

J M BAXI GROUP

TIDINGS

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J M BAXI

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From the Quarter Deck

Dear Friends and
Colleagues,

The Collins dictionary announced the word "Permacrisis" as "The Word of the Year" for 2022. For 2020 it was "Lockdown" and 2021, it was "NFT- Non-Fungible Token". Permacrisis described as an extended period of instability and insecurity, truly describes 2022. Interestingly, it was chosen ahead of the words, Kyiv, Partygate and Quite Quitting.

We have seen the wild swinging of the pendulum of events - rising commodity prices and then softening as well - crude oil not included; the war in Ukraine leading to an energy crisis and food grain supply disruption; China's continuing COVID-19 induced lockdowns leading to supply chain and port disruptions; the ongoing geopolitical tensions between China and other countries, especially the US, India, Japan and Australia. We also saw ports across the world undergo unprecedented congestion and waiting time for berths. At one stage almost 20 percent of container ship capacity was waiting to berth at ports, but this seems to have eased. In other instances, cargo volumes seem to have reduced drastically, causing many of the top shipowners to cancel several voyages and also merge several services. The last two months of 2022 have pointed towards the possibility of a recession, especially in the western world. It is tempting to guess the Collins dictionary word for 2023. However, if it is to be a reflection of only India, the word in all probability would be "growth", "progression" or "grow progression"!!!

2022 saw India celebrate its 75th year of Independence. The year also saw India become the 5th largest nation with a US \$ 3.5 Tn GDP, displacing the UK - ironically, our ex-colonial masters who now have a Prime Minister of Indian origin. As per a recent UN report on population, by July 2023 the world's population is expected to cross 8 Bn, and India is expected to become the most populated nation with 1.428

Bn people. This theoretically makes us the largest number of consumers and producers. With this positive dynamic we will also have the challenge of ensuring that human capital is educated, skilled and enabled to contribute to the next phase - let's call it, post @75.

Our Indian ports have seen a relatively flat growth rate in terms of volumes. There has been some amount of changes in terms of our trade partners for traditional commodities. With major trade disruptions, India has seen an increased amount of fertiliser and crude oil being sourced from Russia. However, this has not been at the cost of India's traditional partners. The importation of gas has been impacted by rising prices and decreasing availability. In general, tanker and gas carrier prices have been on an upwards trend and in some specific cases at very high prices. On the other hand, container freight rates, and container ship rates have been falling drastically and quickly coming back to normalcy. Of course, how does one define normal is in itself very difficult. Container carriers will look back at 2022 as a dream year with large and not-so-large carriers garnering record profits - collectively amounting to around US \$ 225 Bn for 2022, a 50.6 percent upward increase compared to last year. How the major shipping companies will deploy these vast sums of money is to be seen. Some of the shipping lines are preparing themselves to be total transport and logistic solutions providers across sea, land, air and rail. There is also a focus on green shipping and clean fuel ships. Shipping companies are betting big on various types of green fuels of the future like methanol, ammonia, hydrogen, as also LNG. The new shipbuilding orders are of such a large magnitude that it accounts for almost 20 percent additional capacity of the existing fleet.

Several experts have commented and opined that India's economy is weathering the global recession and inflationary trend well, and managing the quantitative tightening much better



than most of the world. It is therefore likely the efforts of India's China Plus Programme, Make in India, and Atmanirbhar will have a long-lasting and profound influence in shifting India to a much larger size, both in terms of volume and value. For India to see a volume of 40 Mn TEU plus 2 Bn Tonnes of non-container port throughput by 2030, ports, railways, roadways and inland waterways will need to keep up and enable these expectations. It is with this vision, that our company is positioning itself.

For our group of companies, the next 10 years will certainly see a greater embracing of technology. Remote-controlled equipment and vehicles will be the norm in last-mile connectivity. The recent news of the French postal service introducing autonomous vehicles to deliver parcels and posts, is a clear pointer of the things to come. Recently, Korea too introduced some bus routes with autonomous vehicles. It is gratifying to know that our company and our colleagues are also pushing themselves to be at the forefront of creative growth with humility, honesty, innovation and perseverance. 2022 has indeed been exciting, where we have committed to add a very large capacity of cargo handling in India.

With these words of enthusiasm and confidence, I wish each and every one of you and your family members a very happy new year. Do continue to stay safe and secure, and I look forward to traversing 2023 with each of you.

Krishna B. Kotak
Chairman - J M BAXI GROUP



Marine Services

Holidaying In INDIA Moves Into Cruise Control

Cruise shipping is one of the most dynamic and fastest-growing segments of the leisure industry worldwide. The word cruise conjures up images of destinations like the Caribbean, Alaska, Europe etc. While India isn't on the list of destinations, that is now rapidly changing.

The potential of cruise tourism

A few years back, India lacked the infrastructure, and the market to build and manage cruise ships. With the Indian economy developing at a steady pace, the growing middle-class and increasing disposal incomes, the potential for cruise tourism is yet untapped. As a destination, India with its long and beautiful coastline, meandering rivers, idyllic islands, rich history and culture, is fast emerging as a new marketable product. That aside, cruising provides a wide range of jobs with opportunities for establishing long-term careers.

The government of India realises this potential, and is determined to position India as a global cruise hub with state-of-the-art infrastructure for both ocean and river cruises. Global players too have shown a keen interest in promoting cruise tourism in the country. With the right infrastructure and the adoption of modern technology, India is set to become one of the top cruise destinations in the world

India aims to increase cruise passenger traffic from 0.4 Mn at present to approx. 4 Mn by 2030. The economic potential of cruise tourism is expected to go up from US \$ 110 Mn to US \$ 5.5 Bn in the years to come.



Passengers playing shuffleboard and enjoying a swim on the ship's deck

A history of cruise tourism

To understand how cruising evolved, it is important to know that it was in the mid 1800s, that ships began ferrying passengers. British India Steam Navigation Company called (BI) was formed in 1856 as the Calcutta and Burmah Steam Navigation Company. The company was formed out of Mackinnon, Mackenzie & Co, a trading partnership of the Scots William Mackinnon and Robert Mackenzie, that was used to carry mail between Calcutta and Rangoon. BI became British India SN Co. in 1862, under Lord Inchcape (James Lyle Mackay) who became the chairman in 1913. Later, the company became part of the P&O group of companies in 1914 through a complex amalgamation, but continued with its own identity and organisation for nearly 60 years until 1972, when it was entirely absorbed into P&O.

As one of the largest shipowners of all time, the company owned more than 500 ships and managed 150 more for other owners. The company ran services from India to Ceylon, Bay of Bengal, Singapore, Malaysia, Java, Thailand, Japan, the Persian Gulf, East Africa and South Africa. BI had a long history of service to British and Indian governments, through trooping and other military contracts. Some of the company's better known passenger ships included Rajula, Dunera, Scindia, Sirdhana, Leicestershire, Dwarka, the sister ships Kampala and Karanja, Kenya and Uganda, and Dara, which was sunk by a terrorist bomb in 1961.

Green shoots of cruising began to emerge in the late 1920s. P&O Steam Navigation Co, based in Glasgow, United Kingdom, ordered and constructed the passenger vessel SS Viceroy of India in 1927. Originally intended to be christened, the Taj



File photo of the S S Viceroy of India

Marine Services



SuperStar Libra, the first cruise ship to be based in India

Mahal, she was launched as the Viceroy of India on 15th September 1928 by Dorothy, Countess of Halifax, the wife of the Viceroy of India.

The Viceroy of India was handed over to P&O on 7th March 1929 and made her maiden voyage on the Indian mail route. The passenger ship was also suited for leisure cruises, which she made every year until the outbreak of World War II in September 1939. In February 1930, the ship was berthed in Bombay when the 6,070 Great British India Line ship Warfield collided with her. The collision pushed the liner against a dockside crane, which she demolished but escaped serious damage herself.

In September 1932, the Viceroy of India set a new record time between London and Bombay – 17 days, 1 hour, 42 minutes.

On 5th September 1935 the Cunard White Star liner Doric and the Chargeurs Réunis cargo steamship Formigny collided off Cape Finisterre. The Doric stayed afloat, but her 736 passengers were transferred to other ships, including 241 transferred to the Viceroy of India, as a precaution.

Cruising - A global perspective

Global cruise tourism enjoyed an increase of about 28.5 Mn passengers in the year 2018 and it stood at 30 Mn passengers in the year 2019.

Alternative cruise destinations, have also been experiencing significant growth, and cruise companies are always looking for new itineraries. Cruise operators across the world are experiencing stiff competition and looking for alternative and more exciting destinations. Other than the major and regular ports in India which receive cruise ships - Mumbai, Goa, New Mangalore, Kochi and Chennai, we have alternate ports like Diu, Porbandar, Port Blair, islands in the Lakshadweep Island, Vishakapatnam, Gopalpur which offer tremendous potential for cruise tourism.

Cruising sets sail in India

Passenger volume in India for the year 2018 was around 221,000 and it increased up to 313,000 in the year 2019 and decreased to 46,000 in the year 2020.

The launch of SuperStar Libra, the first cruise ship to be based in the country, by Star Cruises Asia in September 2005, led to a rapid growth in cruise holidays by Indians and foreign tourists. The ship called at Mumbai, Goa and Kadmat Island (Lakshadweep). This was a fairly new concept because up until then, Indians went on cruises in the far eastern countries, the US or European countries, as facilities were not available in India. However, the cruise line ceased operations in India in

2007 due to unfavourable regulatory and fiscal conditions.

In 2018, India's first domestic cruise liner, MV Angriya a small ship with a capacity of 400 passengers began voyages on the Mumbai-Goa sea route.

Government initiatives to promote the industry

The Ministry of Tourism recognises cruise tourism, as a niche product. In order to promote India as a 365 day destination, steps taken to promote cruise tourism include developing appropriate infrastructure for handling cruise vessels and facilitating ease of passenger movement.

The five major ports in the country handling cruise ships - Mumbai Port Trust, Mormugao Port Trust, New Mangalore Port Trust, Cochin Port Trust and Chennai Port Trust are being developed to attract cruise ships with dedicated terminals and other related infrastructure for berthing of vessels and embarking and disembarking of passengers.

In order to promote cruise tourism, the government offered to pay 25 percent of the project cost for the development of cruise terminals. The Mormugao Port Trust, Goa, is to build an international cruise terminal within three years and Chennai has already developed a terminus which can accommodate 5,000 people. To make short cruise trips from India feasible, the Indian government has relaxed the 'cabotage law', which mandates cruise ships operating along the Indian coastline, to visit international ports.

The Ministry of Shipping has also rationalised tariffs applicable for cruise vessels. This has had an immediate reduction in port charges ranging from 60 to 70 percent, offering substantial relief to the cruise industry in India, in line with the government policy to support the economy, during COVID-19.



Marine Services



Artist Impression

State-of-art cruise terminal - The Ballard Pier

Cruising post the pandemic

There was a sudden cessation of cruise calls across the world, when the pandemic hit in early December 2020. The last port call in India was from 7th to 9th March 2020. Between March and August 2020, J. M. Baxi & Co was instrumental in repatriating over 18,000 Indian crew from all over the world by sea and air.

An Indian cruise line company, Cordelia Cruises, commenced domestic operations on the West coast of India in September 2021. Being home ported at Mumbai, voyages included calls to Goa, Cochin, Lakshadweep Islands and Diu with different itineraries. The ship ran at over 70 percent capacity in 2021 - 22 demonstrating the cruising appetite of Indian travellers. According to a survey by Hansa Research on behalf of the Norwegian Cruise Line (NCL), in October 2022, around 78 percent of respondents in a survey said that their vacation goal was to travel to create memories with their loved ones, while 65 percent said they travel to visit different places and experience something new. During the south-east monsoons between June and September, a cruise line shifted operations to the East coast

of the country for the first time in the history of cruising in India, and did so successfully.

Since then, the number of cruise calls have started to increase significantly. India will be host to over 85 international calls and 270 domestic calls in 2022 - 23. Some international cruise lines like Viking Cruises and Crystal Cruises have introduced India itineraries for the very first time.

India's first international cruise terminal

The state-of-the-art Mumbai International Cruise Terminal, is being constructed at the BPX berth of Indira Dock and is expected to be fully commissioned by July 2024. J M Baxi Ports & Logistics is the first private company in India to have been awarded the concession to build and operate a cruise terminal in India for the next 30 years. Named the Ballard Pier - Experience Center, the new cruise terminal will be a four storied structure having a total built up area of approx. 415,000 sq. feet.

The building will be accessible to both cruise passengers and the general public. The aim is to create an experiential cruise and retail landmark

at a unique water-front destination. It is being designed as a cruise terminal with a mega sized retail and experience centre, taking advantage of the connectivity to the rest of the city.

The ground and first floors of the building are earmarked for cruise operations during the cruise season (typically from mid-September to April end) while the two upper floors and the roof top have been earmarked as a commercial space for food, beverage and retail outlets of exclusive brands, along with entertainment and gaming areas. The floor space will be utilised for cultural shows, conventions, exhibitions and private functions during the non-cruise season.

Having an over 75 percent market share of cruise ship calls in India, the J M Baxi group has been aggressively promoting the terminal, by welcoming existing and new cruise lines to collaborate at various international and Indian forums like the SeaTrade Global in Miami in May, Seatrade Cruise Mediterranean at Malaga in September and the 1st Incredible India International Cruise Conference in May 2022. With India's cruising industry ready to take off, the teams at J M Baxi will continue to play a pivotal role in shaping how Indians holiday, in the years to come.

Marine Services

J M Baxi Shines On The Back Of Steel Trade

The steel industry has been headlining the news recently. India is currently the world's 2nd largest producer of crude steel, with an annual output of 10.14 MnT. According to the Steel India Report – IBEF, the production of crude steel and finished steel in FY22, stood at 133.596 MnT and 120.01 MnT, respectively.

According to the World Steel Association, crude steel production in India, rose over 6 percent year-on-year to 10 MnT in the middle of 2022. Presently India is the only country which has registered positive growth in its steel output for the year. The country had produced 9.4 MnT of crude steel during the same month last year. Other steel manufacturing countries such as China, the US, South Korea, Turkey, Iran etc. saw a dip in growth compared to their production of the previous year. Russia having been engaged in a conflict with Ukraine is estimated to have produced 5 MnT, down 22.2 percent over 6.4 MnT a year ago. Russia has registered the highest

fall among the top 10 steel producing countries.

Demand for steel from different sectors remains to be the driving factor for this industry. Consumption of steel by India's infrastructure segment is expected to increase to 11 percent by FY26. Demand from the automotive sector is expected to increase due to rise in the demand for automobiles.

Majority of steel exports are executed from the East Coast of India, due to its proximity to the steel mills in that region.

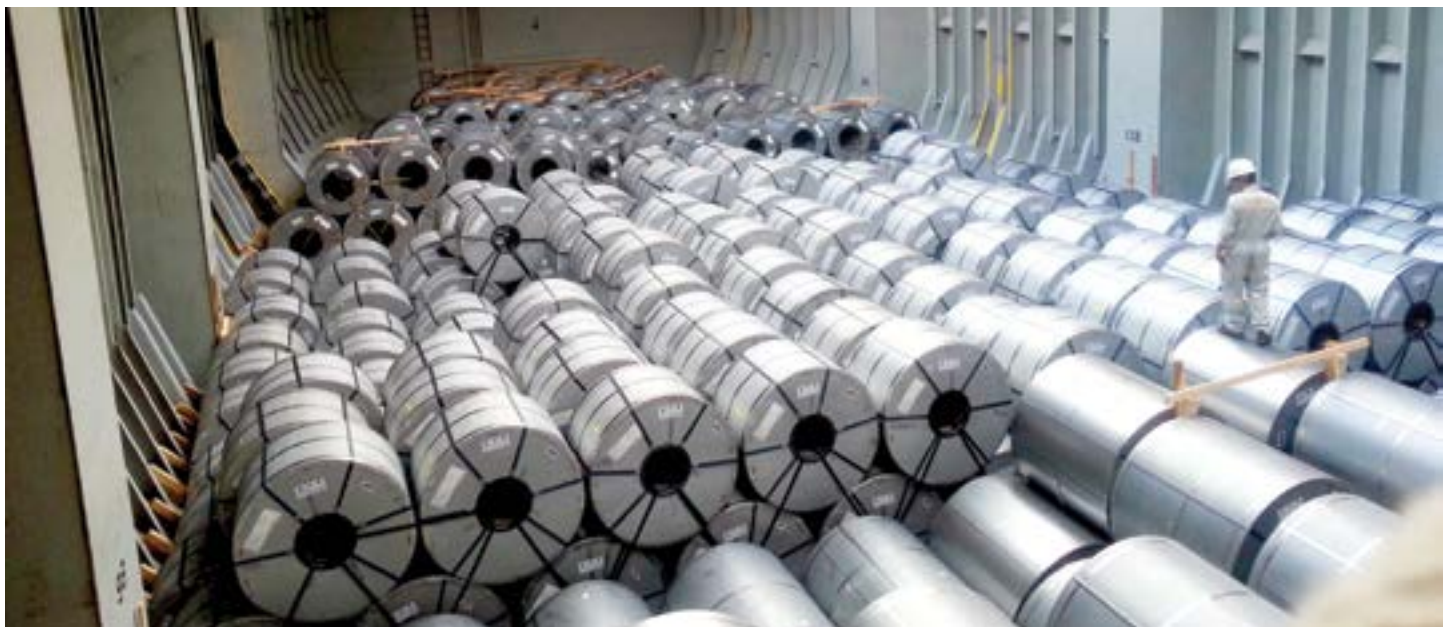
J M Baxi group as a front-runner in the shipping industry has contributed remarkably to the steel sector. This is especially so, from one of the company's terminals in the East coast – Paradip in Odisha. Paradip Clean Cargo Multipurpose Terminal continues to handle steel exports for steel majors TATA Steel, JSPL, SAIL and Bhushan Steel - all within close proximity. The fast turnaround time and overall terminal efficiency has boded well

for the terminal and still attracts clients to export their steel from here. To augment customer benefits, the marine services vertical of the group undertakes the agency and stevedoring activities at various ports in India where steel is being handled.

J M Baxi's expertise in handling steel commodities is well acknowledged and accepted by customers, especially those who place a premium on safety with respect to manpower and cargo handling equipment.

The annual production of steel is anticipated to exceed 300 MnT over the next 10 years, with crude steel production projected to reach 85% capacity utilisation, achieving 230 MnT of finished steel till that period.

The Central Government's initiative of Atmanirbhar Bharat is evident in the steel sector and J M Baxi group as an entity, promises to support the nation's growth with its contribution in the maritime port infrastructure and marine services sector.



In Conversation

With Mr. DEEPAK SHETTY, Former Director General Of Shipping

The maritime industry - an important and strategic cog in the national economic wheel:

India is currently the fastest-growing economy across the globe and is a silver lining in a rather gloomy international economic outlook, given that we are clocking around 6-7 percent GDP growth, annually. This is attributable to smart business and governance decisions taken over the years, enabling us to insulate ourselves from the financial and economic tremors felt across the globe. Projections from the World Bank, International Monetary Fund, Asian Development Bank etc. indicate that India is set for consistently steady growth over the next 2-3 decades. Presently it has overtaken UK, to become the 5th largest economy in the world, behind Germany, Japan, China and USA. As of now, Indian GDP is positioned at around US \$ 3.2 Tn. However, it is estimated to grow between US \$ 8 - 10 Tn by 2030. Some projections place Indian GDP at US \$ 42 Tn by 2050. We could surge ahead of the US to become the number 2 economy and possibly even overtake China beyond 2050.

When poised for this scale of growth, shipping becomes a critical component of the overall economic paradigm and infrastructure. EXIM cargo carried on Indian maritime bottoms has sharply declined from an all-time high of 40-42 percent until 1988, to 6-7 percent currently. Policymakers need to boost Indian flag shipping substantially to 15 percent and beyond. Approximately US \$ 56 - 58 Bn is the annual freight payment outgo from India to overseas carriers.

The Government in consultation with stakeholders, must recognize that Indian shipping requires a boost, if we are to make headway. While foreign shipping



Mr. Deepak Shetty, I.R.S.(Retd.) is a Former Secretary to the Government of India and Director General of Shipping. He is from the Indian Revenue Service (Customs and Central Excise) - 1980 batch. He retired from his civil service career spanning a little over 36 years, at the end of 2016. He served as Director General of Shipping for 2 years in 2015-16, immediately after which he was assigned Joint Director General of Shipping for 4 years from 2011 to 2014. He has served in multiple official assignments, across the Ministries of Finance, Textiles and Shipping in the Government of India.

He currently serves as Senior Adviser to the Maritime Anti-Corruption Network (MACN) - Copenhagen, Director-cum-Trustee of the International Seafarers Welfare and Assistance Network (ISWAN) - London, Maritime Sanctions Expert of the United Nations (UN) - New York and is an Independent Director on the Boards of Directors of several Indian companies.

Here is an excerpt of the chat with the Tidings team. He offers his 'big picture' perspective on the maritime industry and the road ahead.

has its positives, we cannot rely on it totally, in situations characterized by geo-political-strategic tensions or sanctions in the international arena.

We must protect our sovereign interest, and therefore need to have a bare minimum tonnage under our own fold. It is interesting to note that section 411 of the Indian Merchant Shipping Act, 1958, provisions that in specified circumstances, the Director General of Shipping, Government of India can invoke powers invested in them to issue directions to the Indian flag fleet for stipulated purposes in national interest. However, these powers cannot be exercised with foreign flag vessels.

While structural rigidity in the shipping sector has eased, facilitated by Government policies, more ground needs to be covered. Taxation merits are being re-looked at, so that the shipping sector is given a major leg-up. Moreover, we need to have a comprehensive and holistic national transportation policy that encompasses all the four verticals - civil aviation, roadways, shipping and railways, that leverages their potential synergies.

Bridging the gap between government and industry:

There is increasing transparency in governance now. I recall when I joined the civil service in 1980 it was quite the opposite. We grew in an eco-system where revenue collection was paramount and there was an ingrained suspicion about the private sector. Today, there is a conscious and structured engagement with stakeholders across the spectrum. The watershed moment was in 2013, when there was a clear directive issued by the Government of India to the effect that (other than the budget or finance bill which requires confidentiality) every other public policy document to be formulated or amended must follow a rigorous process of consultation and engagement with stakeholders.

In Conversation

This was a huge leap of faith for the Government towards increasing transparency and accountability. Illustratively, I recall the Admiralty Bill in 2015, when I was Director General of Shipping. The backdrop was that the Supreme Court had persuaded the Government, as far back as in 1992, to bring in a new admiralty legal framework to replace the archaic British era Admiralty Acts of 1831-1890. We took it upon ourselves to go about this process and initiated the drafting of a new and all-encompassing Admiralty Bill. We would spend time, calling in stakeholders, extensively discussing with them and factoring their inputs. It was a complex piece of legislation. It took us about a year of persistent and rigorous efforts to draft this entirely new and modern legislative framework. After we had drafted it, we put it out in the public domain, to solicit informed comments and opinions. Post that, before finalising the new Admiralty Bill-2015 all acceptable inputs were duly factored in. If a further consultation was required with stakeholders, it was done. However, after finalising this draft legislation and while sending it to the Government, it was imperative to capture the feedback given by the industry and place on record which ideas were considered and which were not, accompanied by detailed justifications. This crucial document was made a part of the overall policy framework draft document that went all the way up to the competent authority, at the highest level, in the Government of India. The idea was for them to evaluate if the requisite consultations had taken place extensively, transparently and fairly. That is the measure of confidence-building that has taken place over the years. My urge to the industry has been to consistently remain clued into the websites of the appropriate policy making authorities, as every policy and amendments follow the same rigorous procedure of engagement and consultation. The industry must leverage this opportunity by contributing to policy making, for their own benefit.

Industry collaboration:

I would like to underscore is that we are a fragmented industry with people speaking in different voices, often at cross-purposes. The industry needs to put up a reasonably united front with a minimum common agenda if it is to move ahead. My stint as the additional Textile Commissioner, was an eye-opener on how an entire industry can move ahead when all stakeholders collaborate. Initially all the players, down-stream and up-stream along the value chain, were competing against each other - raw cotton producers, spinners, weavers, processors, apparel made-ups manufacturers etc. It became clear that no one stood a chance unless the entire value chain with all entities, becomes cohesive and consensual. We in the Government had then advocated that the textile industry ought to come to a common consensus and put up a united front. This had then enabled the Government to formulate and prioritise policies to confront bigger challenges before the industry. This approach ultimately benefitted all its players, as opposed to dealing with disparate elements and smaller issues that impacted only a few. This led to the consolidation of the industry under one common banner that they subsequently brought about in the form of the Confederation of Indian Textile Industry (CITI) comprising nearly all the multiple constituents of the industry. So now when the Government hears them as one voice, they know that there is a reasonable impact of their articulations. Similarly, the maritime industry should aim to have a confederation of its own. My advice is that we need to transcend our diverse turf issues and must subsume some of our narrow partisan interests if we are to surge ahead as a robust and force-for-good industry.

Imperative of constant dialogue with the Government:

The Government increasingly prefers to have a high level of deeper engagement with industries. However, dialoguing with the Government can be effective

only when the industry is proactive and offers structured and constructive feedback and suggestions. There are multiple fora and institutions to express diverse points of view – portals of the Government of India's Ministries, departments, grievance fora, Central Vigilance Commission, Directorate General of Shipping etc.

Of course, both parties need to come to the table prepared - thorough domain and all-round knowledge. There must be demonstrable professionalism by articulating needs reasonably and clearly. Non-constructive suggestions laced with unwarranted critiquing and without reasonable propositions, tend to place government officials into reactive mode and that benefits no one. Recommendations should also come in the form of tangible objectives that can be achieved, as opposed to grandiose ideas that may be too big to bite. To that end, it is imperative to break-down strategies, into short-term, mid-term and long-term holistic goals.

Of course, it is unreasonable to assume that all suggestions offered by the industry and trade may end up getting translated into action, as the government cannot yield to everything sought. There has to be a fine balance between the imperatives of governance, prioritization in the face of resource limitations, management of competing forces, while keeping in mind national interests, and the eco-system of international elements. All this said, the industry must leverage this opportunity of engagement with the Government, which is available as an institutional mechanism.

Manpower and skill development:

When it comes to human resources, there needs to be an enduring commitment and calibrated investment in skill and capacity building, as the industry scales up. With an eye on the future, the industry needs to constantly assess the appropriate skill sets required to be future ready. Accordingly, training and retraining needs to be approached from that prism.



In Conversation

Technology is overtaking the maritime industry at an exponential pace. It has been reported that in May-June, 2022 the 1,80,000 cu.m. LNG carrier Prism Courage had successfully conducted a 33-days voyage from Freeport, Texas, USA, to South Korea's Boryeong Port LNG Terminal, covering about 10,800 nautical miles (half of its overall voyage of over 20,000 nautical miles) which was navigated autonomously. In another 10 years and beyond, technology would have progressed further, potentially paving the way for semi-autonomous and eventually autonomous merchant vessels. In that eventuality what do we do with our manpower - do we re-skill them, do we re-assign them to shore jobs etc. - is for us to think through and address.

Cyber risks:

Given the extent of digitalization - IT, ITeS, ICT, AI, ML, Drones, Big Data etc., and the way automation and disruptions will take over in the future, the industry will need to be mindful of cyber risk downsides. Illustratively, the scenario of sophisticated cyber jacking, potentially leading to the take-over by cyber criminals and cyber pirates of a ship's command and control structure, for release on payment of ransom (possibly via crypto-currencies) is no more fictitious. The 9/11 civil aviation attacks in the USA, over 20 years ago, were orchestrated remotely by deploying steganography tools. Cybercriminals can orchestrate a DDOS (distributed denial of service) attack, where connected computer terminals get frozen across locations, on the back of ransomware, in return for a ransom. India has the Information Technology Act, 2000, as amended, which is a comprehensive legislative framework to deter and mitigate an array of cybercrimes, bearing a prescriptive template of do's and don'ts for the consideration of both the public and private sectors. This can be gainfully leveraged to conduct scenario building exercises to check for preparedness.

Risk management:

Shipping is intrinsically intertwined with the global economy, policy planners and industry must have a 360 degree view of all world-wide developments. More so, as this decade is characterized by salient geo-political-strategic disruptions and risks over which we have very little control, but all the same, face their significant impact. COVID-19, the Ukraine-Russia conflict, tensions in West Asia, other 'hot spots', volatility in the availability and price of oil are examples. The world does not operate largely on a multilateralism basis, anymore. Every country is now looking at its own national sovereign and strategic interests to protect, promote and build defensive walls against exports and imports by using tariff barriers, non-tariff barriers, labour standards, environmental protection norms etc.

There is a need to clearly focus on risk management by organisations to help foresee situations, build mitigation and backup plans, and introduce resilience measures. Unfortunately, risk management is not taken seriously by most, and is viewed as a compliance tool because of legislative and regulatory mandates. Therefore, it is imperative to have a Chief Risk Officer in every company with a dedicated team, and a nuanced risk management policy, that scans of the horizon, understands external and internal risks, and takes timely measures.

Climate change:

Climate change is for real, with its catastrophic consequences manifest across the globe. Europe had the hottest summer, the perennial wildfires in California, the forest blaze in Australia etc. indicate that we need to commit to and invest in corrective steps. Another example is the drying of the Mississippi River, known for its vast reach and powerful currents. It has now withered to unprecedented levels, choking shipping lanes, revealing wreckage of ships and planes, and sand dunes developed in patches. All-round decarbonization is a critical imperative.

Good governance:

Many organizations view corporate governance through a narrow prism. It is not just about CSR and offering shareholders value, but positively impacting a wider set of stakeholders, and taking them into consideration. Corporate entities like Arthur Anderson, Lehman Brothers, Satyam, IL&FS etc. fell through due to lack of responsible governance. Businesses with good governance stay in the race for the long haul and are considered sustainable. Investors worldwide veer towards entities that invest in good governance, ESG and climate change adaptation. In fact, such companies are able to mobilize money from the markets at a 0.5 to 0.75 basis points lesser interest rate as they are viewed as sustainable. This is true for the maritime industry as well.

Business integrity, transparency, accountability and anti-bribery are critical components linked to good governance. I would urge maritime companies to consider becoming members of the UN Global Compact (UNGC) which is a voluntary commitment towards adopting sustainable and socially responsible policies. It's a simple framework, comprising 10 principles including labour standards, anti-corruption and environmental protection. Here, shared best practices and information flows build pressure towards incorporating socially responsible policies into a company's ethos. Another effective body is the Maritime Anti-Corruption Network (MACN) where I am a Senior Adviser. It is a global network of 180 of the largest shipping and logistics companies worldwide (representing 55 percentage of global tonnage). Among many of its service offerings, is a helpline for complaints on seaside corruption which can be registered by masters, companies, agents etc. These complaints are escalated to the government authorities, and pursued for a resolution. IMO validated the work of MACN in 2022.

Technologies

The Future Of Information And Communication Technology

It is no secret that technology today is ubiquitous, enabling efficiencies, shaping lives and furthering opportunities. Over the next decade, technologies will snowball to become larger, pervading every aspect of life. New ideas will surface to further enrich lives, and exponential improvements will be made to existing technologies. Information and Communications Technology (ICT) and the digital sector are major economic drivers to India, contributing over 13 percent to India's GDP. The country aims to grow the ICT sector to US \$ 1 Tr by 2025, which is around 20 percent of the GDP. According to the National Association of Software and Services Companies (NASSCOM), India's technology industry recorded its highest-ever rate of growth by reaching revenues of US \$ 227 Bn in 2021, from US \$ 200 Bn in 2020.

Over the last 10 years, one of the most prominent characteristics has been the convergence of technologies – earlier our tools lived on separate devices. Emails on PC's, music on MP3 players, photography on DSLR's etc. As the world grows to adopt technology, there will be more convergence as our lives sync across various technologies, enabling a high level of customisation.

On the enterprise level, while India was already on the precipice of a digital transformation, COVID-19 hastened it. Companies are shining a light on their IT systems, weaving it and oftentimes realigning their strategies accordingly. These efforts are being realised with the help of emerging technologies such as robotic process automation, big data,



artificial intelligence, machine learning, blockchain, cloud computing, quantum computing, the Internet of Things (IoT), cybersecurity, and augmented / virtual reality to improve services and experiences for their customers.

The advent of IoT, industrial 4.0, coupled with increasing technological and automation investments, are driving the market for next-generation communication, such as 5G, Light Fidelity (Li-Fi), wireless sensors network (WSN), etc. all next-generation communication devices. As per Mordor Intelligence agency, the next-

generation communication devices market is expected to register a CAGR of over 20 percent during the forecast period, 2021-2026.

The Indian telecommunications sector is the second largest in the world, with 1.2 Bn subscribers. India's mobile economy has been driven by widespread adoption, with wireless subscriptions representing 98 percent of telephone use. According to Deloitte, India is expected to reach 1 Bn smartphones by 2026, from 750 Mn currently.



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Aryacom started in 1988, premeditating the need for technology solutions just as Indian telecommunications began to take shape. Since then, the company continues to keep a pulse on emerging technology and proactively anticipates how these solutions can solve customer's business challenges. With this philosophy in mind, Aryacom has introduced innovations and solutions for several markets - public safety, defence energy and infrastructure. The J M Baxi technology company is now working on projects with a focus on tech solutions for the next ten years. While some technologies have already been introduced earlier and are now being refined, some are just finding their roots and taking shape at Aryacom. Here is a look at what is in the works.

Push-To-Talk over Cellular



The Push-To-Talk (PTT) global market size is expected to reach US \$ 59.81 Bn by 2030 enabled by the Push-To-Talk over Cellular (PoC) solutions. PoC enables users to replicate two-way radio features on their cellular phones with the use of an app. PoC devices can connect anywhere there is a mobile data signal or Wi-Fi. With the advancements of the 4G data network and more recently the launch of 5G technology, PoC is becoming increasingly reliable and will likely augment traditional RF two-way radios. As a result, businesses such as taxis, skip hire companies, couriers, haulage and companies with operations which span across multiple sites, over large areas will benefit from PoC technology. These can include security companies,



retail firms with multiple outlets and industrial estates across the country.

Drones

Drones or unmanned aerial vehicles (UAV) are robots that can fly autonomously (the ability to operate independently without human intervention) basis their embedded systems which uses remote sensing, software development, GPS etc. Such amalgamation promises a great future for extensive use of drones in providing services especially in areas that are remote or cannot be serviced by humans physically.

Aryacom is already working on SVAMITVA (Survey of Villages Abadi and Mapping with Improvised Technology in Village Area) yojana with a partner, having expertise in surveying and mapping.

Drones have the capability of carrying out everyday tasks like fertilizing crop fields on an automated basis, monitoring traffic incidents, and surveying hard-to-reach places among others. Drones can also be deployed at ports or at power plants, allowing for accurate accounting of strategically stockpiled coal. The benefit of volumetric stockpile estimation is that inventory is tracked meticulously for evaluation, financial reporting, and excise duty.

In the next 5-10 years, as networked drones continue to spread, there will be more urban unmanned aircraft, and tens of thousands of low-orbit broadband satellites will operate in the sky. To include the ocean, desert and sky, broadband connections need to extend from the ground to the air, to form a three-dimensional ultra-wide network intertwined with the sky and the ground. This network will be composed of small stations with a coverage radius of 100m, macro stations with 1~10 Km and low-orbit satellites with 300Km~400Km, providing users with 10G, Giga, and 100m continuous broadband experiences respectively.

Visible Light Communication (VLC)

Technologies such VLC/ Li-Fi technology enables data transmission via light rather than radio waves, at high-speeds through small adjustments in the intensity. The result is a high-speed Internet connection that is more secure, reliable, and able to deliver bandwidth far beyond the capabilities of conventional wireless communications such as Wi-Fi. Thereby, they have huge potential in military applications where security and reliability are of paramount importance.

Technologies



Wireless Sensor Network (WSN)

Industries such as oil and gas, waste management, and automotive manufacturing, are major end-users of industrial WSNs. However, smaller industries, such as cold storage, are likely to adopt WSNs for enhanced productivity and are expected to generate a high demand for WSNs.

Smart wearables

It is anticipated by 2024, at least 10 percent of people will wear smart clothes that come with a chip. These wearable devices can be used to capture and share a wide range of useful information. Data generated on the device will be captured on an app, that will further encourage the user to clock in those miles, sleep on time, eat wisely and generally make life more efficient.

Augmented Reality (AR) smart glasses are a new generation of wearable glasses that merge the virtual and physical world as information can be viewed on the glasses itself as opposed to the phone. Prominent examples include Microsoft's HoloLens and Google Glass. Here comes the era of the 'Eyeophone'.

Cloud computing

The future of data storage, access, and usage will soon be dominated by the cloud. While everyone is at the start of it, by 2030, cloud computing will be adopted widely leaving system-based storage with a small piece of the data storage pie.

Smart home automation

As household appliances become smart, by 2024 more than 50 percent of internet usage will be diverted towards home automation. We will see a big shift in internet traffic, as more sensors are deployed and more products become connected to the internet. Currently, most of the internet traffic at homes is for personal consumption, more specifically for communication or entertainment.

NextGen Wi-Fi

In the next ten years, Wi-Fi will migrate from just being indoors, to outdoors, in-vehicles, warehouses, freight yards – basically everywhere, such that all devices will be connected at all points in time. This hyper level of connectivity will provide high-precision positioning, gesture recognition, breathing detection, emotion recognition, perimeter security and other functions.

In the future, NextGen Wi-Fi technologies will get widely adopted and play a major role in increasing people's quality of life and improving productivity. Wi-Fi Infrastructure will be mostly cloud-driven enabling smart digital services, such as smart waste management, smart security and smart lighting in public spaces. High-speed Wi-Fi, together with good connectivity in terms of bandwidth, are powerful tools for the tourism industry to increase customer satisfaction. Investment in Wi-Fi services could benefit the local economy due to growth in the tourism sector.

Wi-Fi technology applied to healthcare services largely improves hospitals and clinics' performances. For instance, thanks to wireless apps doctors can have instant access to their patients' clinical information and easily communicate with them. In addition, public Wi-Fi will facilitate rural healthcare, as patients living in rural areas can use their Wi-Fi network to reach doctors remotely. At the same time, Wi-Fi will allow real-time location monitoring, meaning that it makes it possible to track the position of the medical staff within a healthcare building and to better plan the use of resources so that both patients and equipment can be directed to the right place at the right time.

Lastly Wi-Fi for students and academic staff in educational institutions shall leverage wireless education to improve their digital studies curriculum

As technology evolves and customer's needs change, it will be interesting to see what innovations progress or morph, and which ideas fall through. Irrespective, Aryacom will continue to be committed to sensing the pace of technology's rapid transformation, with an aim to enable customers to manage their lives and businesses more efficiently.



Ports & Logistics

J M Baxi Heavy Completes Execution For Two Challenging International Projects

In October 2022, J M Baxi Heavy successfully completed two prestigious projects for Thailand and Singapore. The project commenced in early 2020 when Larsen and Toubro's (L&T) Modular Fabrication Facility at Hazira and Katupalli were entrusted with projects from Petrofac, an oilfield services company and Linde, a chemical company. J M Baxi Heavy (then Lift & Shift) was awarded these projects, with the initial engineering works, transport feasibility study, and client approvals, all of which were executed during the COVID-19 lockdowns.

The planning and engineering discussion commenced with studying the transport feasibility. It involved using J M Baxi Heavy's 3 meter wide, Nicolas axles and a load spreader arrangement that needed to be designed to match the Scheuerle axles awaiting the cargo on the other end in Thailand and Singapore. The movement of the cargo had to also be synced for onward and final delivery to its final destination. Making it even more challenging was all requirements were critical with no scope for change.

Various options were studied and developed by the J M Baxi Heavy engineering teams. After rounds of online meetings to explain the proposed loading drawings, the customer gave the go-ahead for the commencement of developing a detailed engineering roll-out plan.

Thai Oil modules - Petrofac was the EPC contractor for the project and it was decided to explore the transport feasibility of all modules by various means to keep costs within budget, especially given that prices of sea

Thai Oil Modules - Petrofac							
Shipment Mode	No. of Voyages	No. of Modules	Wt. Tonnes	FRT	Period	Axle days	SPMT Hrs.
Road	4	26	1075	13649	Jan 21 to Oct 22	3276	936
Barge	5	18	1452	22908		121	972
RoRo Ship	9	55	21975	44362		6400	76800
Total	18	99	24502	80919		9797	78708

freight had skyrocketed due to the lockdown. Hence a detailed study was conducted for all 99 modules. It was concluded that 26 modules would be transported by road to Hazira Port via axels, and delivered under hook to a Heavy Lift Vessel (HLV). 18 modules were to be transported via barges and split into five voyages to Hazira Port for onward delivery to a HLV. This total of 44 modules were delivered

between January and August 2021. The 55 balance modules required special structures to be fabricated, to help lift and transfer the cargoes. It was critical to maintain the stability of the modules on the axles to ensure they do not slip or become unsteady during transportation.

While short tide windows, delays due to the monsoons, long detention



Thai Oil Modules - Petrofac

Ports & Logistics

periods, ship delays etc. were all di regueur, the exception was the expert precision required in the engineering and movement of the modules. The heavy cargo needed to be lifted off the ground, placed on custom-made stools, loaded on and loaded off the vessels. Some of the modules needed to be loaded, welded and made suitable for sailing, all of which required absolute accuracy at every step of the way.

Singapore Gasification Modules- Linde was the EPC for the project, where a RoRo ship was chartered to transport 46 modules, to be ferried in 10 trips, between March to December 2021. J M Baxi Heavy (then LSPL) had engineered and proposed the loading of modules where for the first time 2 x 3 file axles were positioned as wings and 4 file axles in the centre were combined to transport the heavy

Singapore Gasification Modules - Linde							
Shipment Mode	No. of Voyages	No. of Modules	Wt. Tonnes	FRT	Period	Axle days	SPMT Hrs.
RoRo Ship	10	46	34069	689567	April 21 to Oct 22	13408	19956

modules weighing 2,850 tonnes and 35 m in height. The critical engineering elements considered load transfer, the grillage foundation for travel on unstable surfaces, travel within the yard and the roll on to the RoRo vessel.

The shipments commenced in March 2021 as per schedule. However post the first two shipments, India faced one of the toughest COVID-19 attacks leading to shortage of oxygen and a stop on all fabrication, bringing all operations to halt and a setback of three months. The shipping delay further complicated issues such as the availability of raw materials. This led to

an extended timeline of October 2022, when the last shipment was loaded out.

COVID-19 posed major challenges that required high levels of collaboration over the most minute engineering details. Teams co-ordinated over calls across time-zones and geographies, troubleshooting delays, sudden change in plans, challenges in securing approvals from authorities etc.

Both projects ran parallel, and the teams successfully manoeuvred them with agility and precision, much to the customer's delight.



Singapore Gasification Modules - Linde



Ports & Logistics

Heavy Lifting The Future of INDIA

On 1st Apr 2022, three companies Boxco, AllCargo's project and forwarding division and Lift & Shift merged to form a new company J M Baxi Heavy, that is set to transform the heavy lifting industry.

The integration has opened up new opportunities and trade links. These will help deliver logistics solutions to freight forwarders and logistics companies across the globe and the Indian market, through EPC firms and manufacturing companies. The new entity offers a one-stop solution ranging from engineering, transportation, installation, marine solutions and logistics management for SAARC countries, the African continent, as well as project cargo arriving in India for various projects.

Drawing on synergies from the J M Baxi group

J M Baxi Heavy is uniquely positioned to offer a comprehensive set of solutions. It draws on the larger company's strengths - expertise, connections and infrastructure at various port terminals, container freight stations, inland container depots and other marine services spanning the entire logistics value chain. All of which will help customers benefit from seamless connectivity.

J M Baxi Heavy offers project solutions for the arrival of import cargo, customs clearance, planning, barging, road transportation, temporary storage at ports and building landing jetties. On the export front, cargo can be transported from the hinterland to the ports by road or barge and delivered to heavy lift ships acting as the catalysts for major infrastructure projects, thereby helping India achieve its target of a US \$ 3 Tr economy.

Another advantage is that large industrial players can bring their over

dimensional cargoes to J M Baxi port terminals, and use the large available storage area where cargo can be aggregated, and moved further to or from destinations across various parts of the country or internalised ports around the SAARC region, via road, or sea via heavy lift ships.

When forces combine

Doing the heavy lifting, is a combined strength of 400 plus people armed with technical knowledge, engineering prowess and breadth of experience in handling complex, valuable and large cargoes for many prestigious companies within and outside of India. The team is led from the front by six individuals with over 200 years of combined experience



Anil Lohana, Senior Vice President, Operations: With 40 years in the transport industry, Anil leads project

execution to make sure cargoes are delivered as per plan - budget and time. He says his most recent challenging situation was leading a team to deliver a 4,500 tonnes single module in April 2021 when the entire world was going through the COVID-19 induced lockdown



Ashish Agrawal, Vice President, Project Forwarding: Ashish's

expertise lies in the Africa business with strong emphasis on door-to-door solutions, a plus as most industry EPC companies reach out to J M Baxi Heavy for Africa deliveries. Some of his most notable works was for multiple power projects in Mali, Senegal and other areas in East Africa.



Shreyas Raut, General Manager, Engineering: Shreyas' strong engineering base adds to our ability in

tailor making solutions for every heavy package assignment, while making the entire operation safe

and cost effective. He led the entire engineering for the Thai oil and Linde Gasification project, which included spreading the load from 3 to 7 file axel configurations, a feat achieved by not too many across the world so far.



B. Ramesh, Assistant Vice President: Ramesh has hands-on experience in handling complex projects involving

heavy lift and over-dimensional cargo. He currently manages commercials and business development, and expanding the overseas network. One of his most memorable projects was the Male International Airport Project, Maldives, where cargoes needed to be moved from India and UAE during the lockdown.



Kushal Roy Chaudhary, Chief Financial Officer: Kushal has been instrumental in cost management and internal controls to help build a robust system to ensure the company's growth.



Sameer Parikh, President and Chief Business Officer: At the helm of J M Baxi Heavy is Sameer who successfully

led the growth of Lift & Shift for over 30 years. With extensive experience on the field, his flair for detail and customer centric attitude, has helped his teams deliver projects successfully over the years. When asked about his most challenging project, he recounts the Thermax assignment where RORO ships were operated for the first time at Mundra Port, and moving cargoes over land posed multiple roadblocks, literally and figuratively. The project won the International Heavy Lift award in the category of Overland Heavy Lift transporter of the year 2020.

With this, J M Baxi Heavy aims to entrench itself as the new market leader with a strong focus and commitment to provide safe, economical and on- time delivery each time.

In Focus

Achieving Seamlessness In Trade

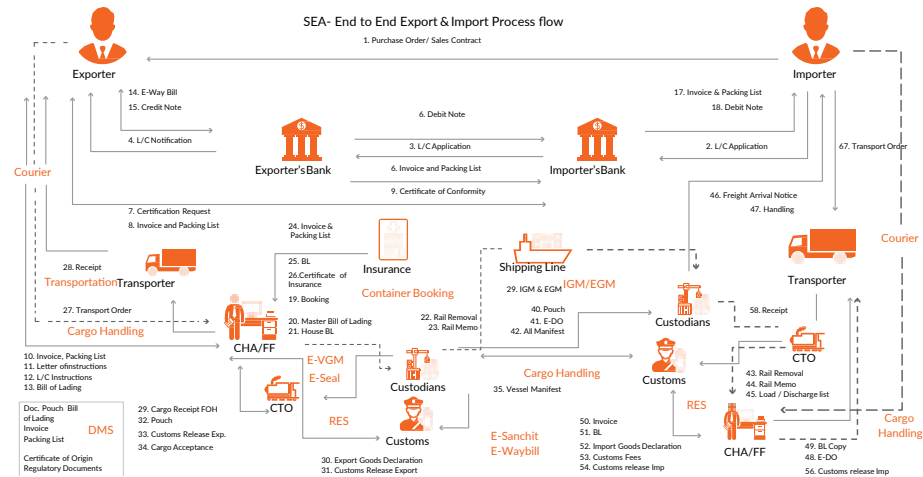
The world of trade is large. Although exciting it consists of many actors that play various roles throughout the lifecycle of a shipment. As business picks up the pace and as trade blocs promote cross-border exchanges, efficiency is the order of the day and no one can afford to work in silos. Countries must adopt technology platforms, to help weave together the varied pieces of trade and logistics, to offer seamlessness of integration and transactions.

There are various trade platforms across the world, like Trade Net (Singapore) and National Single Window-DNeX (Malaysia). Some of the other countries that have trade platforms are the Republic of Korea, Hong Kong, Senegal, Thailand etc. After introducing the single trade window, the processing time of documents have reduced from 4 days to 15 minutes in Singapore, customs clearance from 18 days to 9 days in Senegal, and export time from 24 days to 14 days in Thailand. This includes savings from transmission costs by using e-documents, improved productivity by automating administrative work, and improved management, storage, and retrieval of information and documents using information technology.

In India, The Port Community System (PCS 1x) was launched on December 11, 2018, in a record time of six months. PCS 1x is an initiative by the Indian Ports Association intended to provide a single window system for port communities in India, to securely exchange documents and information electronically with their stakeholders, involved in maritime transport.

ICEGATE is the national portal of Indian customs that provides e-filing services to the trade, cargo, carriers, and other trading partners electronically. PCS1x was integrated with ICEGATE on 31st July 2020. Since then, PCS 1x has tripled its user base

NLP - Landscape



and reduced the turnaround time of customs.

Now PCS 1x has been migrated to the National Logistic Portal Marine (NLP-M), which is designed as an open platform, that allows multiple service providers to offer EXIM-related services independently.

The PCS 1x Journey

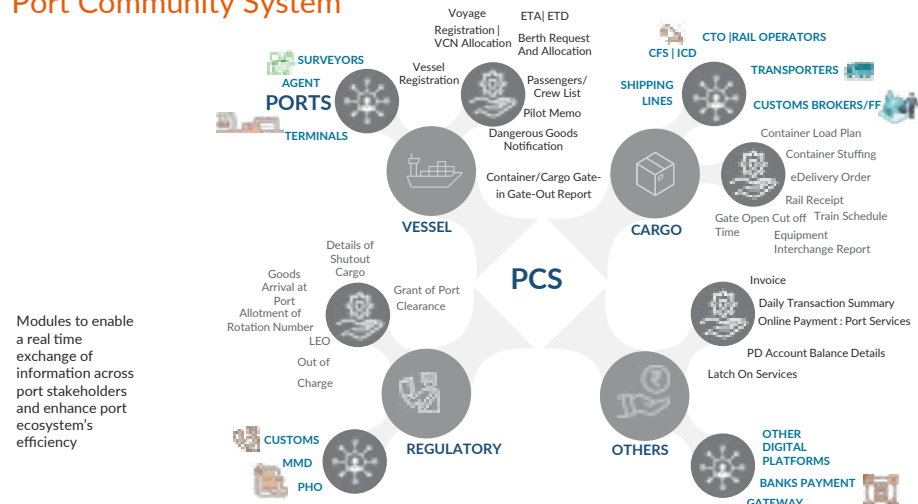
The tender for PCS was awarded to Portall by the Indian Ports Association (IPA) in May 2018. The scope was to migrate the older version, PCS 1.0 launched in 2006, as-is without any change, to a cloud platform; and

thereafter to provide various value-adds such as mobile applications, interactive dashboards, 24x7 support wrapped around a modern and intuitive user interface. By doing this, the user base of PCS expanded from 7 stakeholders, to 27 stakeholders of PCS 1x. A lot of marketing through roadshows and interactions were conducted, to bring more stakeholders on-board. The vision was to deliver the best PCS globally.

The road to NLP-M

The NLP-M will be a step up from the PCS 1x, the existing Port Community System, and will cover

Port Community System

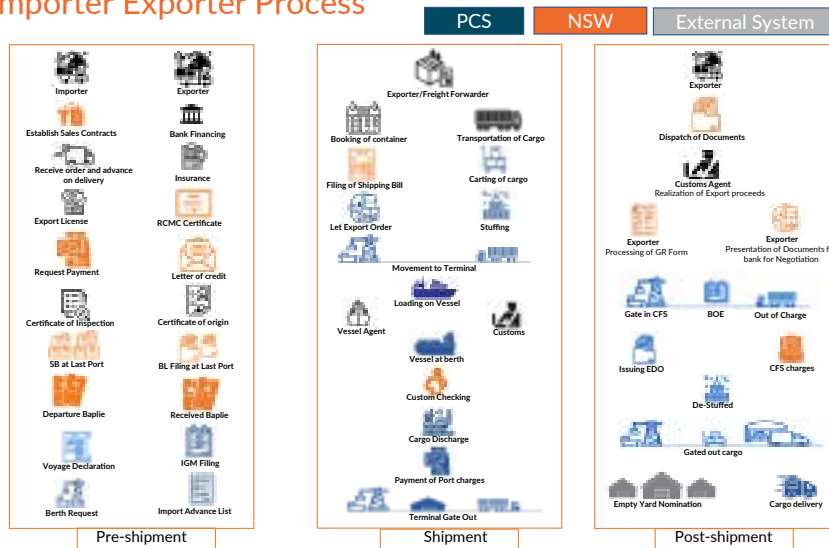


Confidential



In Focus

Importer Exporter Process



the functionalities of marine trade including inland waterways and coastal. The NLP-M initiative will strengthen the involvement of various ministries through interactions with various platforms, sharing of information sources and working in close synergy.

The core advantages of NLP Marine

PCS 1x, currently has 18,361 registered users and the total number of vessels handled is 1.06 Mn. The e-payments done per month are approximately US \$ 64 Mn, and the total transaction amount since inception is approximately US \$ 2,431 Mn. The average number of transactions per month is approx 1 Mn.

Connecting land, water and air

As trade grows and becomes complex, multiple modes of transportation will be resorted to, to help bring in efficiency, reduce costs, move goods faster and more recently take into consideration the cause of environmental responsibility. Therefore, multi-modal transport - ocean, land, air and inland waters need to be synchronised.

Ocean trade

India is placed centrally - bang in the middle of one of the world's major sea routes connecting the Middle East,

Africa and East Asia with Europe and the Americas. Routes through and around the Indian Ocean facilitate maritime trade which carry more than half of the world's sea-borne oil. It is also a valuable source of fishing and mineral resources.

Land trade

Land trade provides access to hinterland areas helping the trade to penetrate deeper inland markets. Roadways and railways are used for cargo and passenger movement and can often help reduce time, and trade transaction costs.

Air trade

Air trade plays an important role in the economic development of the nation. The Ministry of Commerce and Industry is targeting an exponential jump in goods and services exports - US \$ 2 Tr by 2030. India's air cargo industry is well positioned to scale up further. Airport cargo infrastructure, digital infrastructure for cargo handling, and airport gateways that facilitate efficient access to world markets need to be strengthened.

Inland trade

Inland trade is quickly gathering momentum, as the government's Sagarmala programme looks to bolster the use of inland waterways and rivers,

as an efficient way to move domestic trade.

Inland navigation has been considered, the cheapest means of transport compared to other methods of transport. Initial investments towards river services, as well as expenditure on its maintenance is much lesser as compared to road and rail transport. Moreover, it causes lesser pollution.

Land ports

Petrapole Border is the largest land port located in south Bengal

Land ports are the new frontiers for trade. The first land port in India was set up only 15 years earlier at the Wagha- Atari border. The Wagha border facilitates people movement and the Attari is exclusively for the movement of trucks and trains. As trade volumes grow, the need to diversify how we transport goods will be paramount - making land ports an integral part of the of the trade eco system. This will mean integrating land ports into the NLP.

We have currently nine integrated land ports operational in India - Attari, Agartala, Petrapole, Raxaul, Jogbani, Moreh, Sutarkandi, Srimantapur, and a Passenger Terminal Building at Dera Bada Nanak. There are some land ports that are under development - Rupaidiha, Dawki, Banbasa, Sonauli, Sabroom, Bhithamore, Kawrpuichhuah, Fulbari, Panitanki etc.

The bottom line

The current logistic costs in India are to the tune of 14-15 percent of the GDP. In most developed economies this cost is to the tune to 9-10 percent. The high costs in India can be attributed to delays due to paperwork and process inefficiencies. NLP-M hopes to address these issues and provide an environment for ease of doing business and a digital platform with reduced paperwork. The government of India hopes to reduce the logistics costs in the country through the usage of NLP.

Weights And Measures

Indian Crude Oil & Petro Products Sector – An Overview

India is the world's third largest oil importing and consuming nation behind the US and China. The demand for petroleum products in India is supported by a healthy economic growth of 7.1 percent, continuing economic reopening amid ease of COVID-19 restrictions and easing of trade-related bottlenecks supporting both mobility and industrial sector activity.

Until FY 22 India met its energy demands by importing crude oil from Iran and Saudi Arabia. Total imports from Iran stood at 21 percent followed by Saudi Arabia at 16 percent. The total import of crude oil in India stood at 212 MnT in FY 22. In the present scenario, Russia has emerged to be the top exporter of crude oil to India. This can be attributed to the ongoing Russia-Ukraine war. Due to the sanctions imposed by the western countries, Russian crude oil flowed at a discounted rate in the market. India imported approx. 935,556 barrels per day of crude oil from Russia in Oct 22.

The oil and petroleum sector are among the eight core industries in India and plays a major role in influencing the decision-making for all the other important sections of the economy.

India's refining capacity stands at about 251.2 MnT per annum as on October 2022, comprising of 23 refineries - 18 under public sector, 3 under private sector and 2 in a joint venture. Refinery capacity utilization was 88.8 percent for the year 2020-21. Indian Oil Corporation (IOC) is the largest domestic refiner with a capacity of 80.6 MMTPA. The top three companies - IOC, Bharat Petroleum Corporation (BPCL) and Reliance Industries (RIL) - contribute around 70 percent of

Refineries across India				
Sr. no	Refinery location	Name of the company	Name plate capacity (MMTPA)(As of 01.01.2022)	Crude oil processing (MMT) 2021-22
Public sector unit refineries				
1	Digboi – 1901	Indian Oil Corporation Ltd.	0.65	0.7
2	Guwahati – 1962		1.0	0.7
3	Barauni – 1964		6.0	5.6
4	Koyali – 1965		13.7	13.5
5	Bongaigaon – 1974		2.70	2.6
6	Haldia – 1975		8.0	7.3
7	Mathura – 1982		8.0	9.1
8	Panipat – 1998		15.0	14.8
9	Paradip – 2016		15.0	13.2
10	Manali – 1965	Chennai Petroleum Corporation Ltd.	10.5	9.0
11	Nagapattinam – 1993		0	0
12	Mumbai – 1954	Hindustan Petroleum Corporation Ltd.	9.5	5.6
13	Visakhapatnam – 1957		8.3	8.4
14	Mumbai – 1955	Bharat Petroleum Corporation Ltd.	12	14.4
15	Kochi – 1963		15.5	15.4
16	Numaligarh – 2000	Numaligarh Refinery Ltd.	3	2.6
17	Mangalore – 1996	Mangalore Refinery and Petrochemicals Ltd.	15	14.9
18	Tatipaka, AP – 2001	Oil and Natural Gas Corporation Ltd.	0.066	0.075
Joint venture refineries				
19	Bina – 2011		7.8	7.4
20	Bathinda – 2012		11.3	13.0
Private sector refineries				
21	DTA-Jamnagar – 1999		33.0	34.8
22	SEZ-Jamnagar – 2008		35.2	28.3
23	Vadinar – 2006		20	20.2
GRAND TOTAL			251.2	241.7

India's total refining production from FY 2020-21. India plans to almost double its oil refining capacity to 450 MnT in the next 10 years to meet the rising domestic fuel demand as well as cater to the export market. Petro-products play a considerable part in India's economy as an earner of foreign exchange.

Crude oil to petro-products

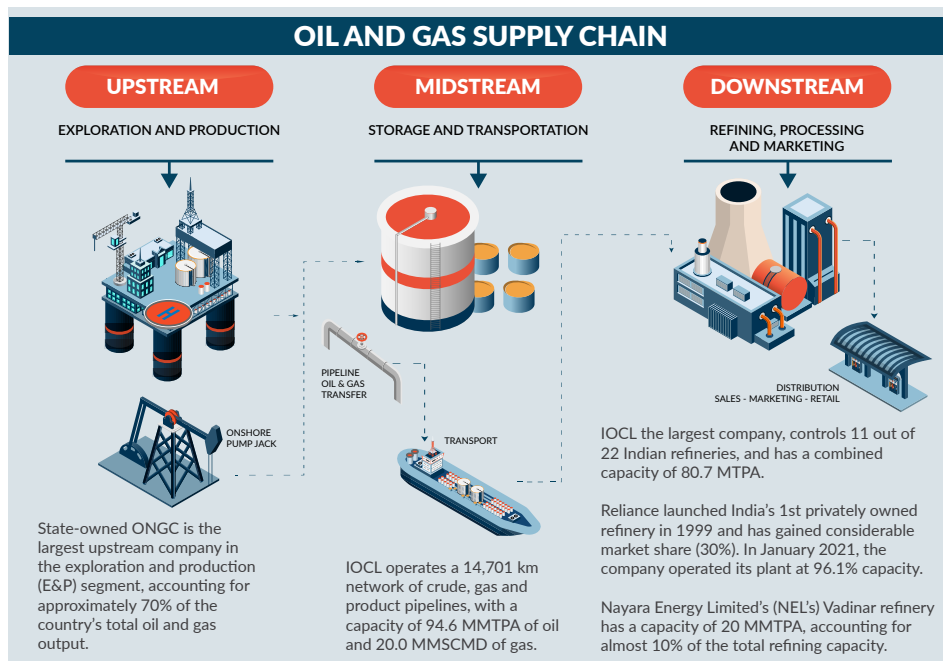
From its extraction to how it is supplied to end consumers, crude

oil passes through various refining stages. Different kinds of companies operate and specialise in activities at each stage. Based on the operations and their position in the supply chain, these oil companies are divided into upstream, midstream, and downstream companies.

Petroleum products derived from crude oil include light distillates such as LPG and naphtha; middle distillates such as kerosene; and heavy ends such as furnace, lube oils, bitumen, petroleum coke and paraffin wax.



Weights And Measures



Production of petroleum products reached 254.3 MMT in FY 22. India is one of the largest exporters of refinery products due to the presence of various refineries.

Petroleum products - current scenario

Petroleum demand in the world's third-largest oil consuming nation has been growing faster than anywhere else in 2022, rising by more than 400,000 barrels a day. That's equivalent to more than 20 percent of the total global increase.

Year	Crude Oil imports	Petroleum products import	Petroleum products export	Petroleum products consumption
2020-21	196.5	43.2	56.8	194.3
2021-22	212.4	42.1	62.8	204.2
2022-23*	134.2	25	36.3	126.1

India is one of the largest exporters of refinery products due to the presence of various refineries. Exports of petroleum products from India reached 62.7 MMT in FY 22 from 60.5 MMT in FY 16. Crude oil and petroleum products worth US \$ 44.41 Bn were exported in FY 22. During FY 22 high-speed diesel was the major export item

among petroleum products, followed by Motor Spirits (MS), naphtha, Aviation Turbine Fuel (ATF) and furnace oil. Major export destinations for Indian petroproducts are Singapore, Brazil, Netherlands and South Korea. India mostly imports motor spirit, ATF and fuel oil from Russia and the UAE.

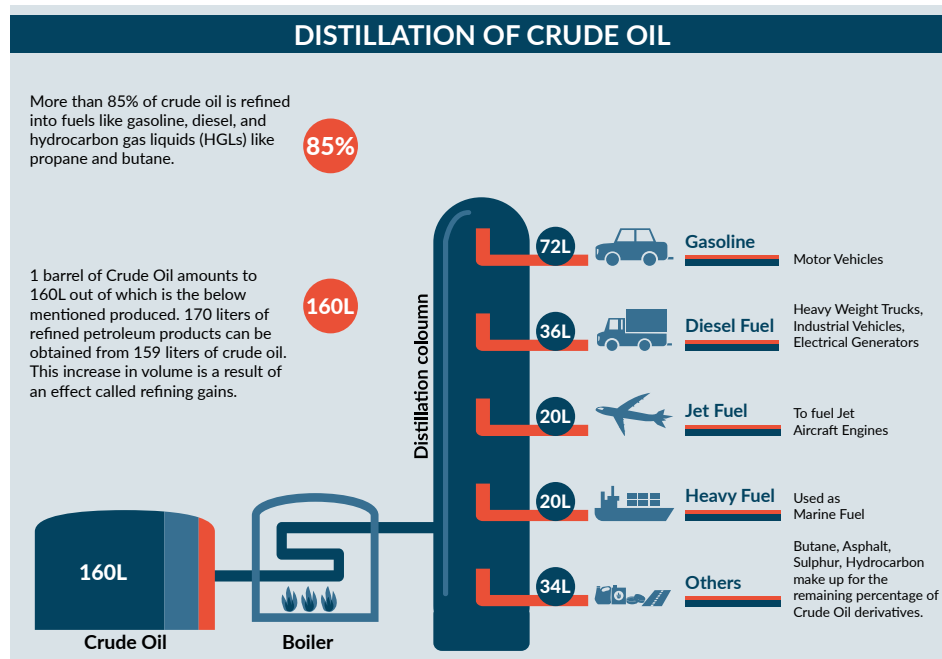
The overall consumption of Petroleum Oil and Lubricant (POL) products for FY 22 in India was recorded at 211 MnT with a growth of 5.1 percent over the previous financial year with Motor Spirit (MS) continuing to be a growth driver in oil consumption in India with a growth of 10.3 percent over FY 21, surpassing pre-pandemic volumes. High-Speed Diesel (HSD), the highest volume product, achieved a growth of 5.5 percent over FY21. LPG consumption recorded a volume of 28.58 MMT in FY22 which is 7.6 percent higher than the years preceding the pandemic. As of April 2022, the total length of the crude oil pipeline network across India is 10,419 km with a capacity of 147.9 MMTA. During FY22 the utilization of the crude oil pipelines increased by 5.7 percent. Product pipelines including LPG pipelines have a total network of 18,820 km and 115.7 MMTA capacity.

LPG	Domestic and auto fuel. Also for industrial application where technically essential. Now permitted as auto fuel.
Naphtha	Feedstock/fuel for fertilizer units, feedstock for petrochemical sector and fuel for power plants.
MS	Fuel for passenger cars, taxis, two & three wheelers.
ATF	Fuel for Aircrafts
SKO	Fuel for cooking & lighting
HSD	Fuel for transport sector (railways/road), agriculture (tractors, pumpsets, threshers, etc.) and captive power generation.
LDO	Fuel for agricultural pumpsets, small industrial units, start up fuel for power generation.
FO/LSHS	Secondary fuel for thermal power plants, fuel/feedstock for fertilizer plants, industrial units.
BITUMEN	industrial units.
LUBES	Lubrication for automotive and industrial applications.
PETROLEUM COKE	Fuel grade petcoke is used as fuel for cement kilns and other carbon consuming industries. electric power plants. Calcined petcoke is used in manufacturing aluminium, graphite electrode, steel, titanium dioxide
Other products (Benzene, Toluene, MTO, LABFS, CBFS, Paraffin wax etc.)	Feedstock for value added products.

The road ahead

India's oil consumption is forecast to rise from 5.2 Mn barrels per day (mbd) in 2022 to 7.0 mbd in 2030. India state refiners are set to invest US \$ 26.96 Bn to boost oil refining capacity by 20 percent by 2025. India's refining capacity of about 251 MnT a year in 2022 is expected to climb to 298 MnT a year by 2025. India will soon start crude oil imports from Iran which was banned in 2019, due to US Sanctions. By 2025 it may also increase the crude oil imports from the UAE.

Weights And Measures



While the share of renewables, including solar, wind and natural gas, is likely to increase in the next 10 years, absolute oil demand would still rise strongly over the next decade.

Demand for gasoil will rise by an average 5.3 percent per year through FY 25 and by an average 4.5 percent through 2030. India will continue to rely mainly on road transport to move freight around the country, while the number of passenger cars would steadily increase in the coming years with rising vehicle ownership. Gasoline and gasoil will continue to benefit from rising car sales and a stronger manufacturing industry, but faster than expected penetration of electric vehicles could slow demand growth.

While the near-term recovery for oil demand will primarily stem from transportation fuels, it is the petrochemical sector that will dominate growth over the medium term in India. Total ethane, LPG and naphtha demand is expected to grow. India is likely to start operations of 281 petrochemical projects by 2025, accounting for nearly 34 percent of the total upcoming petrochemical project starts in Asia

for the year. Petrochemicals demand in India is outpacing supply due to consistent economic growth and is one of the largest consumers of petrochemicals globally. Petrochemicals are one of the fastest growing industries in the Indian economy as it supports other growing industries such as construction, pharmaceuticals etc.



A common feature impacting all segments of the oil market is the acceleration of the energy transition in recent years and to meet this increasing oil demand the government is focusing on exploration so that India can reduce reliance on imports and insulate the country from effects in the energy sector arising from geopolitical situations. Recently, the centre opened bidding for 26 blocks for oil exploration in the country. This will help produce 25 percent of the country's crude oil demand by 2030. India has set a target of 5 MnT of green hydrogen by 2030. Over the next decade, the country plans to add 175 GW of green hydrogen-based energy, and thereby curb the country's dependence on crude oil imports.

For the near to mid-term future, crude oil will continue to play a pivotal role in India's growth trajectory. However, as the emphasis on research and thrust on infrastructure for green energy grows, there will be a gradual yet inevitable phasing out of the fossil fuel that has brought us so far.



Port Statistics

SHIPPING AND CARGO PERFORMANCE

QUARTERLY UPDATES ON INDIAN MAJOR AND MINOR PORTS (QTY IN MILLION TONNE)

JUL - SEP 2022-23 V/S JUL - SEP 2021-22

LIQUID COMMODITIES & GASES										
	CRUDE OIL & OIL		CHEMICALS & LUBES		EDIBLE OIL		ACIDS		LIQUIFIED GASES	
	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22
No of Ships Called	1335	1243	468	582	388	363	164	173	400	421
Total Cargo handled	70.8	79.861	3.66	4.210	4.5	4.075	1.8	1.922	9.39	11.38
Import	57.19	60.904	2.6	2.710	4.21	3.826	1.78	1.797	9.25	11.29
Export	13.61	18.957	1.06	1.500	0.29	0.249	0.01	0.126	0.13	0.09
FINISHED FERTILISERS & FERTILISER RAW MATERIALS										
	UREA		SULPHUR		ROCK PHOSPHATE		DAP		MOP	
	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22
No of Ships Called	46	54	13	13	56	62	29	28	17	21
Total Cargo handled	1.9	2.685	0.52	0.495	2.5	2.709	1.72	1.307	0.66	0.675
Import	1.9	2.685	0.26	0.286	2.47	2.709	1.72	1.307	0.66	0.675
Export	0	0.000	0.26	0.209	0.03	0	0	0.000	0	0.000
COAL AND COKE										
	NON COKING COAL		COKING COAL		MET COKE		PET COKE		OTR GRADES OF COKE	
	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22
No of Ships Called	569	564	321	254	15	20	39	23	22	48
Total Cargo handled	38.12	35.057	15.53	14.213	0.5	0.636	1.83	0.560	0.42	0.512
Import	37.81	35.057	15.24	13.937	0.5	0.327	1.78	0.560	0.4	0.370
Export	0.31	0.000	0.29	0.276	0	0.309	0.05	0.000	0.02	0.142
OTHER BULK & BREAK BULK CARGO										
	CEMENT		MINERALS		IRON ORE		STEEL PRODUCTS & PROJECT CARGO		GRANITE	
	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22
No of Ships Called	8	23	344	334	26	141	341	417	36	41
Total Cargo handled	0.267	0.506	15.401	14.389	1.714	7.221	3.087	7.471	0.82	1.005
Import	0.169	0.16	9.994	10.849	0.388	1.222	1.719	2.495	0	0.036
Export	0.098	0.346	5.407	3.54	1.326	5.999	1.368	4.976	0.82	0.969
AGRICULTURAL PRODUCTS & EXTRACTIONS										
	SUGAR		RICE		WHEAT		PULSE		EXTRACTIONS	
	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22	Jul-Sep, 2022-23	Jul-Sep, 2021-22
No of Ships Called	37	33	60	77	22	9	18	21	8	12
Total Cargo handled	1.33	0.98	2.01	1.67	0.87	0.34	0.49	0.45	0.19	0.19
Import	0.11	0.000	0.04	0.030	0	0.000	0.35	0.23	0.09	0.130
Export	1.22	0.980	1.97	1.640	0.87	0.340	0.14	0.220	0.1	0.06

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

Port Statistics

INDIAN PORT PERFORMANCE

JUL - SEP 2022-23 V/S JUL - SEP 2021-22
CARGO THROUGHPUT (QTY IN MILLION TONNE)

Ports	Types of Ports	NO. OF SHIPS		LIQUID CARGO		BULK CARGO		CONTAINERS (TEUS)		TOTAL CARGO *	
		JUL-SEP 2023	JUL-SEP 2022	JUL-SEP 2023	JUL-SEP 2022	JUL-SEP 2023	JUL-SEP 2022	JUL-SEP 2023	JUL-SEP 2022	JUL-SEP 2023	JUL-SEP 2022
KANDLA	PUBLIC	635	569	4.304	3.944	10.477	7.649	111291	118219	14.781	11.592
MUMBAI	PUBLIC	396	408	6.815	7.632	1.952	1.863	0	0	8.767	9.495
JNPT	PUBLIC	188	180	1.553	1.580	0.227	0.158	1480617	1338126	1.780	1.738
MORMUGAO	PUBLIC	80	95	0.204	0.140	2.803	3.523	0	0	3.006	3.662
MANGALORE	PUBLIC	302	323	6.539	5.584	1.280	1.783	0	0	7.819	7.367
COCHIN	PUBLIC	254	266	5.598	4.620	0.359	0.313	166035	198359	5.957	4.933
TUTICORIN	PUBLIC	201	253	0.378	0.390	5.004	4.340	176505	199292	5.382	4.730
CHENNAI	PUBLIC	241	187	3.688	2.802	0.949	1.111	368915	379412	4.637	3.913
ENNORE	PUBLIC	177	184	1.135	1.083	5.666	5.458	144296	119114	6.801	6.541
VISAKHAPATNAM	PUBLIC	497	461	4.236	3.803	12.114	9.599	126130	130121	16.350	13.402
PARADIP	PUBLIC	538	455	7.320	7.709	21.315	17.506	2519	2679	28.635	25.215
HALDIA	PUBLIC	450	417	3.576	3.729	6.138	4.306	24957	42937	9.714	8.035
KOLKATA	PUBLIC	29	13	0.012	0.023	0.014	0.021	149643	144655	0.026	0.044
GANGAVARAM	PRIVATE	47	108	0.000	0.055	3.757	7.145	0	0	3.757	7.200
PIPAVAV	PRIVATE	110	88	0.206	0.177	1.988	1.442	186619	158773	2.193	1.618
MUNDRA	PRIVATE	902	813	5.924	6.272	8.387	6.027	1635776	1619715	14.310	12.298
BEDI	PRIVATE	20	19	0.000	0.000	1.285	0.851	0	0	1.285	0.851
DAHEJ	PRIVATE	168	173	4.642	6.292	4.089	2.491	0	0	8.730	8.783
HAZIRA	PUBLIC	180	249	0.727	1.158	6.695	7.756	138494	164539	7.422	8.914
NAVLAKHI	PUBLIC	32	19	0.000	0.000	2.062	1.219	0	0	2.062	1.219
KAKINADA	PRIVATE	191	186	0.660	0.641	4.039	2.811	298	720	4.699	3.452
SIKKA	PRIVATE	346	364	30.290	30.756	0.043	0.000	0	0	30.333	30.756
VADINAR	PRIVATE	167	140	15.733	14.015	0.000	0.000	0	0	15.733	14.015
KRISHNAPATNAM	PRIVATE	216	189	0.394	0.415	11.775	7.987	14992	36885	12.168	8.402
KATTUPALLI	PRIVATE	21	18	0.000	0.107	0.160	0.083	176362	88684	0.160	0.190
BHOGAT	PRIVATE	3	0	0.249	0.000	0.000	0.000	0	0	0.249	0.000

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
MUMBAI WAREHOUSING & LOGISTICS PARK
DELHI INLAND CONTAINER TERMINAL
INCHHAPURI INLAND CONTAINER TERMINAL
PARADIP MULTIPURPOSE CLEAN CARGO TERMINAL
ROZI BULK TERMINAL
THE BALLARD PIER

TECHNOLOGIES

DIABOS
PORTALL
ARYA WATER
ARYA COMMUNICATIONS &
ELECTRONICS SERVICES

