPALLI	PRIVATE	16	7	0.04	0.00	0.04	0.01	175,351	106,145	0.08	0.01
BHOGAT	PRIVATE	0	0	0.00	0.54	0.00	0.00	0	0	0.00	0.54





MARINE SERVICES

J. M. BAXI & CO.
BOXCO SHIPPING SERVICES
UNITED LINER SHIPPING SERVICES
ARYA OFFSHORE SERVICES
CONTAINER MOVEMENT
(BOMBAY) TRANSPORT
"K" STEAMSHIP AGENCIES
EASTERN LINER SHIPPING

PORTS & LOGISTICS

PROJECT HEAVY LOGISTICS
COLD CHAIN LOGISTICS
BULK LOGISTICS
RAIL LOGISTICS
KANDLA CONTAINER TERMINAL
HALDIA CONTAINER TERMINAL
VISAKHA CONTAINER TERMINAL I
VISAKHA CONTAINER TERMINAL II
TUTICORIN CONTAINER TERMINAL
NHAVA SHEVA FREEPORT CONTAINER TERMINAL
VISAKHA CONTAINER FREIGHT STATION
MUMBAI CONTAINER FREIGHT STATION I
NHAVA SHEVA DISTRIBUTION TERMINAL
MUMBAI WAREHOUSING & LOGISTICS PARK
DELHI INLAND CONTAINER TERMINAL
INCHHAPURI INLAND CONTAINER TERMINAL
PARADIP MULTIPURPOSE CLEAN CARGO TERMINAL
VISAKHA MULTIPURPOSE CARGO TERMINAL
ROZI BULK TERMINAL
THE BALLARD PIER

TECHNOLOGIES

DIABOS
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ARYA COMMUNICATIONS &
ELECTRONICS SERVICES