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India and the Quad in Port Development in the Bay of Bengal Region

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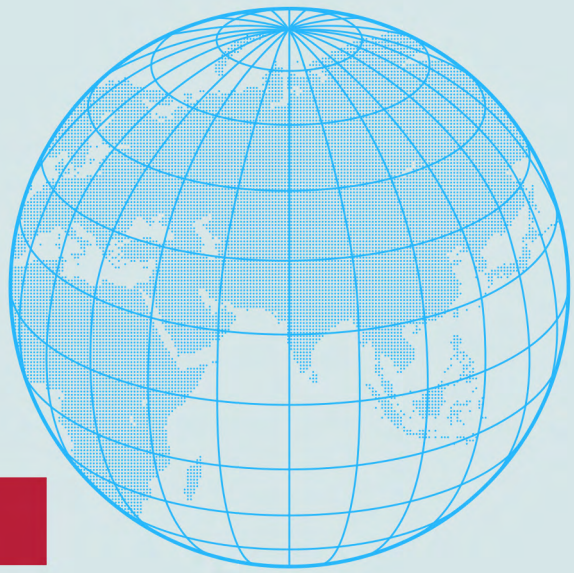

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India and the Quad in Port Development in the Bay of Bengal Region

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Abbreviations

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
BIDA	Bangladesh Investment Development Authority
BIMSTEC	BIMSTEC – Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BoB	Bay of Bengal
BRI	Belt and Road Initiative
CEPA	Comprehensive Economic Partnership Agreement
CHEC	China Harbour Engineering Company Ltd
CITIC	China International Trust Investment Corporation.
CPA	Chattogram Port Authority
CSCEC	China State Construction Engineering Corporation;
DFC	US International Development Finance Corporation
DFAT	Department of Foreign Affairs and Trade (Australia)
ECTA	Economic Cooperation and Trade Agreement
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMO	International Maritime Organization
IoT	Internet of Things
IPGL	India Ports Global Limited
IPMDA	Indo-Pacific Partnership for Maritime Domain Awareness
IORA	Indian Ocean Rim Association
JICA	Japan International Cooperation Agency
MAHASAGAR	Mutual and Holistic Advancement for Security and Growth Across Regions
MAITRI	Maritime Initiative for Training in the Indo-Pacific
MEA	Ministry of External Affairs (India)
MoCI	Ministry of Commerce and Industry (India)
MoFA	Ministry of Foreign Affairs (Japan)
MoPSW	Ministry of Ports, Shipping and Inland Waterways (India)
MoU	Memorandum of Understanding
NBR	National Board of Revenue (Bangladesh)
NER	North Eastern Region (of India)
PGII	Partnership for Global Infrastructure and Investment
PIB	Press Information Bureau (India)
PLA(N)	People's Liberation Army Navy (China)
PMC	Department of the Prime Minister and Cabinet (Australia)
PPP(s)	Public-Private Partnership(s)
Quad	Quadrilateral Security Dialogue
SAGAR	Security and Growth for All in the Region
SARIC	South Asia Regional Infrastructure Connectivity
SLPA	Sri Lanka Ports Authority
TAT	Turnaround Time
TEU	Twenty-foot Equivalent Unit
TFA	Trade Facilitation Agreement (WTO)
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCWA	United Nations Economic and Social Commission for Western Asia
WCT	West Container Terminal (Colombo Port)
WTO	World Trade Organization

Abstract

This paper examines the roles of India, the United States, Japan and Australia, both bilaterally and through the Quadrilateral partnership (Quad), in driving port infrastructure development and enhancing shipping connectivity in the Bay of Bengal (BoB) region. Over the past decade, India has expanded its investments in domestic and regional port infrastructure, focusing on efficiency improvements, logistics integration, and the construction of new ports and terminals. These efforts are shaped by a combination of economic imperatives and geostrategic considerations. Simultaneously, the Quad has increasingly recognised the importance of supporting sustainable and resilient port infrastructure development across the Indo-Pacific.

Despite the BoB's significance as a maritime trade hub - handling 50% of global seaborne trade and 30% of global cargo - its port infrastructure remains underdeveloped relative to evolving global supply chain demands. Key ports such as Chennai, Kolkata, Chattogram and Colombo face capacity limitations and operational inefficiencies that hinder trade. Consequently, opportunities for port expansion and modernisation are being securitised and becoming an object of geoeconomic competition. In particular, China's expanding port engagement in the region, with investments in all of India's maritime neighbours, is a growing cause for concern.

As regional and global attention shifts towards maritime infrastructure, this paper highlights the pressing need for enhanced port development and connectivity. It proposes a strategic framework to assess opportunities and risks for India to work within the Quad framework, particularly after the announcements regarding increasing port-related engagements during the previous Summit. It presents three models for India–Quad cooperation: bilateral engagement, diplomatic engagement with the Quad for complementary infrastructure, and full integration with the Quad for developmental efforts. These models attempt to align the regional demand for port infrastructure with the grouping's evolving role in the Indo-Pacific. This study employs a mixed-methods approach, drawing on secondary sources, field research at India's eastern ports, and key informant interviews with government and private-sector stakeholders.

Keywords: Ports, Infrastructure, Quad, Bay of Bengal, India

Executive Summary

The paper examines the roles of India, the United States, Japan and Australia, both bilaterally and through the Quadrilateral partnership (Quad), in driving port infrastructure development and enhancing shipping connectivity in the Bay of Bengal (BoB) region. Ports are the entry and exit points for international trade and play an important role in the economic and social development of countries. Globally, more than 80% of merchandise trade is transported via seaports (Humphreys, 2023). Approximately 30% of global trade flows are handled by ports in the BoB region, including Colombo (Sri Lanka), Chennai (India), and Chattogram (Bangladesh).

The paper aims to contribute to policy discussions on India and the Quad's role in BoB port development in three ways: it highlights country-specific port challenges, explores India's motivations for regional port investments, and proposes a framework for effective cooperation between India and the Quad countries. The latter addresses a key gap in the existing literature, as Quad partners continue to shape their collective approach.

The BoB is a focal point for global supply chains and geopolitical competition. Despite its significance as a maritime trade hub, its port infrastructure remains underdeveloped relative to evolving global supply chain demands. Challenges in port infrastructure and connectivity in the BoB region include infrastructure deficits, varied governance models, outdated efficiency parameters, lack of digitisation, and growing geopolitical competition. India's engagement in the development of port infrastructure in the BoB is driven by a combination of economic and geostrategic factors.

India has expanded its investments in both domestic and regional port infrastructure, focusing on efficiency improvements, logistics integration, and the construction of new ports and terminals. These efforts are shaped by a combination of economic imperatives and geostrategic considerations. At the same time, the Quad has recognised the importance of supporting sustainable and resilient port infrastructure development across the Indo-Pacific.

Since the first Leaders' Summit in 2021, the Quad countries have recognised ports as strategic infrastructure and have laid emphasis on their development through the deployment of resources for green shipping infrastructure and investments for smart and secure ports. India is leveraging the Quad for pooling resources and advancing resilient port infrastructure as a counterbalance to China's influence. Each Quad member brings distinct strengths: Japan's financial resources, the US's technological expertise, Australia's expertise in risk assessment and capacity building, and India's expertise in trade facilitation and its strategic positioning in the Indian Ocean region.

The paper highlights the pressing need for enhanced port development and connectivity and proposes a strategic framework to assess opportunities and risks for India to work within the Quad framework. It presents three approaches for India–Quad cooperation and identifies the advantages and limitations of each type of engagement:

- **Bilateral engagement**: India maintains its status as the preferred development partner by focusing on direct partnerships within its immediate neighbourhood. This allows India to tailor infrastructure projects to its specific needs and security concerns, ensuring alignment with national interests. However, this approach limits access to the Quad's resources, expertise and funding, potentially causing delays in project execution.
- **Diplomatic engagement with the Quad for complementary infrastructure**: In this model, India strategically collaborates with Quad members on specific projects while maintaining autonomy. This hybrid approach allows India to access advanced technologies and specialised skills without compromising strategic decision-making. For instance, India could leverage Japan's expertise in green shipping or Australia's capacity building in public-private partnerships (PPPs). However, managing relationships with multiple Quad partners could complicate decision-making and potentially strain India's relations with countries that have strong economic ties to China.
- **Full integration with the Quad for developmental efforts**: India fully integrates with the Quad on port infrastructure initiatives, pooling resources from all members to enhance connectivity in the BoB. This approach provides India with access to a wealth of resources, including financing, technology, and institutional support, accelerating infrastructure development. However, it may require India to cede some control over project location, planning and execution. It also raises concerns about the perception of the Quad as an anti-China coalition.

India's engagement with the Quad in the BoB is a complex but crucial aspect of its regional strategy. By carefully evaluating its options, India can navigate the geopolitical challenges of the region while promoting sustainable development and enhancing its strategic influence.

1. Introduction

The Bay of Bengal (BoB) has become a focal point for global supply chains and geopolitical competition in the Indian Ocean Region (Anwar, 2022). Accounting for over 30% of global trade flows, the region is home to key ports in countries such as India, Bangladesh, Myanmar, and Sri Lanka, which are gateways for international shipping lanes in the Indian Ocean. However, the port infrastructure that supports these trade routes remains underdeveloped, limiting the region's ability to capitalise on its strategic location. As a result, the BoB has become a battleground for geoeconomic competition, with countries such as China, India, the US, Japan, and Australia vying for influence through port development. The Quadrilateral partnership (Quad) has also stepped up efforts in the last few years towards port development in the Indo-Pacific.

This paper analyses the demand for port development in the BoB region and how India can leverage the Quad to meet this demand. It focuses on four research questions:

1. What are the key challenges and demands in port development in the BoB region?
2. What are the drivers for India's engagements in port development in the region?
3. How are the four Quad partner countries, individually and collectively, filling this gap?
4. How can India engage with the Quad to accelerate port development in the region?

The focus on ports is important because they are key avenues for economic growth and for strategic and geopolitical competition worldwide. Ninety per cent of the world's cargo travels by ship, of which containerised cargo accounts for 23% of cargo by volume and 70% by value (Khalili, 2020). This makes seaports crucial for economic linkages. Ports also allow states to project military power and exert influence over geographical chokepoints. For instance, India's development of the Galathea Bay in the Andaman and Nicobar Islands is touted as being strategically close to the Strait of Malacca—a significant route for China's oil shipments. Furthermore, port development often leads to long-term leasing or dual-use (civil and military) agreements, expanding the developer nation's footprint. For instance, Djibouti port hosts military bases for China, the US, France, and Japan due to its strategic location at the entrance to the Red Sea. Consequently, there has been a growing focus on and competition for development globally and in India's neighbourhood, particularly with an increase in Chinese investments.

In the last decade, India has increased investments in regional connectivity as a result of its Neighbourhood First, Act East, Security and Growth for All in the Region (SAGAR), and the recent, MAHASAGAR policies. As part of this, the region's seaports are recognised not only as economic assets but also as strategic imperatives in bilateral and regional relations (Baruah, 2024). While progress has been notable in road, rail, and border infrastructure, India's recent focus on port development highlights its desire to safeguard national security and counter China's expanding Belt and Road Initiative (BRI), which has established a presence in key South Asian ports such as Hambantota (Sri Lanka), Gwadar (Pakistan), and Kyaukpyu (Myanmar). Furthermore, challenges such as the recent Red Sea crisis have rendered the region's ports more vulnerable, as they are unprepared for sudden increases in vessel arrivals (Rana, 2024).

To address these challenges, New Delhi is pursuing both domestic institutional changes and engaging in bilateral and plurilateral partnerships. For instance, at the domestic level, India has built a consortium of state-run port ventures, called Indian Ports Global Limited (IPGL), to acquire and develop ports and terminals globally (Narayan, 2024). This consortium is dedicated to exploring opportunities in port infrastructure, operations, and financing.

Abroad, India has increasingly been engaging in triangular and trilateral partnerships to build development in its neighbourhood (Ramamurthi, 2024). For instance, India, France, and Australia formed a trilateral partnership in 2021 for maritime safety and security in the Indo-Pacific region (Ministry of External Affairs [MEA], 2024a). Until recently, India, the US, and Sri Lanka were engaged in the development of the West Container Terminal at the Colombo Port. India and Japan have been coordinating to build infrastructure in India's North Eastern Region (NER) and connect it with the Matarbari Deep Sea Port in Bangladesh. India has also engaged the United Arab Emirates (UAE) to build an energy hub in Sri Lanka's Trincomalee harbour (Reuters, 2025). Such partnerships reflect India's increasing interest in engaging like-minded partners for infrastructure development in its neighbourhood.

In a similar way, India is also leveraging the Quad for pooling resources and advancing resilient port infrastructure as a counterbalance to China's influence. Formed in 2004 as a response to the Indian Ocean Tsunami and revived in 2017, the Quad is an informal strategic grouping of the US, India, Japan, and Australia, with the agenda of promoting a free, open, and inclusive Indo-Pacific region by addressing various challenges, including maritime security, climate change, infrastructure development, and emerging technologies.

For port development, each Quad member brings distinct strengths: Japan's financial resources, the US's technological expertise, Australia's expertise in risk assessment and capacity building, and India's expertise in trade facilitation and its strategic positioning in the Indian Ocean region. Since the first Leaders' Summit in 2021, the Quad countries have recognised ports as strategic infrastructure and have laid emphasis on their development through the deployment of resources for green shipping infrastructure and investments for smart and secure ports (Hillman, 2021). The recent announcement of the Quad Ports of the Future Partnership, along with India's proposed Quad Regional Ports and Transportation Conference in 2025, underscores the growing alignment of these nations on strategic infrastructure such as ports (MEA, 2024b) [See Table 5].

Despite these announcements, there remains uncertainty about how India can harness the expertise of its Quad partners to bolster port development in the BoB region. This paper explores three models for engagement between India, the US, Japan, and Australia.

This paper makes three key contributions to expand policy-relevant knowledge on India and the Quad's role in BoB port development. First, it sheds light on the varied challenges facing ports across the region, which differ by country and require tailored solutions. Second, it examines the drivers behind India's port development in the BoB, which can strengthen the case for collaborative initiatives. Finally, the paper presents a framework for effective India-Quad cooperation, aiming to ensure effective outcomes by leveraging each partner's strengths for regional port development. This is particularly important as India navigates a potential change in the US administration and shifting US policies regarding developmental engagements abroad. The latter also fills a knowledge gap in the literature on Quad engagement, as the partners are still developing a way forward.

The paper is structured as follows. Section 2 conducts a literature review to frame the importance of port development in the BoB region. Section 3 explores the challenges faced by ports in the region, including in infrastructure development, logistics, efficiency parameters, and governance structure. Section 4 conducts a review of need and perspectives on port development from Bangladesh, Myanmar and Sri Lanka. Section 5 then focuses on India's drivers for port development in its neighbourhood. Section 6 highlights the bilateral, trilateral and plurilateral efforts of external actors in port development. Finally, based on the above, section 7 offers three models for cooperation between India and its Quad partners for working on port development in the region. This analysis aims to provide insights into how the Quad can support India's ambitions for regional connectivity in the Indo-Pacific through port development.

1.1 Methodology

This paper is based on a qualitative approach. The research methodology is inductive and utilises data collected through a review of primary and secondary literature. For the primary literature, annual reports from the respective government agencies were reviewed. Semi-structured, in-depth interviews of key stakeholders were conducted in India, the US, Sri Lanka, and Australia between 2022–2024, including port operators (DP World, Adani Ports, Patrick Terminals), government officials (from Indian High Commissions and Embassies, the Ministry of External Affairs, the Ministry of Ports, Shipping and Waterways, the Australian department of Foreign Affairs and Trade (DFAT), and the US Department of State), and scholars from think tanks. The paper focuses on the BoB region, comprising Sri Lanka, India, Nepal, Bhutan, Bangladesh, and Myanmar.

2. Port Development: A Key Driver of Trade and Geoeconomics

Port connectivity—the efficiency and effectiveness of linkages between ports and their hinterlands - is a crucial driver of international trade and economic development. With 80% of global trade by volume and 70% by value being handled by ports worldwide, they are critical assets not just for economic growth but also in geostrategic and geoeconomic competition (UNCTAD, 2018a). As trade flows expand, developing countries seek port infrastructure improvements through various cooperation mechanisms. Analysing

port development and its interplay with geoeconomics requires examining the role of states and private players, infrastructure development, and geopolitical competition, and institutional governance mechanisms.

Traditional scholarship on ports often emphasises the state's role in developing port infrastructure as a means of promoting national economic competitiveness and power projection. Studies have shown a strong correlation between state investment in port infrastructure and national trade volumes (UNCTAD, 2018b, 2022a, 2023a). This perspective highlights how states strategically utilise port development to enhance their position in the global trading system. In international relations theories, work such as Krasner's (1976) on structural power is relevant here, suggesting that dominant states often shape global maritime infrastructure to their advantage. On the other hand, Wallerstein (1974) warns that developing states can become locked into unequal relationships (in this case, through port infrastructure development), serving the interests of core economies rather than their own.

Beyond the role of states, more recent research acknowledges the growing importance of private-sector involvement in port development and operation (UNESCWA, 2019; The World Bank, n.d.). Public-private partnerships (PPPs) have become increasingly common, with states seeking to leverage private capital and expertise to improve port efficiency. However, this raises questions about the balance of power between states and private actors and the potential for regulatory capture (OECD, 2017). International political economy scholars have explored the implications of this shift, analysing how the privatisation of port infrastructure affects access, pricing, and overall governance (Galvao et al., 2016).

The interplay between state and private actors in port connectivity is complex and multifaceted. States play a crucial role in setting the regulatory framework, providing essential infrastructure (e.g., road and rail links), and ensuring security. They also often act as a facilitator, bringing together different stakeholders and promoting regional cooperation. Private actors, on the other hand, bring specialised knowledge, operational efficiency, and access to capital.

Several studies have examined the dynamics of state–private sector interaction in port development. Some focus on the benefits of PPPs, arguing that they can lead to improved efficiency, reduced costs, and faster development (Grimsey & Lewis, 2004). Others highlight the potential risks, such as conflicts of interest, lack of transparency, and the exploitation of public resources (Hall, 2015). Understanding the specific institutional context and the relative bargaining power of state and private actors is crucial for analysing port connectivity outcomes and remains a gap in the study of the geoeconomics of critical infrastructure development.

The international character of ports, particularly their importance in facilitating global maritime trade and supply chains, also makes their development a key arena for geopolitical and geoeconomic competition. This has become more pronounced with the rise of China's BRI. The BRI has involved massive investments in port infrastructure across Asia, Africa, and Latin America, raising concerns about China's growing influence and potential debt traps (Himmer & Rod, 2023). This has led other players, such as the US, Japan, and India, to develop their own infrastructure initiatives, creating a complex web of competing interests.

Geopolitical competition extends beyond large-scale projects to competition over strategic port access, control of shipping routes, and influence over global maritime governance. As ports become increasingly strategic assets, understanding the infrastructure development race among global players is essential.

The port sector is subject to a complex web of global and regional governance mechanisms. At the global level, organisations such as the International Maritime Organisation (IMO) play a crucial role in setting safety and environmental standards. The World Trade Organisation (WTO) also influences port connectivity through its rules on trade facilitation and market access. Regional cooperation is also essential for improving port connectivity, particularly in areas such as cross-border transport and transit facilitation. Regional organisations, such as the Association of Southeast Asian Nations (ASEAN), have developed various initiatives to promote port connectivity and integrate their maritime transport systems (Duangphastra, 2022). However, the effectiveness of these regional mechanisms can be hampered by political differences and competing interests.

A nuanced understanding of port development, considering the role of states and private players, infrastructure expansion, geopolitical dynamics, and governance mechanisms, is critical for addressing contemporary port connectivity challenges beyond a purely economic lens.

3. Challenges in Port Infrastructure and Connectivity

Historically, the ports of the BoB region were more than hubs of trade; they served as catalysts for the rise of port cities that became vibrant centres of cultural exchange and connectivity (Henning, 2014). However, in the 20th and 21st centuries, ports in the BoB countries, particularly Sri Lanka, India, Bangladesh, and Myanmar, have seen varied levels of development, despite being some of the busiest ports in the region. This section delves into some of the challenges at key ports in the BoB: Chennai and Kolkata (India), Chattogram (Bangladesh), Sittwe (Myanmar), and Colombo (Sri Lanka).

3.1 Infrastructure Deficit

The rising cargo volumes at key regional ports such as Chennai, Kolkata, Chattogram, and Colombo, has become a challenge as the ports remain constrained by outdated infrastructure, limited cargo-handling capacity, and inefficient management practices.

For instance, Chattogram Port handles 92% of Bangladesh's global maritime trade, making it the country's principal seaport (Akhtar, n.d., & Ministry of Shipping, n.d.). The remaining 8% is distributed between Mongla, Payra, and Sonadia Ports. However, the Chattogram Port faces significant challenges, including long turnaround times and limited storage capacity, which combined with the growing trade volume, impacts port efficiency (UNCTAD, 2022b). Of the cargo from the Chattogram Port Authority (CPA), 70% is destined for Dhaka, while 30% is for the Chattogram region. This dependency is further exacerbated by poor connectivity between Dhaka and Mongla Port, leading to an overreliance on Chattogram (Rane, 2020).

Furthermore, the lack of adequate infrastructure, in terms of the number of jetties and yard space, means that Chattogram Port is working at overcapacity. The port currently has 19 jetties, which can handle up to 15 vessels daily, meaning that many vessels wait at the anchorage to dock, adding to the cost and time of doing trade (Islam, 2018). Chattogram was initially designed to process 1.7 million 20-foot equivalent unit (TEU) containers per year; it handled 2.7 million TEUs in 2018 (Islam, 2018).[1] Its storage capacity of 50,000 TEUs is insufficient and leads to overcrowding in the port yard. While Chattogram Port is expected to handle 5.1 million TEUs by 2030, its current infrastructure is insufficient to meet these needs (SASEC, 2015). Similarly, in Sri Lanka, due to infrastructure deficits that lead to congestion, Colombo Port has been facing a reduction in transhipment volumes. In 2024, the transhipment volume handled by the port declined by 6% (Fernando, 2024).

The ports of Chennai and Kolkata, two of India's largest on the east coast, face significant congestion, outdated equipment, and infrastructure that is not designed for modern, larger container ships. The four terminals at Chennai are currently operating at a capacity of 90%, which could potentially reach 100% in the next two years (Rana, 2024). Both ports are also located within main cities, which limits expansion. As a result, the ports face congestion, a problem that is further exacerbated by the lack of proper multimodal evacuation infrastructure.

Additionally, the maximum draft available at ports in the BoB region is 12 m.[2] At the Kolkata and Chattogram ports, the maximum draft is 9 m. As a result, larger ships requiring deep water (at least 15 m) offload cargo to smaller vessels at other transhipment ports such as Colombo, Jebel Ali, or Singapore. Ports in the region require regular dredging to maintain the draft, leading to an increase in maintenance cost. Presently, except Hambantota, no port in the region has the infrastructure to accommodate deep-water vessels exceeding the size of 18,000 TEUs, a capability predominantly found in Chinese ports today (Iyer, 2019).

3.2 Varied Governance Models: Government vs Private Ports

For most states in the region, ports were primarily run by the government until the 1980s and 1990s. In India, port privatisation began in the early 1990s. The government initially allowed private operators to manage container terminals at major ports. Subsequently, the government has privatised entire ports and has also allowed private players to develop greenfield ports (Shashikumar, 1998; Press Information Bureau [PIB], 2024). India currently has 12 major ports (government-owned with public-private partnerships) and over 200 minor ports (state or privately

[1] TEU, or 20-foot equivalent unit, is the global standard size of a container measuring 8.5 ft x 8.5 ft x 20 ft.
[2] Draft refers to the depth of water available for a vessel to dock at the port.

owned) (Ministry of Ports, Shipping and Waterways [MoPSW], n.d.). The major ports of India handle a higher volume of traffic than the non-major ports, although this gap is decreasing. Between April'23 and March'24, the total cargo handled by major ports was 853.57 MMT, whereas that handled by non-major ports was 739.47 MMT (MoPSW, 2025). This gap is gradually decreasing and is attributed to the emergence of larger private ports, including Mundra Port in Gujarat, which accounts for 64.5% of the traffic of non-major ports (MoPSW, 2025). In international rankings on container handling, Mundra Port has outperformed India's top major port, Jawaharlal Nehru Port (Lloyd's List, 2023).

In Sri Lanka, the Colombo Port Authority was restructured in the late 1990s, and the government has since privatised several terminals and port facilities on a PPP basis (Bandara et al., 2015). In Bangladesh, the ports remain under government control. While there has some progress towards attracting private investment in port-related services, such as container handling and terminal operations, the overall efficiency parameters in publicly owned ports, remain very high (Munim et al., 2022).

Each governance model presents a unique set of challenges. While government-owned ports are driven by a focus on public interest, leading to more consistent policies and a greater commitment to infrastructure development, they also face limitations in terms of funding and investment, as they are often subject to budgetary constraints. Furthermore, they may also be prone to bureaucratic inefficiencies, which can slow down decision-making. For instance, at Chattogram Port, projects to build four additional terminals were delayed by 10 years (Islam, 2018). These are yet to be completed. In contrast, the private ports in the region, such as the Mundra Port in India, are slowly overtaking the government-owned ports both in terms of cargo handling and efficiency parameters.

3.3 Outdated Efficiency Parameters and Lack of Digitisation

Ports within the BoB lag in several key performance and efficiency metrics, including turnaround time (TAT), as outlined in Table 1. TAT is a crucial indicator of a port's efficiency and is measured as the time between the arrival of the vessel to its departure. Lowering the TAT not only accelerates trade processes, but also has environmental benefits by reducing CO^2 emissions from idling vessels at harbours (Alamoush et al., 2022). Notably, major ports in Bangladesh and Myanmar report an average TAT of two to three days, whereas premier ports such as Shanghai and Busan achieve this in less than a day, despite handling the highest volume of containers at the global level annually. This discrepancy underscores an urgent need for upgrading infrastructure and improving efficiency parameters at BoB ports vis-à-vis the volume of cargo handled.

Table 1: Average Turnaround Time (TAT) of Key Ports in the BoB Region vs Global Average

S. no	Port	Country	Average TAT 2023 (Days)
1	Colombo	Sri Lanka	1.0
2	Chennai	India	1.4
3	Tuticorin	India	0.7
4	Vishakhapatnam	India	0.9
5	Kolkata	India	3.4
6	Chattogram	Bangladesh	2.5
7	Yangon	Myanmar	3.0
8	Singapore	Singapore	1.1
9	Sydney	Australia	1.3
10	Shanghai	China	0.8
11	Busan	South Korea	0.5

Source: Sinha, 2024.

The inefficiency cost of Bangladesh's Chattogram Port is US$ 92 million annually (Begum, 2003). During 2001–2002, a reported improvement of 1.05 days in vessel TAT saved ship-owners approximately US$ 15 million (Begum, 2003); this cost is eventually passed on to the port users. The CPA has made gradual progress in digitisation through automation systems, including cranes, container yard management, and port processes, enhancing its port-handling capabilities. However, it still lags behind regional competitors in terms of digital transformation. To handle the rising cargo volumes, the CPA needs to adopt smart port technology. Furthermore, no clear plans are underway to integrate advanced Internet of Things (IoT)-based systems in the newly built Payra and Matarbari Deep Sea Ports (Haq, 2020).

In the BoB region, Sri Lanka holds a 24% container market share, primarily as a transhipment hub (Kannangara, 2019; Kavirathna et al., 2021). Despite attempts to launch digital initiatives in the past, including a smart port initiative in 2019 aiming to digitise within 18 months, several challenges have delayed progress (Nadeeka et al., 2024). These include limited financial resources, concerns over data sharing, lack of digital skills, and inter-agency collaboration.

Another key challenge is the lack of trade facilitation. Except for India, no other country in the region has met its World Trade Organisation's Trade Facilitation Agreement (TFA) commitments despite being a signatory; the implementation rates hovering between 40%–60% among countries in the region.[3] This results in prevalence of complex and lengthy customs procedures, longer clearance times, and limited digitisation, which increase both costs and delays for port users.

3.4 Rising Geopolitical Competition

Given the economic and geopolitical dividends of port development, as well as the strategic location of the BoB, there has been a growing interest from external actors to engage in port construction, operation and upgradation. Resultantly, governments in the region have also sought to leverage their strategic location to attract investment from multiple global players. This has led to increased geopolitical competition in port development (Table 2).

Table 2: Port Development Engagements in the BoB Region

Country	Port Development in the BoB	Cost (US$ m)
China	Hambantota Port (Sri Lanka)	1,500
	Colombo, CICT (Sri Lanka)	500
	Kyaukpyu (Myanmar)	1,300
	Chittagong Port (Bangladesh)	–
	Payra Port (Bangladesh)	600
India	Colombo, WCT (Sri Lanka)	700
	Sittwe Terminal (Myanmar)	500
	Mongla Port (Bangladesh)	–
Japan	Matarbari Deep Sea port (Bangladesh)	1,500
US*	Financial support for Colombo WCT	550
Australia	Chattogram Port (Bangladesh), through SARIC	<10

Source: MEA/MFA/DFAT/JICA.

**Note: The USDFC had extended US$ 550 million for the Colombo WCT supporting India. However, India's Adani Ports cancelled the deal in December 2024.*

[3] Data sourced from TFA Database: https://www.tfadatabase.org/en

Bangladesh has navigated this competition with a careful balancing act. Although Bangladesh is a participant in China's BRI, the administration under former Prime Minister Sheikh Hasina had been selective in its partnerships with China. Despite signing US$ 24 billion in BRI-related deals, Bangladesh denied China the opportunity to develop the strategically significant Sonadia Port in 2016, after India expressed interest in the development of Payra Port and Japan in developing the Matarbari Sea Port (Bagchi, 2016; Ramachandran, 2020). Later, during Xi Jinping's visit to Bangladesh in August 2016, Hasina awarded two components of the Payra Port project to China under a deal of US$ 600 million to build the port infrastructure only (Ship Technology, 2016). Apart from this, China has also been involved in the development of an industrial park at Chattogram Port in Bangladesh, Kyaukpyu Port in Myanmar, and Hambantota Port and Colombo East Container Terminal in Sri Lanka.

In Myanmar, India has built and is operating the Sittwe terminal (inaugured in 2022) through the state-owned IPGL. In Sri Lanka, India is building the WCT at Colombo Port, and in Bangladesh, a terminal at Mongla Port. Japan, by comparison to India, has a singular but large-scale port project wherein it is invested in building Bangladesh's first deep-sea port in Matarbari, which is also expected to connect with India's NER. The US, until December 2024, supported India's Adani Ports and SEZ on the Colombo WCT with US$ 550 million. Australia has been engaged in the development of the Bay Terminal at Chattogram Port in Phase 1 of the South Asia Regional Infrastructure Connectivity (SARIC) framework.

Table 2 shows that China's total port investments in the region surpass those of the Quad countries combined. As a result, geoeconomic and geopolitical competition in regional port development remains very high, often resulting in varied infrastructure standards. In this competitive environment, countries often prioritise geopolitical interests over economic efficiency. Given the rising geoeconomic contest, governments struggle to balance between improving port efficiency and/or advancing decarbonisation efforts. Focusing solely on infrastructure, without improving operational efficiency to attract businesses and customers, risks undermining potential gains and increasing debt burdens for countries in the BoB.

4. Perspectives on Port Development from Bangladesh, Myanmar, and Sri Lanka

As maritime infrastructure becomes increasingly central to regional trade and connectivity, India's neighbouring countries—Bangladesh, Myanmar, and Sri Lanka—are prioritising port development as a strategic lever for economic growth and integration. As seen in the previous section, these countries, each at different stages of infrastructure maturity and political stability, are investing in expanding port capacity, improving operational efficiency, and attracting foreign investment.

Bangladesh has been actively pursuing port modernisation as a critical step towards realising its long-term development goals under Vision 2041 (General Economics Division, Government of Bangladesh, 2021). Recognising that infrastructure has not kept pace with the country's rapid manufacturing growth, port development has become a top national priority. To address these challenges, the government is considering engaging leading global port operators to enhance operational efficiency and optimise limited capacity. The Bangladesh Investment Development Authority (BIDA) estimates a potential to attract US$ 3 billion in foreign direct investment for three major port projects: the Laldia Char Terminal and two terminals under the Bay Terminal expansion (The Daily Star, 2025). APM Terminals, a subsidiary of the Danish shipping giant Maersk, is investing US$ 800 in the development of Laldiar terminal (Maritime Gateway, 2025).

However, capacity remains a key constraint. Even with projected expansions bringing container handling capacity to 7.8 million TEUs, Bangladesh would still lag significantly behind regional players such as Vietnam (47 million TEUs) (The Daily Star, 2025). The government is also leveraging international support, such as assistance from the Asian Development Bank (ADB) to prepare a strategic master plan for the Chattogram Port (SASEC, 2024). Domestically, institutions such as the National Board of Revenue (NBR) have intervened multiple times to alleviate port congestion and streamline operations (Dhaka Tribune, 2025; UNCTAD, 2022b).

Prior to the 2021 military coup, Myanmar had initiated comprehensive planning to improve its port and transport infrastructure. With support from the

Japan International Cooperation Agency (JICA), Myanmar developed the National Transport Master Plan (2015–2040) and the National Logistics Master Plan (2018–2030, Myanmar Port Authority, 2021). These documents acknowledged the pivotal role of transport infrastructure in economic growth and highlighted the need for deep-water ports in the country with better intermodal connectivity and modern navigation systems.

Yangon and Thilawa ports were identified as insufficient in terms of depth and handling capacity, necessitating the development of an additional deep-sea port. A number of international stakeholders—including Japan, South Korea, China, India, and private-sector players from Thailand—were active in supporting Myanmar's port ambitions (Ministry of Transport and Communications, 2014). India, in particular, played a key role through the Kaladan Multimodal Transit Transport Project, under which a 2018 memorandum of understanding (MoU) enabled the appointment of a private port operator for Sittwe Port and Paletwa Inland Water Terminal (MEA, 2018). However, political instability following the coup has stalled much of this progress, leaving the future of port development uncertain.

For Sri Lanka, ports are central to its economic aspirations, benefiting from the island's strategic location in the Indian Ocean. The Colombo Port has emerged as a vital transhipment hub for South Asia, with continuous expansion efforts led by the Sri Lanka Ports Authority (SLPA) (Kavirathna et al., 2021). In 2023, the Sri Lankan government announced US$ 132 million in investments for port development, including over US$ 100 million for the Eastern Container Terminal at Colombo Port, US$ 32 million for upgrades to the Jaya Container Terminal, and plans to develop Trincomalee Harbour for bulk cargo and Galle Harbour for tourism (Bruno, 2023). Additionally, Colombo, with support from the ADB and Japan, has developed a National Port Master Plan to guide long-term infrastructure development. In a bid to attract regional investment—particularly from India—Sri Lanka has also reformed investment rules for the Trincomalee Port, signalling openness to cross-border collaboration in port operations (ET Infra, 2021).

These recent developments reflect an urgency from neighbouring countries for port development and an openness to international collaborations.

5. India's Drivers for Port Development

India's engagement in the development of port infrastructure in the BoB neighbourhood is driven by a combination of economic and geostrategic factors.

On the economic front, enhancing port infrastructure is essential for increasing trade and improving connectivity to India's north-eastern states, which are geographically isolated. Since 2018, India has access to Mongla and Chattogram ports for cargo transit, but inefficient ports may not do much to decrease the cost of trade. India's trade with its neighbouring countries has doubled in the last decade, yet remains limited to movement via land (Sinha & Sareen, 2020).

Furthermore, it is in India's interest to support the economic development of neighbouring countries. About 30% of national revenue in Bangladesh comes from customs duties and taxes on imported goods through Chattogram Port (Begum, 2003). In Sri Lanka, this accounts for 6.2% of the gross domestic product (GDP) (Kelegama, 2010). Colombo Port contributes US$ 15 billion annually to Sri Lanka's GDP (Port City Colombo, 2024). Given Sri Lanka's recent economic crisis and Bangladesh's upcoming transition to a middle-income economy in 2026, both countries need to build on this revenue stream and cannot afford losses.

The landlocked countries of Nepal and Bhutan are also reliant on ports in the region for their third-country trade. Apart from Indian ports, Nepal currently has access to Chattogram and Mongla seaports. In 2023, former Prime Minister Sheikh Hasina also offered Nepal the use of Payra Port (Giri, 2023). Similarly, in 2023, Bangladesh and Bhutan signed an agreement on the Movement of Traffic-in-Transit and its Protocol, which gives Bhutan access to Mongla, Payra, and Chattogram ports (Sevkani, 2023).

The economic development of neighbouring countries through investments in infrastructure is in India's interest for a stable neighbourhood. Beyond other reasons discussed below, the economic development of India's neighbourhood also forms a part of New Delhi's Neighbourhood First and Act East policies. They are important not only for extending India's influence in South Asia and counterbalancing China's growing presence but also for delivering on New Delhi's ambition to become a regional power in

the Indian Ocean region. The route to this begins in its neighbourhood. This was emphasised by former Foreign Secretary Harsh Shringla:

> India interacts with its neighbours more frequently, at more levels, including the highest, and does so within a constructive and open spirit. We are better connected. We are buying and selling energy from each other. We visit each other in larger numbers using the better physical connections that have been created (MEA, 2021a).

While ports traditionally appear to play a primarily economic role, they have also become important assets in regional geostrategic competition. The critical infrastructure nature of ports, the investments in terminal operations, the sovereign funds in the list of companies that operate ports, and the increasing use of technology in port operations give them a geopolitical and geostrategic dimension. China, for instance, is involved in different aspects of port construction and operations in India's neighbourhood (Table 3). This can have implications for trade movement (or restrictions), as well as an impact on the time and cost of doing trade. India's interest in port development and management is also guided by geostrategic compulsions, particularly the need to secure its maritime borders and ensure freedom of navigation for its trade, of which 70% by value and 90% by volume moves through its seaports. It can further have implications for the landlocked countries in the BoB region—Nepal and Bhutan—that are dependent on Indian ports for their third-country trade.

As a result, India has proactively pursued maritime initiatives in its neighbourhood in the Indian Ocean Region (including the BoB), both through its SAGAR policy and its vision of a free, open, and inclusive Indo-Pacific. It aims to de-risk and diversify supply chains to enhance resilience and stability in the region. Strengthening connectivity with Indian Ocean Region nations through initiatives such as the Sagarmala project, which aims to enhance the performance of the country's logistics sector by leveraging its coastline and waterways, is crucial for India's economic growth. India has planned to build a port in Galathea Bay, on Andaman and Nicobar Island (Simhan, 2024).

In the BoB region, the Maritime India Vision 2030 specifies five key objectives for maritime cooperation, all of which are dependent on port development (including trade facilitation through ports) and connectivity (MoPSW, 2023). These include:

- India to play a major role in the development of maritime trade between Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries.
- India to help landlocked BIMSTEC nations by providing access and reducing the alienation of Nepal and Bhutan.
- Introduce regular and scheduled feeders in the BoB for BIMSTEC trade.
- India to establish common standards for data exchange and customs in line with the European Union.
- Provide opportunities for training seafarers of BIMSTEC nations on a subsidised basis.

India also aims to increase interaction between Indian and BIMSTEC ports for the adoption of best port practices, intermodal connectivity, and standard operating procedures (MoPSW, 2023, p. 214).

Apart from this, India has also led the formation of the Indo-Pacific Oceans Initiative (IPOI), which focuses on boosting maritime connectivity in the Indian Ocean Region. New Delhi has also focused on expanding port connectivity with Southeast Asia, including through an MoU between Thailand's Ranong Port and India's major ports of Chennai, Vishakhapatnam, and Kolkata. India and Indonesia have also agreed to push maritime connectivity between Andaman and Nicobar and the latter's Sabang Port (Sinha & Xavier, 2024).

The developments on this front have positioned India strategically for collaboration with regional nations through bilateral and trilateral efforts focused on safeguarding oceans, enhancing maritime connectivity, fostering capacity building, and promoting fair, mutually beneficial, and sustainable maritime trade and transport. The BoB is central to India's maritime security. Strengthening port infrastructure would not only boost trade but also secure vital sea lanes that are critical for India's economic and maritime security. Growing geopolitical competition in port development, especially from China, could leave India's neighbouring countries economically vulnerable by creating port overcapacity, leading to losses for the host country (Watterson et al., 2023).

Table 3: China's Port Engagements in India's Neighbourhood in the Bay of Bengal

Country	Port	Type of engagement	Chinese company	Year
Bangladesh	Chittagong/ Chattogram	Construction	CHEC	2004
Bangladesh	Payra	Construction	CHEC and CSCEC	2013
Myanmar	Kyaukpyu Port	Construction	China National Petroleum Corporation, CHEC, China Merchants Ports	2013
Myanmar	Port Thilawa	Construction and leasing	Hutchison Ports, Sinochem Second Construction Group (2017), CITIC Consortium	1997, 1999, 2017, 2018
Sri Lanka	Colombo Port – South Container Terminal	Construction, operation through JB (China holds 85%)	China Merchants Ports, CHEC	2011
Sri Lanka	Hambantota Port (Phase 1–3)	Construction, acquisition and leasing. (China has 85% stake in Hambantota International Port)	–	2007–2018

Source: Watterson, 2023.

Note: CHEC: China Harbour Engineering Company Ltd; CSCEC: China State Construction Engineering Corporation; CITIC: China International Trust Investment Corporation.

The Hambantota Port in Sri Lanka is a notable example of a troubled Chinese project in India's neighbourhood, where Chinese research vessels, often suspected of conducting surveillance, have docked. Although Sri Lanka imposed a one-year ban on these vessels, it has since permitted them to return. India is encircled by Chinese-built ports in neighbouring countries, including Gwadar (Pakistan), Hambantota and the Colombo East Terminal (Sri Lanka), Payra (Bangladesh), and Kyaukpyu (Myanmar). With these ports, China has established a network that could potentially influence maritime activities in the region. There have also been reports of China's Type 039 Song-class diesel submarine, the People's Liberation Army Navy (PLA(N)) submarine Changzheng-2, and the warship Chang Xing Dao docking at Colombo Port in 2014 (Prakash, 2014). More recently, both Indian (INS Mumbai) and Chinese warships docked in Colombo in August 2024 (Pandit, 2024). These activities have led to increasing concerns about the dual-use nature of China-built-and-operated ports in the region. This renders India's maritime space vulnerable to surveillance, limiting its operational freedom and raising concerns about strategic encroachment.

Given this reality, there is a pressing geostrategic imperative for India to strengthen its own presence through investments in port development across its neighbourhood. By actively engaging in port infrastructure projects, India can enhance regional connectivity, build stronger alliances with neighbouring countries, and counterbalance China's influence. By developing ports in collaboration with Quad partners, New Delhi could also promote transparency, operational efficiency, and sustainable practices in regional infrastructure development.

6. Infrastructure and Connectivity in the Bay of Bengal

The Quad's interest in port development in the Indo-Pacific is more recent. Though the partner countries have been engaging in this sphere at a bilateral level, with each recognising ports as critical infrastructure, their collective efforts could be instrumental in shaping the future of port development in the BoB.

6.1 Bilateral or Trilateral Initiatives by India, the US, Australia, and Japan

India's Focus on Bilateral Engagements

India utilises a variety of approaches to expand its influence in port development, both bilaterally and through regional institutions. Bilaterally, India has partnered with Bangladesh on projects such as Mongla and Chattogram, and has also inaugurated the Sittwe Terminal in Myanmar. It is also developing the Colombo WCT in Sri Lanka, as well as a terminal at Mongla Port in Bangladesh. Notably, the US International Development Finance Corporation (DFC) had provided US$ 550 million to support the Colombo WCT project (DFC, 2023).

Most of India's efforts have been bilateral, but it also participates in port development through regional institutions. Within BIMSTEC, India contributes to initiatives such as the BIMSTEC Multimodal Transportation Plan, which prioritises port development and inland connectivity to boost development. India is also a member of the Indian Ocean Rim Association (IORA), where it is currently the coordinating country for Maritime Safety and Security (IORA, n.d.-a). The India-led Coalition for Disaster Resilient Infrastructure is also partnering with IORA's Working Group on Disaster Risk Management to build resilient infrastructure (IORA, n.d.-b).

Beyond this, India also has memoranda of understanding with countries in the BoB region to enhance maritime cooperation (Table 4). All these initiatives require robust port infrastructure to support the growth in trade and the building of supply chains. Despite its strategic interests, India faces significant challenges in fully realising its ambitions in the BoB.

Japan's Financial and Technical Contributions

Japan has been a significant player in the region, providing financial support and expertise for key projects. Japan is leading the development of Bangladesh's first deep-sea port at Matarbari, aimed at improving Bangladesh's port infrastructure and connectivity with global supply chains. The JICA has committed to funding over 70% of the US$ 2.2 billion Matarbari project, which will significantly enhance the port's capacity to handle larger vessels (Sinha, 2023). This development positions Japan as a key partner in Bangladesh's infrastructure expansion, while also providing an alternative to Chinese investment in the region. The port is further expected to connect to India's NER.

United States' Role in Port Development Financing and Standards

The US's bilateral engagement in port development in the region is limited. Recently, the DFC announced an investment package of US$ 550 million, supporting India's development of Colombo Port's WCT in Sri Lanka (DFC, 2023). However, India's Adani Ports and SEZ opted out of the funding in December 2024 (ET Bureau, 2024). Despite this setback, the US is well-positioned to contribute to capacity building and institutional strengthening in port management, regulatory frameworks, and technology adoption. For instance, the Port of Los Angeles was a pioneer in the development of smart ports, and could engage in capacity building or port development in this region. This engagement would also be in line with the country's Indo-Pacific Strategy, where Washington, DC, aims to enhance maritime security and connectivity, aligning closely with the Quad's broader objectives.

The US has also led the formation of the G7 Partnership for Global Infrastructure and Investment (PGII) to fund infrastructure projects in developing countries. It aims to mobilise up to US$ 600 billion by 2027 to narrow the infrastructure investment gap in partner countries by working closely with multilateral development banks, development finance institutions, and private-sector partners (The White House, 2023). The India–Middle East–Europe Economic

Table 4: India's MoUs on Maritime Cooperation in the Indo-Pacific

Country	MoU Areas
Myanmar	Facilitate cooperation between Oil and Gas companies for development of petroleum products.
Indonesia	Blue Economy, Maritime security, and Maritime Safety.
Australia	Cooperation in the Indo-pacific region, IOR association, Indian Ocean Naval Symposium, Indian ocean Tuna commission, and Indo-Pacific Oceans initiative. Supply of high-quality mineral resources to India. • Marine Pollution and climate change.

Source: Maritime India Vision 2030.

Corridor (IMEEC), announced in 2023, is a part of the PGII focused on strengthening multimodal connectivity between railway and rail-ship transit routes to narrow the infrastructure gap and strengthen connectivity between countries (MEA, 2023).

Furthermore, the US, Australia, and Japan, in 2019, also formed the Blue Dot Network, a multilateral initiative aimed at promoting high-quality, sustainable, and transparent infrastructure development in developing countries. The Blue Dot Network provides a certification framework for infrastructure projects that meet specific standards of quality, sustainability, and transparency (US Department of State, n.d.). India has endorsed the Blue Dot Network in several statements with the US, including the India–US Joint Statement issued in February 2020 during the first presidency of Donald Trump, the Joint Statement issued in October 2020 following the Third India–US 2+2 Ministerial Dialogue, the India–US Joint Statement issued in Washington in September 2021, the meeting of the Prime Minister with President Joseph R. Biden Jr., and the Joint Statement from the Quad Leaders' Summit in September 2021 (MEA, 2022).

Australia's Port Infrastructure Diplomacy

Australia has increasingly prioritised its role in the Indian Ocean Region, particularly through the US$ 32 million SARIC initiative. Although Australia's financial contributions may be smaller than those of Japan or the US, its commitment to enhancing regional connectivity through capacity-building programmes, regulatory standardisation, and infrastructure resilience is critical. Furthermore, cooperation in customs and trade facilitation is also a part of the India–Australia Economic Cooperation and Trade Agreement (ECTA) (DFAT, n.d.).

6.2 Quad Initiatives

Beyond traditional security concerns, the Quad has been actively exploring avenues for cooperation in areas such as technology, climate change, and infrastructure development. One such initiative with immense potential is the collaboration on green shipping and the development of Quad Ports of the Future.

The Quad Working Group on Green Shipping, announced at the 2021 Leaders' Summit, involves the adoption of environmentally sustainable practices and technologies in the maritime industry (The White House, 2021). It involved collaboration between Mumbai Port Trust, the Port of Los Angeles, Port Botany, and the Port of Yokohama to lead the way in the decarbonisation of ports. Additionally, the Quad could collaborate on developing standards and regulations for green shipping, ensuring a level playing field and promoting the global adoption of sustainable practices. More recently, the announcement of the Quad Ports of the Future is another key aspect of the partnership. India has taken the initiative to host the first conference for this in 2025 (Department of the Prime Minister and Cabinet [PMC], 2024).

At the 2024 Wilmington Summit, the Quad launched the Ports of the Future Partnership, highlighting its focus on sustainable and resilient port infrastructure across the Indo-Pacific. The initiative aims to share expertise, mobilise investments, and strengthen collaboration with regional partners. India will host the inaugural Regional Ports and Transportation Conference in Mumbai in 2025. Through this new partnership, "Quad partners intend to coordinate, exchange information, share best practices with partners in the region, and leverage resources to mobilise government and private sector investments in quality port infrastructure across the Indo-Pacific region" (PMC, 2024).

The Quad also introduced the Maritime Initiative for Training in the Indo-Pacific (MAITRI), designed to help countries utilise initiatives such as the Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) to secure their waters and combat illegal activities (PMC, 2024). India will host the first MAITRI workshop in 2025. Furthermore, to enhance disaster response, the Quad Indo-Pacific

Table 5: Timeline of Quad Initiatives in Port and Shipping Development

Year	Event	Initiative
2021	First Leaders' Summit[1]	Quad Climate Working Group on Green Shipping
2024	Fourth Leader's Summit[2]	Quad Ports of the Future Partnership
2024	Fourth Leaders' Summit[2]	Quad Regional Ports and Transportation Conference (planned)

Source: [1]The White House, 2021; [2]The White House, 2024.

Network was launched, enabling shared airlift capacities and coordinated logistics for rapid relief operations (PMC, 2024.).

Maritime cooperation remains central to the Quad's agenda, focusing on port development, maritime security, and domain awareness. While cooperation in port development is one part of it, several other initiatives in the maritime domain have been initiated, although the key driver remains bolstering maritime security and improving maritime domain awareness, with the ultimate goal of upholding a free and open Indo-Pacific. Initiatives such as the IPMDA, launched in 2022, continue to support partner nations in monitoring waters, countering illegal fishing, and addressing climate challenges, reinforcing the goal of a free and open Indo-Pacific (PMC, 2023).

7. India's Choices for Engagement through the Quad

As the geopolitical landscape of the BoB shifts, India faces critical choices regarding its engagement with the Quad on port development and infrastructure. Each strategic option presents unique advantages and challenges, with implications for India's regional influence, economic growth, and national security. Moreover, these choices are not mutually exclusive; India could adopt a multi-pronged strategy to address diverse objectives simultaneously. This analysis explores three potential approaches: bilateral engagement, diplomatic and limited engagement with the Quad for complementary infrastructure, and full integration with the Quad on port infrastructure (Table 6).

Approach 1: Bilateral Engagement

India has historically adopted a bilateral approach to partnerships within its immediate neighbourhood, aiming to be the preferred development partner. India could try to continue to engage bilaterally with its neighbouring countries for port development, including in areas such as port operations, training and capacity building, trade facilitation, etc. This approach allows India to exert control over the terms and scope of infrastructure projects, while managing regional influence.

Table 6: Strategic Approaches for India on Port Development

Approach	Description	Advantages	Limitations
Bilateral Engagement	India engages only bilaterally with neighbouring countries for port development, maintaining strategic control.	High strategic autonomy; tailored agreements; control over port security; regional leadership; suitable for brownfield projects.	Limited access to Quad resources and technology; slower project execution; reduced broader influence.
Diplomatic and Economic Engagement with Quad countries	India collaborates selectively with Quad members on specific projects while retaining autonomy.	Balanced autonomy and cooperation; access to Quad expertise; leadership in sustainable infrastructure; suitable for both greenfield and brownfield projects.	Complex coordination; risk of perceived alignment with Quad security agenda; diplomatic balancing required.
Full Integration with Quad partnership	India fully joins Quad port infrastructure initiatives, pooling resources and aligning with multilateral goals.	Access to vast resources and tech; influence in setting regional standards; enhanced global credibility; suitable for greenfield projects.	Reduced autonomy; risk of misaligned priorities; perception of anti-China stance; potential regional pushback.

Source: Prepared by the author.

Advantages

The primary benefit of this approach is maintaining strategic autonomy. Bilateral engagements enable India to tailor infrastructure projects to its specific needs and security concerns, ensuring that development aligns with national interests. For instance, port security (both inland and offshore) remains a critical aspect of India's strategic calculus, particularly in the BoB, which is a gateway for India's eastern coast (Ravella, 2022; Sajith et al., 2024). Bilateral agreements allow India to shape port security protocols directly, minimising external influences that might emerge under a larger framework such as the Quad. It also enables India to lead infrastructure development standards in its neighbourhood.

Additionally, by prioritising bilateral engagements, India strengthens its role as a leading regional player in development. Through direct partnerships, India can negotiate more favourable terms and build a reputation as a reliable partner for countries such as Nepal, Bhutan, Bangladesh, Sri Lanka, and Myanmar. This approach is also suitable for brownfield projects, given that such projects involve enhancing existing assets, usually with limited financial requirements and greater autonomy over the upgrades.

Limitations

However, there are limitations to this approach. A bilateral strategy can constrain India's access to the Quad's resources, expertise, and funding. Developing resilient, high-quality infrastructure is a complex and resource-intensive endeavour. By operating independently, India may face delays in project execution due to limited access to specialised technology and financing options. For example, sustainable port development often requires expertise in green shipping practices, digitisation, and advanced engineering—areas where India might benefit from the Quad's collective knowledge.

Furthermore, exclusive bilateralism could hinder India's ability to project regional influence on a larger scale. The Quad represents a formidable platform for countries committed to a rules-based order, and aligning more closely with it could enhance India's standing within this group and beyond. By choosing to remain largely independent, India might miss an opportunity to shape the Quad's agenda on infrastructure standards, sustainability, and regional governance.

Approach 2: Diplomatic and Economic Engagement with Quad Countries for Complementary Infrastructure

In this approach, India could adopt a hybrid approach, seeking strategic collaboration with Quad members on specific projects while maintaining its autonomy. This would involve leveraging the Quad's strengths in areas where India might lack expertise, particularly green technology, digitisation, and capacity building.

Advantages

This approach offers India a pragmatic balance between autonomy and collaboration. By working with Quad partners on select initiatives, India could gain access to advanced technologies and specialised skills without compromising its strategic decision-making. For instance, Japan has significant expertise in sustainable port development and green shipping, while Australia can contribute to establishing regional infrastructure standards and capacity building in PPPs. Through targeted partnerships, India can elevate the quality and sustainability of its port projects.

Furthermore, this model aligns with India's aspirations to lead regional development efforts. By spearheading initiatives such as the Quad Ports of the Future, India could position itself as a leader in sustainable infrastructure in the BoB. Such an initiative would allow India to shape the Quad's agenda on port development, focusing on green shipping practices, digital port management systems, and workforce training programmes. This approach is also suitable for both brownfield and greenfield port development projects, where India can lead but also tap into support from the Quad countries for components such as green technology, PPP frameworks, and digitisation. Acting as the lead country, India could foster a unified approach to port development, encouraging regional actors to adopt sustainable practices and align with global standards.

This approach can also allow India to leverage its economic frameworks with countries such as Japan and Australia to strengthen cooperation on port development in the BoB countries. For instance, through the India–Japan Comprehensive Economic Partnership Agreement (CEPA), signed in 2011, India and Japan can utilise the investment chapter to create trilateral investment platforms (India, Japan, and the host

country) for sustainable port development (Ministry of Commerce and Industry [MoCI], 2021). This will be useful for Bangladesh as well, which is in the process of negotiating a CEPA with Japan (Ministry of Foreign Affairs [MoFA], 2025). Additionally, with Australia, India can utilise the existing chapters of the ECTA or use the upcoming CEPA for co-hosting training and capacity-building programmes in customs coordination, port digitisation, and climate-resilient port design (DFAT, n.d.).

Limitations

Nevertheless, diplomatic engagement also entails potential drawbacks. Managing relationships with multiple Quad partners could complicate decision-making, as each country may have distinct priorities and objectives. Aligning these interests could require prolonged negotiations and compromise, potentially slowing the progress of port projects. Additionally, India would need to navigate the challenge of maintaining its regional influence while sharing leadership with other Quad members.

Another risk is the perception of alignment with the Quad's broader strategic objectives, particularly regarding China. While India could emphasise that its engagement is focused on infrastructure development, diplomatic collaboration with the Quad might still be perceived by some regional actors as aligning with the Quad's security approach. This perception could strain India's relations with neighbouring countries that have strong economic ties to China, complicating its diplomatic efforts in the region.

Approach 3: Full Integration with the Quad on Port Infrastructure

In the third scenario, India could pursue full integration with the Quad on port infrastructure initiatives. This approach would involve pooling resources, both public and private, from all Quad members to enhance connectivity in the BoB. It would position India as an active participant in a multilateral framework, sharing the responsibilities and benefits of infrastructure development with its partners.

Advantages

Full integration offers several compelling advantages. First, it would provide India with access to a wealth of resources from the Quad, including financing, technology, and institutional support. This could accelerate infrastructure development, making ports more resilient, efficient, and sustainable. A collective effort with the Quad would also increase India's leverage in negotiating with international stakeholders, ensuring that regional projects meet global benchmarks for environmental and operational standards.

Moreover, full integration could establish the Quad as a central player in setting infrastructure standards across the BoB, promoting a cohesive approach to regional development. As part of this framework, India would have a stronger voice in shaping these standards, ensuring that they reflect its priorities, such as sustainability, security, and inclusivity. This approach may only be suitable for greenfield projects that are resource-intensive. Quad integration can provide access to capital and technology, as well as global standards and benchmarking. By aligning with the Quad's comprehensive support, India could also enhance its credibility as a global leader in sustainable development.

This approach is also being applied globally. For instance, the Lobito Corridor is a transformative project in Southern Africa, centred around a railway line connecting Angola's Atlantic coast port of Lobito to the mineral-rich regions of the Democratic Republic of Congo and Zambia. Its funding and implementation mechanism is structured as a multi-stakeholder initiative with a strong emphasis on PPPs (European Commission, n.d.). The project is a flagship initiative of the PGII, led by the G7 countries, particularly the US and the European Union, in collaboration with African partners. They signed the Lobito Corridor Transit Transport Facilitation Agency Agreement in January 2023. The US has committed significant financial support, with over US$ 4 billion mobilised (as of late 2024) across multiple interconnected sectors (transportation, logistics, agriculture, clean energy, health, digital access) to advance the corridor (US Department of State, 2024).

The EU, as part of its Global Gateway strategy, in alignment with the PGII, has also mobilised resources related to the corridor. Italy has also committed €300 million (approx. US$ 350 million) under its Mattei Plan (Dumas & Gerasimcikova, 2024). The Africa Finance Corporation and the African Development Bank have committed approximately US$ 500 million each (CNBC Africa, 2024). This project stands out for three reasons. First, public funds (from the US, the EU, and development banks) are used to de-risk the project, making it more attractive for

private-sector participation and investment. Second, the investment is not solely focused on rail infrastructure but extends to supporting sectors such as agriculture, digital connectivity, and clean energy, aiming for comprehensive economic development. Finally, the involvement of multiple partners also de-risks the corridor from financing suspension from one or more partners in the long run.

A similar approach can also be adopted by the Quad countries to pool resources for port development. For instance, from India, financing could also be mobilised from the Rs 25,000 crore (approx. US$ 290 million) Maritime Development Fund (MDF), announced in February 2025 (PIB, 2025). Japan and Australia can also mobilise support for the projects under their Free and Open Indo-Pacific frameworks.

Limitations

However, full integration carries potential risks, particularly regarding India's strategic autonomy. Working within a multilateral framework may require India to cede some control over project planning and execution, particularly if Quad partners advocate for initiatives that do not align with India's core interests. For example, if other Quad members prioritise projects that primarily benefit their own economic interests, India might face constraints in directing resources towards projects that align with its regional goals.

Additionally, full integration might intensify the perception of the Quad as an anti-China coalition. While infrastructure development is ostensibly a neutral objective, a fully integrated Quad initiative could be seen by Beijing as an effort to counter China's influence in the region. This perception could complicate India's relations with China and potentially disrupt trade and diplomatic ties. Moreover, some neighbouring countries might view India's full integration with the Quad as an alignment with Western powers, leading to concerns about India's role as a neutral partner in the region.

8. Conclusion

The BoB, despite its strategic location in the Indian Ocean Region along global shipping routes, faces significant challenges in infrastructure development. Despite the Quad's many announcements on port and shipping infrastructure development, India has struggled to fully leverage its partners' expertise.

While focusing on the challenges and existing engagement mechanisms, this paper presents scenarios that offer a viable path for India's engagement with the Quad in the BoB, with distinct advantages and limitations. In practice, India may not need to choose a single approach; instead, it could adopt a flexible strategy that incorporates elements of all three scenarios or, alternatively, even consider picking a project-specific approach. By balancing bilateral partnerships with selective Quad collaboration, India can maximise its autonomy while also leveraging the Quad's strengths in technology, funding, and governance.

A phased approach could also be beneficial. India might initially prioritise bilateral engagements to maintain control over its strategic initiatives. Over time, it could increase diplomatic engagement with Quad partners, particularly in areas where their expertise complements India's own capabilities. Finally, India could explore deeper integration with the Quad on select projects, positioning itself as a leader in setting regional standards for sustainable infrastructure.

India's engagement with the Quad in the BoB is a complex but crucial aspect of its regional strategy. By carefully evaluating its options, India can navigate the geopolitical challenges of the region while promoting sustainable development and enhancing its strategic influence. As India considers its role within the Quad, it must weigh the benefits of collective action against the need for autonomy, striving to find a balance that supports both its national interests and the broader goals of regional stability and connectivity.

Further research in this area could look at each model separately and assess the strengths, weaknesses, and opportunities present. There also remains scope to conduct a comparative modelling study of regional infrastructure diplomacy by all the Quad countries and suggest the best mode of engagement for India. At the Quad level, further research is also possible on assessing the effectiveness of Quad infrastructure initiatives: how successful have the Quad's earlier initiatives on strategic infrastructure been in practice, and how can the partnership overcome financial hurdles to expedite the execution of initiatives? Such research areas will be critical in charting a way forward for the Quad.

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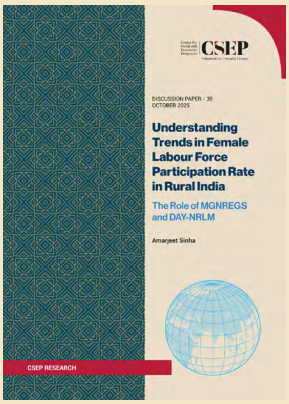
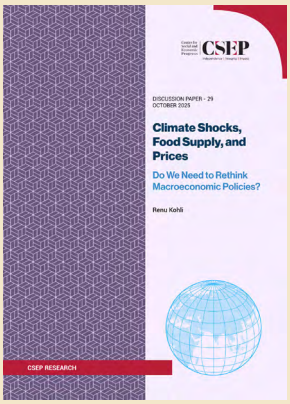
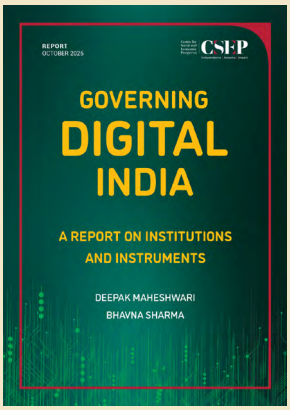
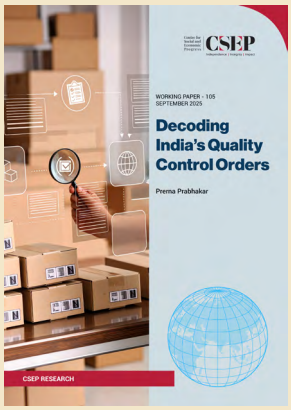
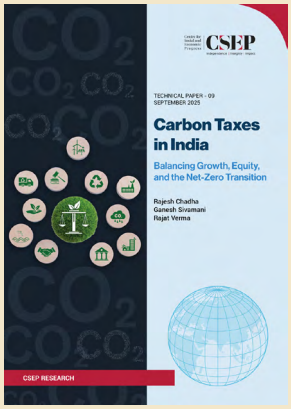
Other publications

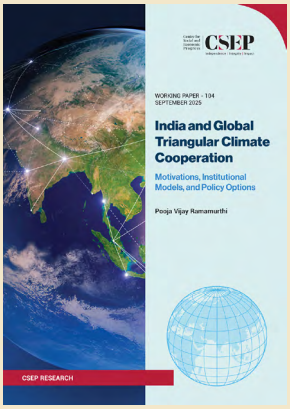


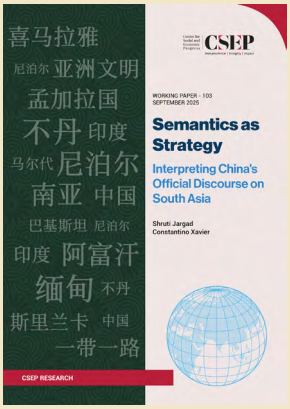


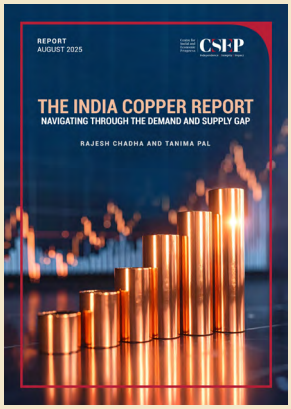


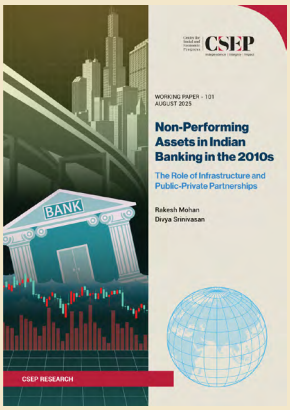


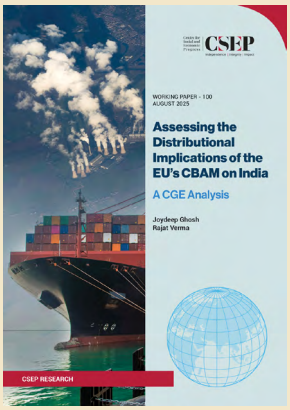


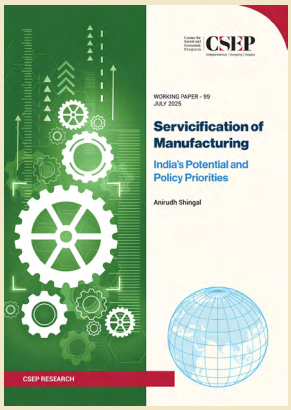


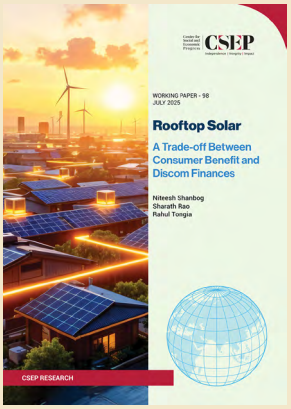


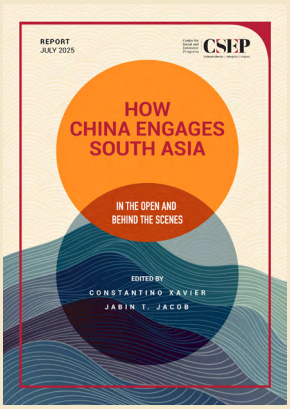


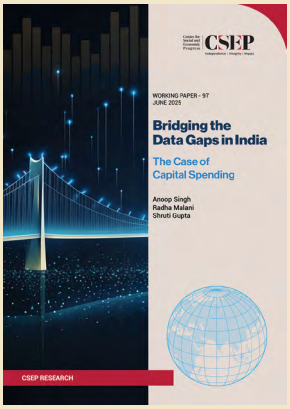


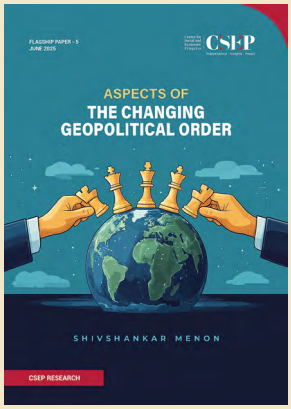












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