FORGING A GROWTH MINDSET AND VISION FOR INDIA'S MARITIME RENAISSANCE

Commodore (Dr) Johnson Odakkal[1]

Abstract

India's maritime sector stands at a pivotal juncture, where historical legacy intersects with strategic imperatives of innovation, sustainability, and global competitiveness. This is a critical analysis of the evolution of the Indian maritime ecosystem in the context of Maritime India Vision 2030, drawing from contemporary policy frameworks, technological transitions, and community-based shipbuilding practices. Anchored in case studies from Mandvi, Beypore, and Tuticorin, it explores how traditional maritime knowledge can be integrated into modern shipbuilding and logistics frameworks. It further evaluates current challenges including regulatory complexity, infrastructural constraints, climate obligations, and fragmented skill development. The article argues for adopting a growth mindset, one that harmonizes heritage, innovation, and inclusive policy design. It concludes by proposing actionable pathways for strengthening India's maritime resurgence, grounded in sustainability, digital transformation, and strategic autonomy.

Keywords: maritime policy, shipbuilding, strategic autonomy, sustainability, port infrastructure.

INTRODUCTION

India and its maritime industry are a given centrality based on the maritime geography with seas surrounding peninsular India on three sides. Enriched with substantial access to the oceanic space, over 11,000 km of coastline, and a network of major and minor ports, Indian economics recognizes that resource chain and empowered delivery is a vital element of sustainability to the people of this nation. Seas are the canvas containing life-sustaining economic arteries of the world with a scale and scope of inherent global trade that must be in perennial flow to prevent many disasters. Indian coastlands and the hinterland come together in a seamless ecosystem that

1. Indian Navy (Retd); Maritime Scholar and Strategic Analyst, Faculty in Global Politics; odakkaljohn son@gmail.com

has fuelled an Indian legacy. It needs to be recognized as the harbinger of not just sustenance but growth in a forward outlook.

The historical approach to review Indian maritime journey identifies a multi-millennial voyage. Sufficient evidence exists to tell us that since ancient times, India has been a maritime power. It can be seen through ages wherein waterways were used to build connectivity, engage in commercial activities, and had an impact on culture through time. Until the colonization of the subcontinent, India traded with nearby trans-oceanic regions and had access to almost half of the world due to the endemic access to the sea. It is this access alone that had made the kingdoms near the coasts powerful and wealthy so much so that they had the power to engage with those who sought to trade with India. Even during colonial times, India did learn and adapt to global standards. The one sector that reflected this adaptation is the shipbuilding industry under the legendary Lowji Wadia. He built ships at the Bombay Dockyard with a stellar workmanship visible even today through ships like the HMS Trincomalee. Although India missed a substantial part of the industrial revolution amidst colonization woes, the march to maritime initiative and to become a maritime power remained in the heart of a few Indian industrialists. Entrepreneurship and venture sustained to give a newly independent nation a head start to maritime significance.

On 2 March 2021, the Maritime India Vision 2030 was released, with a clear perspective of the envisioned growth. Certain writings have emerged that woefully lament the Indian shipping industry turning into a sunset sector. That narrative runs counter to the potential, drive, and direction from multiple elements of the Indian maritime ecosystem. This article attempts to recognize a forward-looking vision and identify the past inspirations as well as existing potential to articulate a growth mindset for the maritime sector.

In the current environment, the Indian maritime sector plays a crucial role in its overall trade and growth, with 95% of the country's foreign trade and 70% of its trade value being undertaken through maritime transport (INDIA MARITIME 2025, n.d.). Highlighting the need for advancing further to maximize utility from the seas, and be self-reliant under the initiative 'Atmanirbhar Bharat', to position India as a leader in the Global Maritime Sector, the Ministry of Ports, Shipping and Waterways has developed the Maritime India Vision 2030 (MIV 2030), a strategic framework aimed at ensuring the coordinated and accelerated development of India's maritime industry over the next decade. The Maritime India Vision 2030 was created with input from more than 350 public and private sector participants, including ports, shipyards, inland waterways, trade organizations and associations, as well as national and international industry and legal experts. The maritime sector is expected to be the driving force behind India's development and will significantly contribute to the growth and expansion of the economy.

The Indian government has launched several major initiatives such as the Project Sagarmala (now, as of March 2025, in plans to launch an upgraded version called 'Sagarmala 2.0'), Port-Led Development and enhanced Inland Waterways & Coastal Shipping (Ministry of Ports, Shipping and Waterways, n.d.). The rising collaboration between public and private sectors in response to these initiatives enhances the dynamism of the industry and clearly indicates a revived interest in its potential. Both public and private entities are now more motivated than ever to increase their involvement. While the encouraging signs of advancement in the sector have created vast opportunities, they have also revealed obstacles to progress. It is essential to eliminate these obstacles and leverage the opportunities to provide guidance for the country's maritime sector.

Acknowledging the potential, it is imperative to consider the knowledge influence that the country must develop a growth mindset and be a leader in the industry. To further advance the maritime industry, the government of India has put forth the Maritime Vision of India 2030 (MIV2030) which is guided by six principles to ensure growth and development for this sector. In order to achieve Waste to Wealth, it is necessary to analyse present and future challenges, define initiatives, drive innovation using the newest technology, create time-bound action plans, benchmark to understand current standing and adopt best-in-class practices, address capability building and human resources, and generate ideas.

The MIV 2030 document also highlights the ten themes which would be the primary focus for the ten-year period, which are to develop best-in-class port infrastructure, to drive end-to-end(E2E) logistics efficiency and cost competitiveness, to enhance logistics efficiency through technology and innovation, to improve the global share of shipbuilding, ship repair, ship recycling, and cargo and passenger movement through inland waterways, to increase India's global stature and maritime cooperation, to lead the world into a safe, sustainable, and green maritime sector, to become a leading seafaring nation with top-notch education, research and training, and to strengthen policy and institutional framework to support all stakeholders (Ministry of Ports, Shipping & Waterways, Government of India, 2021).

	Key Performance Indicator	Current (2020)	Target (2030)
1	Major Ports with >300 MTPA cargo handling capacity	-	3
2	% of Indian cargo transshipment handled by Indian ports	25%	>75%
3	% of cargo handled at Major Ports by PPP/ other operators	51%	>85%
4	Average vessel turnaround time (containers)	25 hours	<20 hours
5	Average container dwell time	55 hours	<40 hours
6	Average ship daily output (gross tonnage)	16,500	>30,000
7	Global ranking in ship building and ship repair	20+	Top 10
8	Global ranking in ship recycling	2	1
9	Annual cruise passengers	4,68,000	>15,00,000
10	% share of Indian seafarers across globe	12%	>20%
11	% share of renewable energy at Major Ports	<10%	>60%

MIV 2030 – Key Targets

Source – MIV 2030

These targets showcase the ambition of the current approach to make India a global stakeholder when it comes to the maritime industry. However, as of June 2025, the progress seems to be uneven. Though initiatives like increasing the country's port capacity under Sagarmala (has increased by 528 Mt as of April 2025) (Blitz India Media, 2025), projects like Vadhavan Port

(which was approved in 2024, and plans to create a cumulative capacity of 298 million metric tonnes per annum) (Press Information Bureau, 2024), Vizhinjam Port (had trial launch in July 2024 and start of operations by December of the same year, which began with an initial goal of handling 1 million twenty-foot equivalent units or TEUs, has handled a record volume of over 8 lakh TEUs containers by facilitating over 385 ships as of July 2025) (The Hindu Bureau, 2025) being on track, with Indian cargo transhipment handled by the Indian ports showing a 4% annual growth in FY 2024–2025 (Press Information Bureau, 2025), the country is still ranked 20th in terms of shipbuilding globally.

INDIAN SHIPBUILDING LEGACY

India has had a journey of maritime prowess, and this can be seen from ancient techniques used for water transportation. From reed boats to massive vessels, shipbuilding in India has experienced difficulties accompanying a major innovation, aggressive growth, sharp decline, and many achievements through time (Talawadekar, 2021).

If we turn the pages of history to 15 years ago, smartphones were mostly unknown, taxi apps barely envisaged, and mobile wallets almost unheard of. Now, almost every part of our lives is touched by smartphone technology. The next big wave in technology that will change the shipping sector 10 years from now, will be robotics and artificial intelligence (AI). This has transformed many sectors and shipping will not be left untouched. Data science is expected to do everything from fighting wars on borders to providing companionship. Talking about defence, be it the talks around the Indian Army using robots for its operations (even potential robotic soldiers in the future), or the incorporation of drones and Artificial Intelligence, the Indian Armed Forces are actively embracing advanced technologies in their operations. In addition, ever since 2017, there was positive anticipation of inculcating robotic boats and submarines in the Indian Navy (Sinha, 2017). The Indian Navy is advancing its plan to procure four Landing Platform Docks (LPDs) to enhance its amphibious warfare, and Humanitarian and Disaster Relief (HADR) capabilities. This procurement process, revived in August 2021, through a Request for Information (RFI) under the Defence Acquisition Procedure 2020 (DAP-2020), mandates that the LPDs be built by Indian shipyards in collaboration with foreign partners for design and technology transfer. The anticipated delivery timeline for the first vessel is within 60 months from the contract signing, with subsequent vessels delivered at 12-month intervals. These LPDs are designed to serve as command centres for the Commander of the Amphibious Task Force, Landing Force Commander and Air Force Commander, and to support HADR missions. Additionally, they will act as mother ships for unmanned systems, enabling the operation and integration of futuristic unmanned vehicles, platforms, and equipment across air, surface, and sub-surface domains (Bhalla, 2021). Indian shipyards, including Hindustan Shipyard Limited (HSL) with France's Naval Group and Larsen & Toubro (L&T) with Spain's Navantia, are competing for the contract, with a decision on indigenous design or foreign collaboration expected by late 2025 (Indian Defence Research Wing, 2024). In November 2024, the Indian Ministry of Defence and the UK Ministry of Defence signed a Statement of Intent for cooperation on designing and developing electric propulsion systems for the Indian Navy, specifically for the four LPDs. This collaboration aims to integrate cutting-edge propulsion technology, enhancing the vessels' efficiency and operational range. A joint working group has been established to expedite the project, with the LPDs expected to be launched by 2030 (Singh, 2024).

India has almost caught up with the world in terms of achieving modern megatronics which would bolster its power further. Though the Indian Navy commissioned a destroyer called 'INS Surat' in December 2024, which showcases advanced sensors and command systems, with AI-assisted features for enhanced situational awareness, we still have a long way ahead for our own Unmanned Autonomous Vessel fleet, or even submarines of that kind (Indian Defence Research Wing, 2025). There are ample examples from various regions in India that have developed ships from various techniques and continue to build or repair ships. This demonstrates how the earlier kingdoms had the knowledge and today this can be bolstered by combining knowledge from local communities and modern technology.

First, let us cast a look at the existing legacy knowledge in this sector in India. That necessarily takes us to three coastal locations to present the case examples.

Mandvi, in Gujarat, is one of the places in India where members of the seafaring Kharva community, comprising of both Hindus and Muslims, have gained new skills in boat construction and repair alongside their traditional navigation abilities. They have mastered the art of crafting their own vessels, called dhows, which are utilized in their flourishing cargo commerce. These dhows are completely constructed from wood, using Sal wood sourced from Malaysia, Indonesia, and Burma, or obtained locally from the babool trees of Gujarat. Skilled artisans who often have limited literacy and no formal engineering training build these ships by hand, bringing them to life expertly without consulting any sketches. This nearly 400-year-old tradition and craft continues to thrive today. However, the emergence of modern ships constructed from steel and equipped with large engines has contributed to a decrease in this traditional method of shipbuilding (Langa, 2017).

Similar to this, Beypore, Kerala, is building Urus, or wooden ships, in response to demand from Arab nations because of their strength and artistry. Beypore has a roughly 1500-year-old shipbuilding tradition. Due to its reputation as the home of skilled artisans, it previously saw a significant increase in demand for ships from Western Asia. Before the invasion of iron and steel, which posed a severe threat to its survival, the shipbuilding sector in Beypore experienced a period of healthy growth. Generally speaking, a Uru is a big ship. To construct one, requires a lot of work and skilled artisans. This seagoing yacht was constructed entirely of wood by glueing boards of high-quality timber. An Uru is typically constructed over a minimum of four years by a group of fifty men. The highly qualified shipwrights have a deep understanding of the complete shipbuilding process and do not create designs. It is a minimally complex cooperative effort that adheres to rigorous and disciplined work ethics. But later, Beypore lost the allure that it had during its prosperous heyday. Few Urus from Beypore made it to the water. The shift in Beypore's shipbuilding sector contributed to the altered situation by forcing the local artisans to create little wooden replicas of their enormous works of art (Kerala Tourism, 2010). However, there arose a beacon of hope in post-2011, with orders from Qatar for luxury yachts and floating restaurants, notably for the 2022 Fifa World Cup (Chari, 2014) (Navrang India, 2023). Yet, as of 2025, only a handful of maestris remain, prompting efforts like the Kozhikode District Tourism Promotion Council's Geographical Indication (GI) tag application and P.O. Hashim's private uru museum to preserve the craft.

Finally, Tuticorin or Thoothukudi provides an example of Thonis/Donis, which are lightweight ships that aid in the dumping of cargo from the middle seas. According to current records, MSV

Abood was the first sailing vessel in Thoothukudi to be mechanized (MSV stands for 'mechanized sailing vessel'). In 1982, Suresh Corera of Suresh Constructions completed this task. However, this ship was never used in Thoothukudi. It was constructed for a Dubai-based sailing sailboat operator. ZK 232, which was likewise constructed by Suresh Constructions and sold to a west coast owner, was the next vessel to be mechanized. In 1983, Giani Zail Singh, the President of India at the time, also gave Suresh Corera a citation 'for exporting the first mechanized sailing vessel from India'. In 1985, Ubald Raj Mackena became the first Thoni owner to completely mechanize and run a Thoni from Thoothukudi. Up to 450 tonnes of freight was transported by a coasting Thoni. Still in use today, the smallest coasting Thoni can transport 150 tonnes of freight. Nonetheless, there are Thonis, sometimes known as 'dhows', that transport over 2000 tonnes of cargo along the west coast of India, Pakistan, and the Persian Gulf. There were forty coasting Thonis in Thoothukudi in the 1980s. There were 43 Thonis coasting in 2011 (A & J., 2011).

The preceding examples provide us with an awareness of traditional knowledge among the skilled communities in the country. They have been preserving the art of shipbuilding within their communities. These family held secrets need to be utilized by the government to build the maritime industry by involving people from the community at various points in building infrastructure. Ancient knowledge being one facet reveals the potential that the industry has for providing livelihood as well as to grow the industry as a whole.. An overseeing organization tasked with its growth will assist in improving the current state of shipbuilding. The government may consider various strategies to boost the industry, thus attracting more clients to support it. These communities have significantly contributed to the advancement and preservation of this craft and should be involved in discussions and planning for the enhancement of the heritage. Thorough documentation and raising awareness through workshops, programs, interactive sessions with artisans, and the establishment of museums can be vital in safeguarding the heritage (Talawadekar, 2021).

THE CURRENT SCENARIO OF SHIPPING INDUSTRY IN INDIA

With the current global geopolitical and geoeconomic scenario, it does seem a bit far-fetched to be able to achieve the goals set through the Maritime India Vision 2030. Few of the current challenges that have affected the shipping industry include the following.

Survivability of the industry

Certain obstacles that are impeding the shipping industry's advancement must be removed immediately. The delay is exacerbated by the Indian bureaucracy's inflexibility and resistance to relinquish control. The confusion is exacerbated by the central, state, and municipal governments' numerous involvements with overlapping powers. Shipping businesses in India have found it difficult due to the absence of a single window clearance procedure. Despite the Coastal Shipping Bill, 2024's efforts to streamline regulations, smaller companies continue to encounter obstacles to compliance (PRS Legislative Research, n.d.). Port capacity remains a bottleneck, with many non-major ports unable to handle mega-vessels due to shallow drafts, though Vizhinjam's deep-water transshipment port (operational since 2024) and Kandla Creek's ₹ 27,000 crore cargo terminal project are reducing reliance on foreign hubs like Colombo (The Hindu Bureau, 2025). In addition to this, road network growth, energy and general infrastructure development are also

needed, though Sagarmala's projects (now even talks of Sagarmala 2.0) and ₹ 1.71 lakh crore in port upgrades are addressing gaps (Negi, 2025). It is challenging for Indian shipping businesses to participate in any of the profitable government programs that are accessible through other routes. Shipping firms have found it challenging to prosper due to the load of taxes such as customs duty on bunkers, landing fees, income tax, and even 5% IGST on vessels flying the Indian flag, among other levies, with very few exceptions. (However, there are talks going on to slash the 5% IGST considering that it discourages the Indian shipping industry.) (Manoj, 2024). The Union Budget 2025–26's ₹ 25,000 crore Maritime Development Fund (MDF) and 10-year customs duty exemptions on shipbuilding components provide relief, yet industry stakeholders seek further GST parity (Press Information Bureau, 2025a). Even if digital port operations have improved, shipping companies' shipment processes are still rather onerous when compared to other forms of transportation. In consequence, this wastes labour and shipping time, which are crucial components of the logistic process. Because of the increased demand for shipping services, vessels are becoming larger. Even while it may seem like a positive trend, many Indian ports are still having difficulty keeping up, even if ports like Vizhinjam can handle larger ships. Additionally, many of these large ships are unable to be summoned into most of the ports (IRC Group, 2018).

Sustainability—climate change and community

In recent years, climate change has been an important point for all countries to work on. The shipping industry has been known to produce a lot of pollution in the environment and countries around the world have been attempting to resolve this issue. At COP26, a coalition of 24 countries including Britain and the United States, signed the Clydebank Declaration to establish at least 6 green corridors by 2025, fostering zero-emission trade routes to decarbonize maritime transport, with sources implying well over 50 initiatives being active as of 2025 (the 'Annual Progress Report On Green Shipping Corridors 2024 edition suggests the number be 62 as of 2024), including Los Angeles-Shanghai and potential Indian corridors like Thoothukudi-Colombo (proposed, and in the feasibility stage under Sagarmala) (Centre for Maritime Economy and Connectivity & Shrotriya, 2024) (Getting to Zero Coalition & Global Maritime Forum, 2024) (Press Information Bureau, 2019). Though United States' withdrawal from the IMO's decarbonization talks due to cost concerns might affect its commitment, the impact may be limited due to a lesser tonnage share of Washington (Balakrishnan, 2025). Shipping, which transports about 90% of world trade, accounts for nearly 3% of the world's CO2 emissions. U.N. shipping agency the International Maritime Organization (IMO) has said that it aims to reduce overall greenhouse gas emissions from ships by 50% from 2008 levels by 2050. The goal is not aligned with the 2015 Paris Agreement on climate change and the sector is under pressure to be more ambitious (Saul & Paul, 2021). The IMO revised its 2018 GHG Strategy in 2023, targeting net-zero emissions by or around 2050, with 20–30% reductions by 2030, 70–80% by 2040, and 5–10% zero/near-zero emission fuel uptake by 2030. Furthermore, the IMO Net-Zero Framework, approved in April 2025, mandates a global fuel standard and a GHG pricing mechanism for ships over 5,000 gross tonnage. This will be effective by 2027, though projections suggest only 10–15% reduction by 2030, as compared to the 20–30% target set by the 2023 GHG Strategy (Directorate General of Shipping, 2025). More than 140 companies in the maritime, energy, infrastructure, and finance sectors participated in the Getting to Zero

Coalition, which was coordinated by the Global Maritime Forum (as of 2025, the membership has grown to over 200 companies) (Getting to Zero Coalition, n.d.) (Global Maritime Forum, 2025). This coalition released a report in 2021 that found getting past the tipping point for zero-emissions fuel costs will require the industry to have 5% adoption of those fuels by 2030, with adoption ramping up to more than 90% by the mid-2040s (Energy Transitions Commission, 2025). Realistically, they could achieve approximately 40% GHG intensity reduction by 2035, but full decarbonization is unlikely before 2050, due to vessel lifespans and incompatible measures. The tipping point for the shipping industry would be when low-carbon technology costs decline enough to prompt its rapid adoption with positive feedback loops between different actors raising confidence, increasing demand, and investment throughout the value chain (Whieldon, 2021). Along with the technological innovations that play a fundamental role in green shipping, due to the complexity in shipping operations, it would require adapting to a mixture of technological, operational, and fuel-related measures. The combination of these measures would generate different decarbonization pathways and the implementation of one measure might become incompatible with another. This would be further supported by strong leadership by policymakers who would enable the setting for a clear decarbonization and other targets as necessary pre-conditions for decarbonization (Fernandes, 2020).

What is the Call to Action?

So far, we have been able to identify the areas of growth in the maritime industry. Noting from our ancient techniques we know that we have the knowledge and skilled manpower to build ships and enhance the maritime industry. What we must rely on next is crucial to explore.

Coast and community

It is imperative that we incorporate the knowledge of the shipbuilding communities to develop the industry. The skill has been surviving barely due to the changing nature of demand for the ships and the inability of advancing with technological prowess by the people. Ensuring they catch the bus missed towards technological advancements by educating the communities further to adapt to latest innovations in the shipping industry can possibly bolster growth. Combining the knowledge and present technology would facilitate growth and even take ahead the initiative of an Atmanirbhar Bharat. The involvement of the communities would be essential to rethink strategies as they have the knowledge passed down from generations within their communities. This would continue the legacy of the coastal communities and enhance India's power as a maritime nation.

Building efficient vessels

To achieve higher and gain better results with respect to the shipping sector, we need a change in perspective when it comes to building ships. From building huge ships, we need to bring back the art of building efficient and smaller vessels which can support inland waterways and transportation. This would reduce dependency on roads and railway transportation which would in turn reduce carbon footprint. There lies another key potential for India while incorporating this change, which is to increase the number of shipyards. This would enable more employment opportunities and even increase the demand for shipbuilding, repairing, and recycling, which would in turn make the country self-sufficient.

Enhanced technology—green shipping

The changing global climate has shifted a sharp focus on green shipping. To combat the challenges posed by the prevailing climate conditions, sufficient research is required to bring out solutions to the challenges that are currently posed by carbon emissions. By introducing methods and technologies which efficiently combat the challenge and can speed up the process would change the way the industry is being looked at. The nation's shipbuilding industry has a chance to be revitalized thanks to the Industrial Revolution 4.0. Given how urgently the current shipyards need to be modernized, the right kind of assistance would be required to turn them into a state-of-the-art automated facility with technologically supported efficient procedures. By the end of this decade, the shipbuilding sector in India may look different thanks to the successful use of innovative technology. In addition to reducing shipbuilding costs and increasing efficiency, technologies such as 3D printing are also being used globally to simplify ship design complexity and recreate parts and components, which shortens the supply chain and saves money and time when manufacturing and repairing new ships. The digitalization of robotics has been beneficial. In order to maximize expensive human resources and boost production speed and scale, shipyards are progressively integrating robots into their production systems. Nowadays, robots carry out jobs like hull cleaning and pipe inspections, ensuring higher and consistent work quality to more precise and particular standards. Virtual and augmented reality (AR) is used in shipbuilding to reduce physical waste, validate and enhance intricate construction procedures, and expedite stability calculations and hull dynamics during the design phase. There are numerous uses for creating a 'digital twin' with augmented reality in the shipbuilding industry (Singh, 2021).

CONCLUSION

In terms of having a vision to upscale the maritime sector, India has a road map planned. However, it is still at its nascent stage and we still must cover considerable distance to achieve our goals as outlined in the Maritime Vision 2030. It is crucial that we begin at the current setup and be inclusive in terms of incorporating people and ideas to achieve this growth trajectory. India has been a world leader in its past as seen through the span of influence in the region and with vision and foresight we can rebuild its dominance in the world. This can begin with the maritime sector which would create a domino effect on other sectors and improve the economic conditions of the country, post the pandemic. A major focus on the maritime sector along with combating the challenges that come by, moving ahead with a growth strategy through existing knowledge, India has the recipe to achieve maritime might, once again.

REFERENCES

1. A, S., & J., R. (2011, December). Thoni: the Sailing Vessel of Thoothukudi. Retrieved from globalparavar.org: https://globalparavar.org/thoni-the-sailing-vessel-of-thoothukudi/
2. Balakrishnan, G. R. (2025, April 12). U.S. withdrawal from IMO decarbonization talks worries shipping, shipbuilding sectors. Sagar Sandesh. Retrieved from sagarsandesh.in. https://www.sagarsandesh.in/news/37334
3. Bhalla, A. (2021, August 21). Indian Navy's procurement of amphibious ships revived after hitting dead end last year. Retrieved from Indiatoday.in: https://www.indiatoday.in/

india/story/navy-s-procurement-of-amphibious-ships-revived-after-hitting-dead-end-last-year-1845761-2021-08-26
4. Blitz India Media. (2025, April 10). Sagarmala has expanded port capacity by 528 MT. World's First Weekly Chronicle of Development News. Retrieved from Blitz India Media. https://blitzindiamedia.com/business-economy/sagarmala-has-expanded-port-capacity-by-528-mt/
5. Centre for Maritime Economy and Connectivity, & Shrotriya, S. (2024). Green Shipping Corridors: Charting Zero-Emission Maritime Trade. In CMEC Policy Brief # 4. Retrieved from ris.org.in. https://ris.org.in/sites/default/files/Publication/PB-4-Dr-Shishir-Shrotriya_0.pdf
6. Chari, M. (2014, June 16). How the FIFA World Cup is reviving the fortunes of an ancient shipyard in Kerala. Retrieved from Scroll.in. http://scroll.in/article/667274/how-the-fifa-world-cup-is-reviving-the-fortunes-of-an-ancient-shipyard-in-kerala
7. Directorate General of Shipping. (2025, April 30). Merchant Shipping Notice No. 4 of 2025: Issuance of Guidance Note on IMO's Net-Zero Framework [PDF].Retrieved from Government of India. https://dgshipping.gov.in/writereaddata/News/2025043007014612 32894MerchantShippingNotice4of2025-Final.pdf
8. Energy Transitions Commission. (2025, February). Achieving zero-carbon buildings: Electric, efficient and flexible [PDF]. Retrieved from energy-transitions.org. https://www.energy-transitions.org/wp-content/uploads/2025/01/ETC_Buildings-Decarbonization-Report_DIGITALFINAL.pdf (Report published February 2025)
9. Fernandes, K. (2020, May 14). Green shipping will revolutionize shipping industry in Asia. Retrieved from csrjournal.in: https://thecsrjournal.in/green-shipping-industry-asia-pacific-climate-change/
10. Getting to Zero Coalition & Global Maritime Forum. (2024, November 19). Annual progress report on green shipping corridors (2024 edition) [PDF]. Retrieved from ctfassets.net. https://downloads.ctfassets.net/gk3lrimlph5v/22Mimgb4JIBUmqC6ZYEIq8/651e26fa87a93a7029b6a30cdeb8d4f0/Getting_to_Zero_Coalition_Annual_progress_report_on_green_shipping_corridors_2024_edition.pdf
11. Getting to Zero Coalition. (n.d.). Getting to Zero Coalition. Retrieved from Global Maritime Forum. https://globalmaritimeforum.org/getting-to-zero-coalition/
12. Global Maritime Forum. (2025, May 7). Global Maritime Forum releases landmark report on shipping decarbonization progress. Retrieved from Global Maritime Forum. https://globalmaritimeforum.org/news/global-maritime-forum-releases-landmark-report-on-shipping-decarbonization/
13. INDIA MARITIME 2025. (n.d.). https://maritimeindia.ficci.in/about-the-event.html
14. Indian Defence Research Wing. (2024, December 5). Indian Navy to decide on procurement of Landing Platform Docks (LPDs) - Indian Defence Research Wing. Retrieved from idrw.org. https://idrw.org/indian-navy-to-decide-on-procurement-of-landing-platform-docks-lpds/
15. Indian Defence Research Wing. (2025, January 25). INS SURAT: India's first AI-Enabled warship set to reduce crew interventions. Retrieved from idrw.org. https://idrw.org/ins-surat-indias-first-ai-enabled-warship-set-to-reduce-crew-interventions/#:~:text=INS%20

Surat%2C%20part%20of%20the,pressure%20scenarios%2C%20ensuring%20tactical%20superiority
16. IRC Group. (2018, January 31). Challenges Faced By Shipping Companies In India. Retrieved from ircgroupglobal.com: https://ircgroupglobal.com/challenges-faced-by-shipping-companies-in-india/
17. Kerala Tourism. (2010, September). Uru. Retrieved from Keralatourism.com: https://www.keralatourism.org/kerala-article/2010/uru-craft-ship-building/73
18. Langa, M. (2017, April 23). The Last Boat. Retrieved from hindu.com: https://www.thehindu.com/society/history-and-culture/all-at-sea/article18194896.ece
19. Manoj, P. (2024, December 16). With support to scrap 5% IGST on ship imports, Ministry attracts ire of ship builders. Retrieved from ETInfra.com. https://infra.economictimes.indiatimes.com/news/ports-shipping/with-support-to-scrap-5-igst-on-ship-imports-ministry-attracts-ire-of-ship-builders/116350477
20. 1. Ministry of Ports, Shipping & Waterways, Government of India. (2021, March). Maritime India Vision 2030. India.
21. Ministry of Ports, Shipping and Waterways, Government of India. (2020). Maritime India Vision. Retrieved from Government of India. http://sagarmala.gov.in/sites/default/files/MIV%202030%20Report.pdf
22. Ministry of Ports, Shipping and Waterways.(n.d.). "Govt Plans Sagarmala 2.0 with New Funding to Bridge Infrastructure Gaps": Sarbananda Sonowal. Retrieved from pib.gov.in. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2113023
23. Navrang India. (2023, October 31). URU -11th Century Heritage Vessel of Beypore, Kerala was on display during FIFA, 2022 World Cup in Qatar. Retrieved from Navrang India. http://www.navrangindia.in/2023/10/uru-11th-century-heritage-vessel-of.html
24. Negi, K. (2025, June 6). $20 Billion infra push: India targets port-led growth with major investment in logistics, trade corridors and shipbuilding. Swarajya. Retrieved from swarajyamag.com. https://swarajyamag.com/news-brief/20-billion-infra-push-india-targets-port-led-growth-with-major-investment-in-logistics-trade-corridors-and-shipbuilding
25. Press Information Bureau. (2019, July 22). Funds for CEZ Thoothukudi, T.N. Ministry of Ports, Shipping and Waterways. Retrieved from pib.gov.in. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1579784
26. Press Information Bureau. (2024, June 19). Cabinet approves 'Development of an all-Weather Greenfield deepdraft Major Port at Vadhavan in Maharashtra'. (n.d.). Retrieved from pib.gov.in. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2026695#:~:text=The%20Project%20involves%20the%20reclamation,contributing%20to%20the%20local%20economy
27. Press Information Bureau.(2025a, February 26). Union Minister Shri Sarbananda Sonowal to chair Post-Budget Industry meet on February 27, 2025. Retrieved from pib.gov.in. https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2106477
28. Press Information Bureau.India's major ports achieve historic milestones in FY 2024-25, driving growth and global competitiveness. (n.d.). Retrieved from pib.gov.in. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2128329#:~:text=Cargo%20handled%20increased%20from%20819,an%20annual%20growth%20of%204.3%25
29. PRS Legislative Research.(n.d.). The Coastal Shipping Bill, 2024. Retrieved from PRS Legislative Research. https://prsindia.org/billtrack/the-coastal-shipping-bill-2024

30. Saul, J., & Paul, E. (2021, November 10). Countries at COP26 launch plan for net-zero shipping lanes. Retrieved from Reuters.com: https://www.reuters.com/business/cop/countries-agree-create-green-shipping-lanes-pursuit-zero-carbon-2021-11-10/
31. Singh, C. J. (2021, September 6). A TECHNOLOGY DRIVEN MARITIME VISION FOR INDIA. Retrieved from indiafoundation.in: https://indiafoundation.in/articles-and-commentaries/a-technology-driven-maritime-vision-for-india/
32. Singh, J. (2024, December 12). Indian Navy Collaborates with UK to Develop Futuristic Electric Propulsion for LPDs. Retrieved from SSBCrack. https://www.ssbcrack.com/2024/12/indian-navy-collaborates-with-uk-to-develop-futuristic-electric-propulsion-for-lpds.html
33. Sinha, A. (2017, February 4). India in 10 years: The bots are coming, and it's good news. Retrieved from livemint.com: https://www.livemint.com/Industry/FM4igHc8o3grCOYfbcBNsN/India-in-10-years-The-bots-are-coming-and-its-good-news-f.html
34. Talawadekar, A. (2021, June 25). Seafaring Through Indian Ship-Building Heritage. Retrieved from epaper.thedailyguardian.com: https://epaper.thedailyguardian.com/Home/ShareArticle?OrgId=2565fe0ad18&imageview=0
35. The Hindu Bureau. (2025, July 7). Close to year after commissioning, Vizhinjam leads in south, east zones, ranks third at national level. Retrieved from The Hindu. https://www.thehindu.com/news/national/kerala/close-to-year-after-commissioning-vizhinjam-leads-in-south-east-zones-ranks-third-at-national-level/article69784404.ece
36. The Hindu Bureau. (2025a, January 7). Kandla port to get ship building facility, cargo terminal at an outlay of ₹57,000 cr. Retrieved from The Hindu. https://www.thehindu.com/news/national/kandla-port-to-get-ship-building-facility-cargo-terminal-at-an-outlay-of-57000-cr/article69073552.ece
37. Whieldon, E. (2021, June 3). Your climate change goals may have a maritime shipping problem. Retrieved from spglobal.com: https://www.spglobal.com/esg/insights/your-climate-change-goals-may-have-a-maritime-shipping-problem