

# A PERSPECTIVE ON MARITIME DEVELOPMENT OPPORTUNITIES FOR INDIA

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## ABSTRACT

India's ambition to become a five trillion-dollar economy hinges on the development of a robust and sustainable maritime infrastructure. With 11,000 km of coastline and a growing network of major and non-major ports, the maritime sector handles the majority of the country's trade by volume and value. This paper explores eight key pillars of maritime development: the rise of non-major ports, increasing containerization, the role of public-private partnerships (PPPs), the Sagarmala initiative, multimodal connectivity, regulatory reforms, port-shipping interface, and comprehensive coastline management. It highlights how states like Gujarat have driven non-major port growth through flexible policies and PPP models, and how containerized cargo is reshaping port technology and investment needs. The importance of rail-based hinterland connectivity, especially through dedicated freight corridors and multi-modal logistics parks, is emphasized to enhance cargo movement efficiency. Regulatory evolution, such as updated maritime laws and the adoption of a landlord port model, aims to create a level playing field and encourage foreign and domestic investment. Additionally, the paper underscores the need for strengthening coastal shipping, indigenous shipbuilding, and port innovation through smart and green technologies. It concludes with a call for holistic coastline governance that balances industrial development, environmental sustainability, community livelihoods, and national security. Collaborative engagement among policymakers, industry, and academia is essential to unlock India's full maritime potential.

**Keywords:** maritime infrastructure, non-major ports, public-private partnerships, containerization, multimodal connectivity, coastline management.

## INTRODUCTION

As India nears the three trillion-dollar mark of our Gross Domestic Product (GDP) and targets five trillion dollars in a few years to become the world's third largest economy, trade logistics being dependent on world-class ports and shipping infrastructure, such infrastructure becomes

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a critical lifeline. The objectives of such infrastructure development would be to reduce logistics costs, while ensuring environmental sustainability. India is well endowed with 11,000 kilometers (km)<sup>2</sup> of coastline with 12 major ports and 217 non-major ports spread across the various maritime states. Out of the 217, 67 non-major ports, under 10 State Maritime Boards (SMB) and Directorates of Ports (DoP) handled cargo. Close to 95% in terms of volume and 70% in terms of value of Indian trade happens by the Indian maritime sector. We examine trends and challenges the maritime sector poses for our way forward under eight pillars.

## **GROWTH OF NON-MAJOR PORTS**

Over the past few decades, the non-major ports driven by the nine maritime state governments and four union territories have gained a lot more than major ports driven by the central government. Part of the reason is an aggressive outlook by the maritime states, led by Gujarat (which has 41 out of the 217 sites), which is leveraging its relative proximity to the hinterland states. Further, the maritime states have followed a strategy of encouraging entire ports under the PPP model rather than just terminals at the major ports. Tariff regulations have also been more flexible. Among all Indian ports, the top two in India today are non-major ports, Mundra and Sikka, followed by the major port at Kandla. Interestingly, all three are in Gujarat. The share of traffic at non-major ports is coming close to 50% of the total national port traffic.

## **GROWTH OF CONTAINER CARGO**

We can divide cargo (and hence nature of port technology) into four broad categories. Starting with the most automated, we have Liquid Bulk, Containers, Dry Bulk and Project/Break Bulk. Bulk cargo is giving way to containerized cargo, in keeping with the focus on manufacturing rather than trade of raw materials. Ports need to adjust to this. This is also the reason why ports in the west coast are exhibiting a higher growth rate than those on the east coast, which traditionally has been big on bulk movement. East coast port development would need to recognize this and build more capacity for containerized cargo.

Of course, bulk would continue (including for coastal movement) and focus on this should not be diluted—in fact modernization of bulk handling to reduce logistics costs should have increased priority.

## **PUBLIC–PRIVATE PARTNERSHIPS**

Ever since the advent of public–private partnerships (PPPs) in infrastructure development in the mid-90s, port development has leveraged PPPs. Over 74% of the national cargo is being handled in PPP ports and terminals, and with this share growing not only are new ports and terminals under PPP but also existing terminals in the major ports are being handed over to PPPs. The challenge in this is to come up with the right project structuring and flexible concession agreements, driven by a real underlying philosophy and engagement of ‘partnership’. Model

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2 *The coastline length was recently reassessed by examining islands, mouths of river and backwaters. In a circular of the Ministry of Ports, Shipping and Waterways dated 29<sup>th</sup> April, 2025, the coastline length was officially increased from 7516.60 km to 11098.81 km. It has also been stated that this length will be reviewed every 10 years with newer data sets.*

concession agreements have been developed for the Build-Operate-Transfer PPP model and now are being developed for the Equip-Operate-Transfer and Operate-Maintain-Transfer models.

As a welcome step in this direction, among the five container terminals at Jawaharlal Nehru Port Authority (JNPA), while four were developed as PPPs, there was one under direct management of JNPA. After over 25 years, this terminal was finally put out for bringing in a PPP in 2022, thus ending any perception of 'conflict of interest' and making JNPA a true landlord for its container terminals.

One of the attendant benefits of PPPs in ports which started with foreign players coming to manage Indian ports, has now transformed to Indian players not only managing Indian ports, but also some foreign ports. There is significant opportunity in this direction.

## **SAGARMALA**

This is a 'garland of maritime projects', providing a wholistic vision of maritime development in the country. The vision is to reduce logistics costs with optimized infrastructure development. It is based on five pillars of (i) port modernization and new port development, (ii) port connectivity enhancement, (iii) port-led industrialization, (iv) coastal community development and (v) coastal shipping and inland waterways. This initiative gains more significance with the overall perspective of the Maritime India Vision-2030 and Gati-Shakti, where integrated development of infrastructure, especially in the context of logistics is the goal. Multimodal transportation with focus on hinterland connectivity would be a key outcome.

Sagarmala was formally initiated in 2015 with a perspective that by 2025 Indian ports would handle 2500 million tons per annum (mtpa), while in reality during 2024–25, the traffic was 1600 mtpa. While we must reflect on why traffic is lower than expected (including coastal movement), as a goal for Sagarmala, capacity of ports may not be as much of an issue as the technological development and consequent service quality of cargo handling.

Another issue that needs to be examined is whether we need more port locations or do we need more capacity at a port. Globally, the biggest ports, which are also the most efficient in terms of cost per unit, handle 300 to 500 mtpa. Taking a lesson from this, investment in port development must be targeted towards modernizing existing ports, rather than creating new ports. Common infrastructure, both on the marine side (breakwater construction, the navigation channels, dredging expenditure) and on the land side (connectivity investments), would be better utilized.

## **CONNECTIVITY**

On connectivity, overall, the marine side is reasonably okay. Two reasons account for this. A port naturally brings greater focus on the marine side development. Secondly, there are fewer challenges of dealing with other stakeholders. The bigger challenge is on the land side, that is the hinterland connectivity. Many of the older major ports suffer from too much proximity to built-up urbanization, putting restrictions on evacuation, especially by road. Many terminals do not have sufficient and easy connectivity to rail. Further, if average land leads are small, then road is preferred as a mode, even if there is rail connectivity. As we move to the ports in the southern part of the narrowing peninsula, such leads are bound to be small. Thus, even with

the congestion on roads and in spite of rail connectivity, roads have the majority share for the hinterland evacuation in most ports.

A key challenge hence is how to increase rail-based evacuation out of a port. This is also to be viewed in the context of increased container handling. Providing rail connectivity to all container handling terminals is one priority. Incentivizing use of rail even for short leads is another. For long lead container traffic, road still gets used, since volumes to specific destinations may not warrant a train load. The idea of multi-modal logistics parks which is gaining traction would help aggregate volumes to or from such a park which would warrant rail movement and then have road movement for the last or first mile.

To make long lead traffic move faster, especially from the ports on the west coast, the central government has come up with the Dedicated Freight Corridor (DFC) project. This will enhance rail-based evacuation, especially from three of the top container-handling ports— Mundra, JNPA and Pipavav. There is also potential traffic from Hazira and from the ports to be developed at Dighi and Vadhvan, both of which are located near Mumbai. The electrification of this route and even the existing non-DFC rail alignment north of Mahesana, providing connectivity to Pipavav and Mundra has been planned for double stacking. Unfortunately, the eastern DFC is planned only for single stacking because the original thought of the driving cargo was coal. But actually, in the long run, including based on the premise of coal giving way to renewable sources of energy, container is going to be the driving cargo. It is important that at least the yet to be constructed Kolkata to Son Nagar portion be considered for double stacking, as also all future DFCs.

To address issues of rail port coordination, a public sector company called India Port Rail and Ropeway Corporation Limited (IPRCL) was set up. This has improved the quality of existing rail infrastructure in many ports and reduced the silo mindset of ports and railways. There is, however, potential for a lot more to happen with the objective of increasing the rail share of port evacuation.

Coastal shipping is also a mode of evacuation from large ocean carriers at bigger ports, which could serve as trans-shipment ports to smaller feeder vessels to serve a larger part of the coastline. Connectivity with inland water transport is yet another opportunity.

## **REGULATION**

Regulation is required whenever there is a possibility of a market failure or inherent lack of visibility in the activity. The domains of regulation could be for safety, security, environmental sustainability, tariff setting, service levels, licensing, and dispute resolution.

For tariff setting, while bringing in PPPs has been a consideration for increased regulation, the real issue is whether there is enough competition. While major ports brought in tariff regulation, non-major ports did not have any. This created a situation of not having a level playing field, and thus non-major ports grew faster. With increasing competition, the idea of a tariff regulator has been done away with for future PPPs in major ports, bringing in better level playing field for both the major and the non-major port sector. In terms of licensing, the government has enabled the port sector to receive 100% FDI for both port development and for equipment.

The Maritime Acts in India are being updated. The relevant Bills have been formulated and presented to the Parliament. These include the Merchant Shipping Bill 2024, Coastal Shipping Bill 2024, Carriage of Goods by Sea Bill 2024 and Indian Ports Bill 2025.

Further, with the idea of a landlord port model, conflict of interest between a regulator/authority and an operator is being removed. There are also structural reforms towards ease of doing business, including facilitating coastal movement.

### **PORT SHIPPING INTERFACE**

We need to elevate our presence in the global maritime world, both in the port and shipping domains.

There are concerns in India that Indian shipbuilding caters to a very low share of ship ownership, resulting in most export/import traffic moving in foreign flag vessels. Development of modern ship building in India needs attention. An attendant issue is the development of coastal shipping, not only for domestic traffic, but also for feeding to/from potential Indian and international trans-shipment ports.

We need greater outcomes in innovation, digitization, smart ports, and green ports, through research and development. Collaboration among industry, academia and government policy makers needs to happen. The direction of facilitating more institutions in the maritime and logistics sector, like the Indian Maritime University, Gujarat Maritime University and Gati Shakti Vishwavidyalaya is good.

### **CONCLUSION**

At a broader level, port and marine transport development is a struggle with other uses of India's 11,000 km long coastline. It is important to get a wholistic perspective on the uses of the coastline.

A coastline not only provides for (i) maritime transportation but also (ii) related industrial location, (iii) borders (and so navy and coast guard need a presence), (iv) resources (fish and other marine based food culture and capture, other forms of marine resources like special minerals), (v) entertainment (beach tourism, and marinas), (vi) habitats for coastal communities (who have made it their living place which needs to be protected), and (vii) sustainability (against natural disasters, sustenance of marine environment).

It is important to have policies and regulations that recognize the overall coastline management.