

India's Blue Economy 2.0: Strategic Potential and Structural Limitations

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ABSTRACT

India's blue economy within regional and global governance frameworks, assessing both its strategic potential and structural limitations. Based on a systematic review of scholarly literature, policy reports, and international data sources, the study employs a descriptive and comparative approach to evaluate major ocean-based sectors, including fisheries, maritime transport, ship recycling, coastal tourism, marine renewable energy, and deep-sea resource exploration. The analysis reveals that despite India's substantial maritime assets—such as a long coastline, expanding port capacity, robust fisheries production, and advancing ocean technologies—sectoral fragmentation and growth-centric approaches continue to constrain sustainability outcomes. The study highlights governance deficits, institutional overlaps, environmental stress, distributive inequities, and transboundary challenges as key barriers to a resilient blue economy transition. It emphasizes the growing importance of maritime security, regional collaboration, and climate adaptation in shaping future ocean policy. The paper argues that achieving long-term sustainability requires an integrated, science-driven, and socially inclusive governance framework that aligns economic objectives with ecological integrity and equitable development.

Keywords: Blue Economy, Maritime Trade, Ocean Sustainability, Coastal Tourism, SDG 14.

Introduction

Although life began in the oceans, which cover more than 95 per cent of the Earth's biosphere, contemporary human engagement with marine systems has been largely extractive and insufficiently attentive to ecological limits. (Troehler 2018) Notwithstanding escalating pressures from climate change, pollution, overexploitation of living resources, and unregulated coastal development, the ocean continues to provide essential life-support functions by producing a substantial share of atmospheric oxygen, sequestering carbon dioxide, recycling nutrients, and moderating global climate and temperature. (Bari 2017) This continued capacity, however, masks growing systemic vulnerabilities that threaten the resilience of marine ecosystems. The ocean remains central to global food security and livelihoods for millions, while enabling nearly 80 per cent of international trade through maritime transport, yet these economic benefits are often pursued in the absence of integrated governance and sustainability frameworks. Similarly, marine and coastal regions are increasingly commodified within the tourism economy, where the conventional "sun, sand, and sea" model and the expansion of nature-based tourism frequently intensify environmental degradation, exacerbate socio-ecological inequalities, and undermine long-term ecosystem health. (UNDP, n.d.) This contradiction between dependence on ocean services and the neglect of ocean stewardship underscores the urgent need for a more sustainable, precautionary, and governance-driven approach to ocean use.

The seabed constitutes a critical component of the global energy system, currently supplying approximately 32 per cent of worldwide hydrocarbon production, with exploration and extraction activities increasingly extending into deep-sea environments. Concurrently, rapid technological advancements have expanded the scope of marine resource development, opening new frontiers that include bioactive marine resources and the assessment of seabed mineral wealth. In parallel, the ocean provides substantial and largely underutilised potential for the generation of renewable “blue energy,” encompassing offshore wind, wave and tidal energy, as well as ocean energy and marine biomass-based energy systems. While these developments underscore the growing economic and strategic significance of marine spaces, they also raise critical questions regarding environmental risks, regulatory adequacy, and the sustainability of intensified ocean use, thereby necessitating careful governance within ecological limits. (Ramnath 2022)

The UNCSO, held in Rio de Janeiro in 2012, formally articulated the concept of the Blue Economy as an ocean-based economic framework aimed at enhancing human welfare and social fairness while substantially mitigating environmental dangers and lack of ecological resources. The conference outcome document, *The Future We Want*, underscored the centrality of oceans to sustainable development by emphasising the imperative of preserving and sustainably using oceans, and their resources as a foundation for long-term economic growth. Within this framework, the Blue Economy is not merely concerned with the expansion of ocean-based economic activities, but with the efficient and optimized utilization of marine resources within clearly defined ecological limits. It thus represents a normative shift toward integrating economic development objectives with environmental sustainability and social inclusiveness, positioning the health of marine ecosystems as a prerequisite for durable ocean-driven growth.

Despite this sustained normative recognition, prevailing patterns of resource extraction and use continue to drive the marine ecosystem disruption, indicating that efforts to date have been inadequate in translating international commitments into effective governance and conservation outcomes. The persistence of these trends underscores a widening gap between policy aspirations and implementation, highlighting the urgent need for more robust, integrated, and enforceable approaches to ocean stewardship that prioritise long-term ecological integrity alongside economic and social development. (World Economic Forum 2019)

Review of Literature and Research Methodology

This research follows a descriptive research approach supported by a systematic review of relevant literature. The study relies on secondary data obtained from scholarly journals, policy papers, institutional publications, conference materials, and reliable online sources. The information was examined, compared, and synthesised to identify major concepts and relationships, which were then used to structure the analysis of the Blue Economy.

Data for this study were gathered from widely recognised international academic and institutional databases, such as Scopus and Google Scholar, as well as other credible research platforms. To ensure comprehensive coverage, structured online searches were also conducted to include relevant grey literature and emerging discussions that may not yet be fully represented in academic journals. Alongside scholarly sources, national and international policy documents, strategic reports, and official publications were reviewed through government portals and global development organisations, including the World Bank, UNDP, and SDG-14-related frameworks. India-specific materials — such as reports from the Ministry of Ports, Shipping and Waterways, documents related to the Pradhan Mantri Matsya Sampada Yojana, and Blue Economy 2.0 reports — were examined in detail to strengthen the contextual understanding of the Indian scenario. Resources from global and regional organisations were also incorporated to present a balanced perspective that reflects both global insights and India-centric analysis.

The literature review followed a systematic and transparent process aimed at identifying high-quality academic and policy-focused studies related to the blue economy at both global and national levels. Relevant publications were located using carefully selected combinations of keywords connected to blue economy sectors, governance mechanisms, policy frameworks, and systems-based approaches. The initial search generated 85 studies; after removing duplicates and applying inclusion criteria based on thematic relevance, geographical focus, and consistency with the research objectives, 56 studies were retained for final analysis and synthesis. Abstracts, keywords, and full texts were carefully reviewed to ensure analytical depth and clarity. By combining insights from academic research, policy frameworks,

and global development indicators, this study provides a comprehensive and comparative understanding of sustainable development and blue economy dynamics within a broader global context while maintaining strong relevance to India.

Review of Literature

The academic literature demonstrates a progressively expanding and increasingly nuanced engagement with the concept of the blue economy, marked by sustained efforts to refine its definition and to develop robust conceptual frameworks. These frameworks emphasize the integration of environmental sustainability, effective ocean governance, and inclusive economic growth, reflecting a shift from sectoral and extractive interpretations toward more holistic and systems-based approaches to ocean-based development.

As articulated by Pauli (2010), the Blue Economy represents a strategic economic paradigm that promotes the integrated and sustainable use of ocean-based resources. It is grounded in the principles of decarbonized development, and economic competitiveness. The sector is projected to contribute up to 100 million jobs, the Blue Economy offers strong prospects for equitable growth, particularly for coastal and ocean-based communities. In this framework Blue Economy can be understood as a foundational pillar for achieving holistic development in the twenty-first century. (Pauli 2010)

SDG 14 is prioritizes the conservation and responsible use of marine and oceans resources, positioning the protection of marine ecosystems at the core of the global sustainable development agenda. The goal draws attention to a range of interconnected challenges, including marine pollution, ecosystem degradation, and ocean acidification. (UNDP, n.d.)

Colgan (2013) undertakes a systematic examination of the development of a comprehensive national dataset aimed at empirically quantifying economic activity driven by the ocean and the Great Lakes in the United States. The study operationalize the sea economy. (Colgan 2013)

Upadhyay (2020) underscores that the imperative to sustainable management and responsible exploitation of marine resources have increasingly occupied a prominent position within domestic policy agendas and global governance architectures. (Upadhyay and Mishra 2020a)

Asif (2022) emphasises that the blue economy framework prioritizes the sustainable utilisation of marine resources as a normative alternative to the carbon intensive, and environmentally degrading model of the old brown economy. China's BRI reshapes Indian Ocean networks; US and India respond strategically, while China-Pakistan Gwadar cooperation boosts capacity and blue economy. (Asif 2022a)

Vedachalam (2019) The study emphasizes the need for an integrated framework that concurrently promotes economic growth, responds to societal and developmental priorities, and safeguards marine ecological integrity. Within the Indian context, particular attention is given to technological interventions undertaken by India, especially initiatives led by the NIOT under the Ministry of Earth Sciences, Government of India. (Vedachalam et al. 2019)

The literature points to a growing dependence on ocean resources accompanied by rising energy demand from increasingly power-intensive marine. The literature consistently finds the Indian Ocean as a critical socio ecological system that underpins the livelihoods, economic systems. Established sea based sectors—such as fisheries, offshore minerals, tourism, and shipping—are widely recognised as foundational contributors to regional economies, while the expansion of emerging maritime industries has further elevated the strategic and economic salience of the blue economy in the region. (Doyle 2018)

Scholars emphasize that the inherently transboundary nature of marine ecosystems limits the effectiveness of fragmented, state-centric governance arrangements and frequently results in competitive, uncoordinated, and environmentally unsustainable patterns of resource exploitation. (Llewellyn et al. 2016)

The literature documents a discernible transition from fossil fuel-based offshore energy systems toward offshore renewable energy sources, driven by their potential to reduce greenhouse gas emissions, generate green employment, and stimulate coastal and regional economies. Empirical studies identify substantial offshore renewable energy potential, particularly in wind, wave, current, and tidal resources, and note ongoing technological advancements aimed at improving efficiency and commercial viability. However, the literature also highlights persistent technical, infrastructural, and financial constraints that continue to impede large-scale deployment. These challenges underscore the critical role

of enabling policy frameworks, regulatory certainty, and targeted investment mechanisms in facilitating the widespread adoption and integration of offshore renewable energy within sustainable blue economy strategies.(Shah and Ramesh 2022)

The literature conceptualises the blue economy as an interconnected system of marine-based economic activities and ecological processes, encompassing sectors such as fisheries, maritime transport, coastal and marine tourism, ocean-based renewable energy, and ecosystem management. Within this multisectoral framework, coastal tourism consistently emerges as a pivotal driver of economic growth, employment generation, and regional development in coastal states.(Carney Almroth and Eggert 2019)

Scholarly analyses of coastal tourism within the blue economy frequently employ multidimensional indicator frameworks—incorporating measures such as tourism competitiveness, international tourist arrivals, sectoral contributions to gross domestic product, and employment levels—alongside cluster analysis techniques to classify countries according to tourism performance and developmental trajectories. More recent contributions emphasise the use of coastline-normalized indicators to improve cross-national comparability by accounting for differences in coastal length and spatial endowments. Within this body of literature, Spain is repeatedly identified as a benchmark case, reflecting the scale, intensity, and maturity of its coastal tourism system, underpinned by extensive coastlines, well-developed beach infrastructure, and long-standing integration of tourism into national and regional development strategies.(Appiott et al. 2014)

The literature reveals a strong conceptual and operational alignment in the blue economy framework and the SDGs, particularly SDGs 14–17, with SDG 14 occupying a central and integrative position. While linkages with SDG 6 remain comparatively underexplored, substantial intersections are identified with SDG 12 and SDG 15, reflecting the broader sustainability implications of marine-based economic activities across environmental and production systems.(“Strategic Vectors of Coastal Tourism Development as a Blue Economy Component in the International Dimension - ProQuest,” n.d.)

Scholarly studies further emphasize the pivotal role of diverse stakeholder groups—including governments, non-governmental organizations, research institutions, industry actors, and local communities—in operationalizing the blue economy agenda. Within this stakeholder-centric discourse, there is a pronounced focus on outcomes related to SDG 3 and SDG 8. Collectively, the literature underscores that effective, inclusive, and coordinated stakeholder engagement is critical both for delineating the scope of the blue economy and for advancing the coherent implementation of SDG commitments.(Lee et al. 2020)

The literature underscores the centrality of visual representations in the construction and contestation of maritime boundaries in the Bay of Bengal. Scholarly analyses demonstrate that colonial-era surveys, litigation sketches, nautical charts, partition-period maps, and contemporary satellite imagery have played a decisive role in asserting jurisdiction over dynamic coastlines and transient geomorphological features such as ephemeral islands. These visual artefacts are conceptualized not merely as technical activities, thereby exposing the sustainability constraints of continued reliance on fossil fuel-based energy systems. In response, scholarly studies identify ocean-based renewable energy technologies as a critical enabler of sustainable blue economy growth, offering global perspectives on their technological development, deployment trajectories, and integration into marine economic systems. Within this discourse, significant untapped opportunities are highlighted for India, given its extensive maritime domain and renewable energy potential. Collectively, the literature underscores the necessity of targeted technological innovation, supportive policy frameworks, and capacity-building measures to enable developing countries to effectively harness ocean energy resources, thereby strengthening the resilience and energy security of the blue economy.(Ramnath 2022)

The literature highlights the expanding conceptualisation of maritime security. Scholars emphasize that effective maritime security governance is integral to India's capacity to sustainably advance the blue economy in the Indian Ocean Region, particularly in light of persistent institutional, regulatory, and enforcement gaps. Within this context, the literature underscores the critical importance of enhanced maritime domain awareness, improved technology and information-sharing mechanisms, and coordinated institutional architectures—most notably the establishment of a centralized national maritime authority—as foundational prerequisites for safeguarding the economic, environmental, and developmental objectives of the blue economy.(Agarwala 2022)

The literature conceptualizes India's blue economy as a strategic development framework aimed at leveraging maritime resources to advance economic growth, enhance regional influence, and promote long-term sustainability. It highlights India's comparative maritime advantages and identifies sectors such as fisheries and aquaculture, offshore energy, port-led development, and maritime security as key pillars underpinning this strategy. Scholarly studies further emphasize India's active engagement in regional and multilateral initiatives within the Indian Ocean Region.(Singh 2019)

At the same time, the literature draws attention to a range of environmental, geopolitical, and governance challenges that constrain the realization of blue economy objectives. These include ecological degradation, strategic competition in maritime spaces, institutional fragmentation, and capacity constraints. Collectively, these findings underscore the necessity of embedding sustainable practices, strengthening inter-institutional coordination, and investing in human capital development to unlock the full potential of India's blue economy that is both economically viable and environmentally resilient.

GDP in South Asia

According to World Bank statistics for 2024 (Figure 1), of South Asian regions continue to exhibit GDP per capita levels that are below the global average, reflecting persistent structural and developmental constraints. Within the region, India's GDP per capita is marginally higher than that of Bangladesh, although both remain within the lower-middle-income range. Despite a gradual transition of several South Asian economies from low-income to middle-income status, the region is characterised by a large population of economically vulnerable groups, which constrains aggregate gains in per capita income. Consequently, notwithstanding the implementation of multiple government-led development and poverty alleviation initiatives, progress in poverty reduction remains limited when assessed through GDP per capita indicators. In contrast, the Maldives and Sri Lanka record relatively higher GDP per capita levels within the region (Figure 1), a trend commonly attributed in the literature to the adoption of more strategic and sector-focused development pathways, including greater emphasis on services, tourism, and economic diversification.("Goal 14 | Department of Economic and Social Affairs," n.d.)

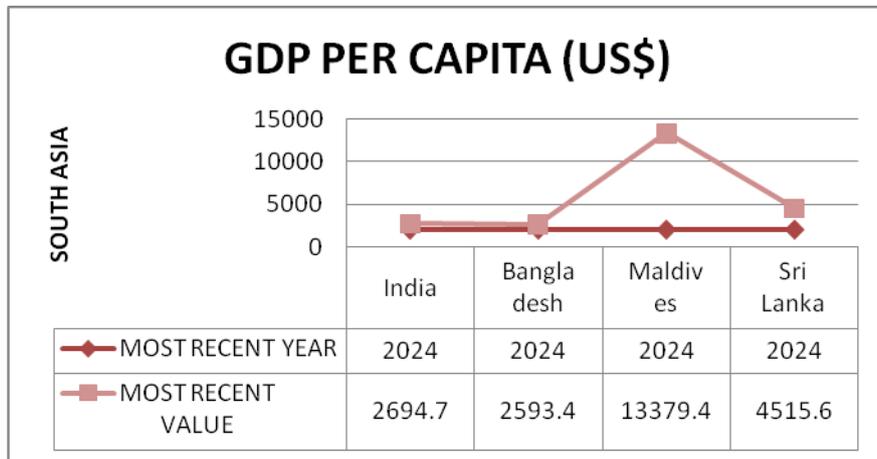


Figure 1: Assessment of GDP per capita in US Dollars of South Asian regions

Source: World Bank

Potential and Opportunities of Blue Economy in India

India possesses an extensive coastline of approximately 11,098 kilometres, with Gujarat accounting for the longest coastal stretch among Indian states at nearly 2,340 kilometres. Coastal regions support the livelihoods and settlements of an estimated 250 million people, with significant employment generated across sectors such as fisheries and aquaculture, maritime transport, port services, and coastal tourism. The strategic importance of India's maritime domain is not a contemporary development but is deeply rooted in history. Archaeological evidence from the Indus Valley Civilization, during the Harappan era, indicates that India had well-established maritime trade links with Mesopotamia through ports such as Lothal, underscoring the longstanding role of maritime connectivity in India's economic and cultural exchanges.(Doyle 2018)

Within this framework, the blue economy comprises a wide array of sectors, including fisheries and aquaculture, marine mining and seabed resources, offshore minerals exploration, shipping services, marine and coastal tourism, and ocean equipment and technology manufacturing. In the global context, efforts to standardize the maritime economy have resulted in the identification of twelve major sectors, encompassing traditional maritime industries alongside emerging ocean-based activities, thereby reflecting the expanding economic, technological, and strategic significance of marine spaces in sustainable development planning.

Sustainable blue financing is anchored in a set of core principles that prioritize the conservation and restoration of marine ecosystems, adherence to evolving sustainability standards and regulatory frameworks, and the promotion of stakeholder engagement, accountability, and transparency in investment decision-making. Within this framework, strategic investment opportunities are evident across key blue economy sectors, including marine transport, fisheries and aquaculture, ocean-based renewable energy, and marine ecosystem services. Collectively, targeted financial flows toward these sectors can play a pivotal role in facilitating the transition toward a resilient, inclusive, and environmentally sustainable blue economy.

- **Maritime Boundaries of India's and its Neighbour Countries**

India's maritime boundaries are shaped by its peninsular geography, a coastline exceeding 11,000 km (including island territories), and its prime location in the Indian Ocean. These boundaries are governed by the UNCLOS, which defines coastal state rules over the territorial sea, contiguous zone, EEZ, and continental shelf.

The India–Bangladesh water boundary in the Bay of Bengal illustrates effective dispute resolution through international law. The 2014 Permanent Court of Arbitration ruling adopted an equitable approach to resolve overlapping EEZ and continental shelf claims, granting Bangladesh a substantial share of contested waters while safeguarding India's strategic interests. The judgment reduced bilateral tensions, enabled offshore resource exploration, and strengthened cooperative maritime governance.

In contrast, the India–Pakistan maritime boundary in the Arabian Sea remains unresolved due to the continuing dispute over Sir Creek, which obstructs agreement on maritime baselines and EEZ delimitation. This legal ambiguity has tangible consequences, including recurring arrests of fishermen, constraints on offshore development, and persistent security concerns, highlighting the limits of legal mechanisms in the absence of political consensus.

The India–Sri Lanka maritime boundary, delimited through bilateral agreements in 1974 and 1976, demonstrates legal clarity achieved through negotiation. However, ongoing disputes over fishing rights in the Palk Strait reveal the gap between juridical settlement and socio-economic realities, underscoring the need for cooperative management frameworks beyond boundary delimitation.

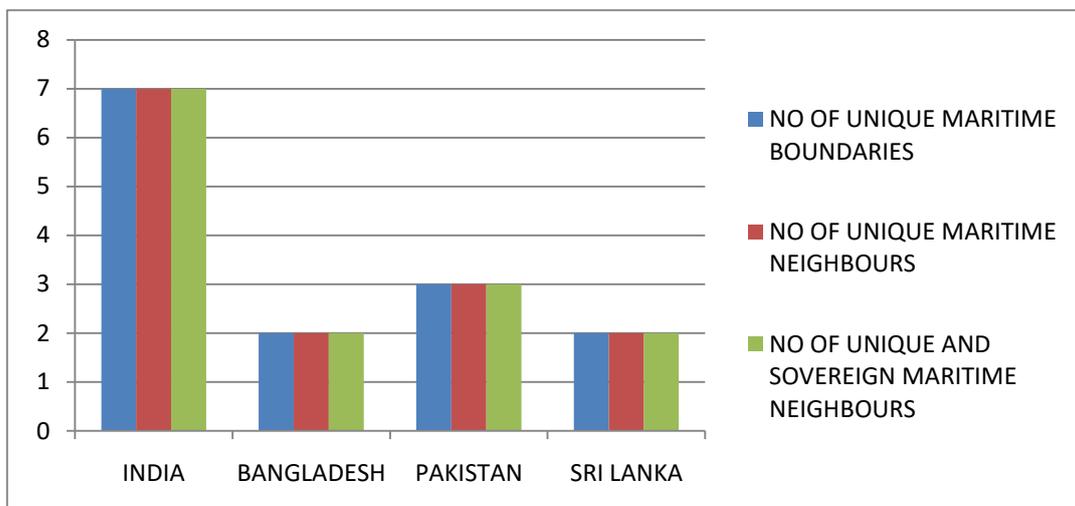


Figure 2: List of countries and territories by maritime boundaries - Wikipedia

- ### Fisheries and Aquaculture

Fish and fisheries production make a substantial contribution to livelihoods, food security, and regional economies. In India, fisheries and aquaculture have shown notable growth in recent years. In 2022, capture fisheries accounted for approximately 5.5 million tonnes, while total fish production reached about 15.8 million tonnes. This represents a significant increase compared to 2021, when capture fisheries stood at around 5.0 million tonnes and total production was approximately 14.4 million tonnes. The data indicate an overall production growth of about 1.4 million tonnes and an increase of nearly 0.5 million tonnes in capture fisheries within a year, reflecting improvements in productivity, infrastructure, and sectorial support.(Ananta and Cabral 2026)

In a regional context, India outperforms its neighbouring countries in both capture fisheries and aquaculture production, making it the largest fish-producing country in South Asia. At the global level, India ranks among the leading fisheries nations and currently stands as the third-largest producer of fish and aquaculture products worldwide.(Trennggono et al. 2025) This strong production base underscores the strategic importance of the fisheries sector to India's blue economy, rural livelihoods, and nutritional security, while also highlighting the need for sustainable management of marine and inland fishery resources.

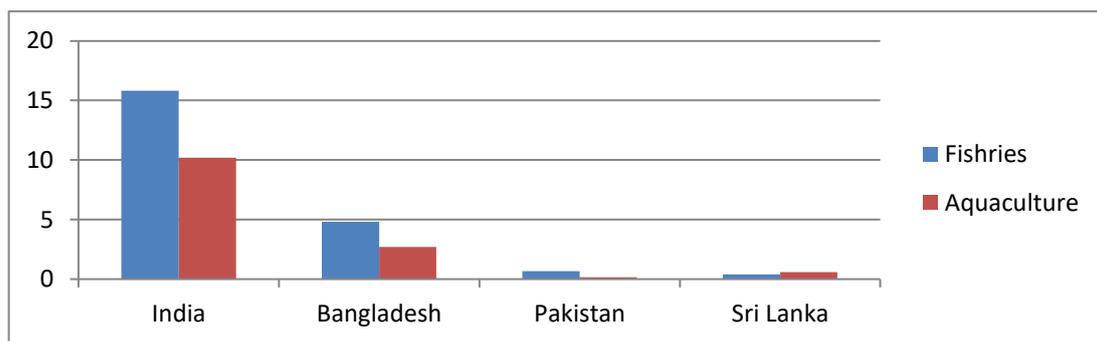


Figure 3: comparative assessment of Aquaculture and Fishing in South Asian Countries (Fishing Industry by Country 2026)

- ### Sea Route Transportation and Ocean Trade

Jawaharlal Nehru Port and Mundra Port in India have emerged as notable recovery leaders, demonstrating a marked improvement in operational performance and throughput in the post-pandemic period. Within the broader global context, South Asia distinguished itself as the only region to surpass its 2020 maritime trade performance by 2023, underscoring the region's relative resilience. However, this recovery trajectory experienced renewed pressure in 2024 as Red Sea disruptions adversely affected shipping reliability and port performance.(Upadhyay and Mishra 2020b)

At the global level, maritime trade expanded by 2.4 per cent in 2023, signaling a recovery from the contraction witnessed in 2022. Nevertheless, this rebound remains uneven and fragile, constrained by persistent structural vulnerabilities within global shipping networks. Strategic maritime chokepoints, notably the Suez and Panama Canals, have become increasingly exposed to geopolitical instability, armed conflict, and climate-induced disruptions, thereby amplifying systemic risks to international trade.(“Oceans and Seas | Department of Economic and Social Affairs,” n.d.)

The Review of Maritime Transport 2024 systematically documents these emerging challenges and calls for urgent, coordinated policy action to enhance the resilience, sustainability, and inclusiveness of the global maritime sector. The report emphasizes the critical need for investment in climate-resilient and environmentally sustainable port and shipping infrastructure, the acceleration of the transition towards low-carbon maritime transport, and stronger regulatory oversight, including measures to curb fraudulent ship registrations, in order to safeguard the integrity and stability of global maritime trade.(Asif 2022b)

A comparative analysis of maritime cargo movements in Figure 4 shows in South Asia in 2023 reveals a substantial asymmetry in port activity, with India demonstrating a markedly higher volume of both loaded and discharged tonnage than its neighbouring countries. In the reference period, India

recorded approximately 156 million tonnes of loaded cargo and 687 million tonnes of discharged cargo, underscoring its dominant position in regional maritime trade and logistics. (2025a)

In contrast, neighbouring South Asian countries exhibit significantly lower cargo handling volumes. Bangladesh loaded around 3 million tonnes and discharged 56 million tonnes, while Pakistan recorded 19 million tonnes of loaded cargo and 54 million tonnes of discharged cargo. Similarly, Sri Lanka handled approximately 2 million tonnes of loaded cargo and 30 million tonnes of discharged cargo, and the Maldives' cargo volumes remain marginal in regional terms. This pronounced disparity highlights the differing scales of maritime infrastructure capacity, trade intensity, and port development across the region. (Upadhyay and Mishra 2020a)

The magnitude of India's cargo handling reflects its larger and more diversified economy, extensive port infrastructure, and stronger integration into global and regional supply chains. Moreover, the substantial difference between loaded and discharged tonnage in India indicates its role not only as a major exporter but also as a key import hub supporting domestic consumption, industrial production, and energy security. (Adiga et al. 2025)

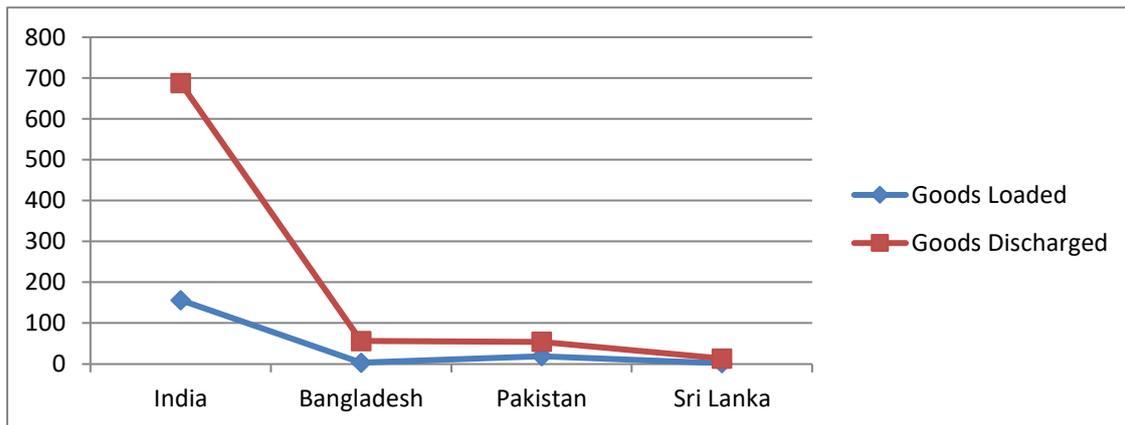


Figure 4: Tonnage Loaded and discharged, millions of tons (SDG 9.1.2), 2023

(Source: UN Trade and Development, [UNCTADstat](#) and Clarkson's research)

- **Ship Breaking Industry**

Ship recycling activities are heavily concentrated within the Indian subcontinent, reflecting the region's structural role in global shipping and merchandise trade supply chains. However, the distribution of shipbuilding capacity, vessel registration, and ship recycling activities across South Asian countries reveals significant variation, indicating differentiated functional specialisation within the regional maritime economy. (Bari 2017)

In terms of shipbuilding and fleet presence, figure 5 shows % of world total ship building, registration and recycling, India accounts for approximately 0.057 per cent of total global shipbuilding and recycling-related capacity, surpassing Bangladesh (0.008 per cent) and Sri Lanka (0.015 per cent), thereby indicating a relatively stronger industrial and institutional base. A similar pattern emerges in ship registration, where India leads with 0.739 per cent of global registrations, followed by Bangladesh at 0.247 per cent, Pakistan at 0.040 per cent, and Sri Lanka at 0.012 per cent. These figures suggest that India holds a comparatively higher position in formal maritime governance structures and fleet ownership within South Asia.

By contrast, ship recycling activities are dominated by Bangladesh, which accounts for approximately 43.2 per cent of global ship recycling, making it the largest shipbreaking hub in the region and worldwide. India follows with 33.9 per cent, while Pakistan contributes around 7.2 per cent. This divergence highlights a regional division of labour, wherein Bangladesh and India play leading roles in end-of-life vessel dismantling, while other South Asian countries remain marginal participants. (2025b)

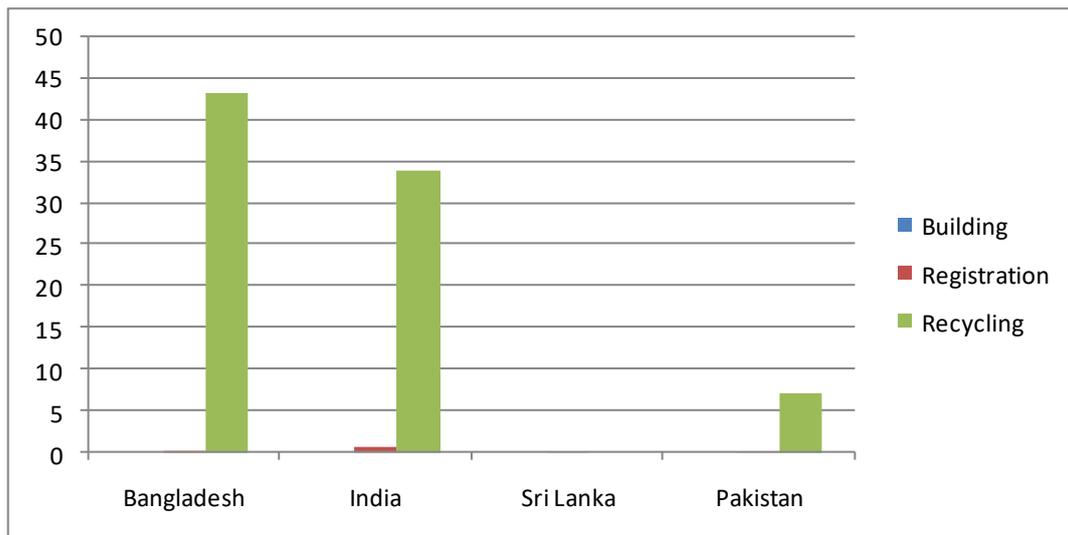


Figure 5: % of world total Building, Registration and Recycling of Ships in 2025

Source: UN Trade and Development, [UNCTADstat](#) and Clarkson's research

- **Coastal Tourism**

The India Tourism Data Compendium 2024, published by the Ministry of Tourism, Government of India, provides a comprehensive statistical basis for analysing India's tourism sector and its post-pandemic recovery. In 2023, global tourism rebounded to around 1.3 billion international arrivals, with India accounting for about 1.5% of global arrivals and 2.1% of global tourism receipts, indicating relatively high revenue generation per tourist. India ranked 39th in the TTDI 2024, reflecting strengths in natural and cultural resources, improved infrastructure, and price competitiveness. (Li et al. 2025) Inbound tourism surpassed pre-pandemic levels, with International Tourist Arrivals reaching 18.89 million, Foreign Tourist Arrivals at 9.52 million, and Non-Resident Indian arrivals exceeding 2019 levels, while leisure tourism remained dominant alongside significant diaspora, business, and medical travel. Outbound tourism also exceeded pre-COVID levels, driven mainly by air travel, and domestic tourism remained the sector's backbone with over 2.5 billion visits, albeit with persistent spatial concentration. Economically, tourism contributed around 5% to India's GDP, supported over 76 million jobs, and generated USD 28.08 billion in foreign exchange earnings in 2023, underscoring its strategic importance for growth, employment, and external revenue. (Das et al. 2025)

- **Marine Based Energy**

India has undertaken comparatively advanced assessments of marine-based energy owing to its extensive coastline (~11,000 km including islands), with estimated wave energy potential of 40–60 GW and several gigawatts of tidal energy concentrated along the western coast and the Gulfs of Kutch and Khambhat; however, development remains largely pre-commercial, limited to research, pilot studies, and resource mapping. (Adiga et al. 2025) In contrast, Pakistan and Bangladesh have made minimal progress despite coastal access, with only preliminary studies indicating modest wave and tidal potential along Pakistan's Sindh–Balochistan coast and Bangladesh's Bay of Bengal shoreline, while the absence of dedicated policies, national programmes, and commercial projects has confined marine energy to a conceptual stage dominated by solar and wind priorities. The Maldives, despite strong geographic suitability and energy security incentives as a small island state, has seen little practical development of wave, tidal, or ocean thermal energy, with national efforts focused primarily on solar energy and climate adaptation. Overall, while India leads the region in marine energy assessment, marine-based energy across South Asia remains underdeveloped due to technological, financial, and policy constraints. (Appiott et al. 2014)

- **Deep Sea Minerals**

India's recent deep-sea mineral initiatives, anchored in the Deep Ocean Mission and the Samudrayaan Project, represent a strategic shift towards positioning the ocean as a critical frontier for India's long-term resource security, scientific leadership, and Blue Economy ambitions. As a flagship programme of the Ministry of Earth Sciences, the mission integrates deep-sea mineral exploration, marine biodiversity research, climate studies, and indigenous technology development, most notably through the MATSYA-6000 human-occupied vehicle designed to operate at depths of around 6,000 m, supported by advanced training of Indian aquanauts and sustained technological innovation led by NIOT. Complementing domestic capability-building, India has strengthened its global standing by securing exclusive 15-year International Seabed Authority contracts for the exploration of polymetallic sulphides in the Indian Ocean, including the Carlsberg Ridge, making it the first country to hold two such contracts and underscoring its proactive engagement in international seabed governance. (Hoareau 2025, 2025) Parallely, the initiation of offshore mineral block auctions and collaboration with private and international technology partners signal an emerging policy framework aimed at gradually integrating ocean mineral resources into the national economy. Together with high-resolution seabed mapping, AUV-based surveys, and biodiversity assessments, these efforts remain firmly within the exploration and technology demonstration phase, reflecting India's cautious, science-led approach that seeks to balance strategic, economic, and environmental considerations in the evolving global discourse on deep-sea mining. (2025c)

India's Maritime Priorities in Budget 2026

India's Union Budget 2026 represents a pivotal policy intervention for the country's maritime ecosystem, signalling a renewed strategic emphasis on shipping, shipbuilding, container manufacturing, and inland waterways. By foregrounding these sectors, the Budget recognizes their expanding significance for economic growth, national security, and global competitiveness. Against the backdrop of shifting global trade routes and the ongoing recalibration of international supply chains, the Budget articulates a clear intent to strengthen domestic maritime capabilities while simultaneously advancing India's global maritime ambitions.

The enhanced role accorded to the Ministry of Ports, Shipping and Waterways (MoPSW) is reflected in a budgetary allocation of INR 5,164.8 crore for FY 2026–27, representing an increase of nearly 48 per cent over the previous year. This substantial allocation underscores the government's commitment to reinforcing maritime trade, port-led development, and transport infrastructure in alignment with broader national development priorities. Subject to effective and coordinated implementation, these policy measures have the potential to augment India's industrial capacity within the maritime sector, enhance logistical efficiency, and contribute to the revitalization of the country's long-standing maritime orientation, positioning the seas as both an economic asset and a strategic domain.

The expanded mandate of the Ministry is reflected in a budgetary allocation of INR 5,164.8 crore for FY 2026–27, representing an increase of nearly 48 per cent over the previous fiscal year. This enhanced allocation signals a clear policy commitment to strengthening maritime trade, transport infrastructure, and logistics systems in alignment with broader national development priorities. The Budget's long-term objective of increasing the modal share of inland waterways and coastal shipping double by 2047, together with the introduction of a Coastal Cargo Promotion Scheme, represents an ambitious yet potentially transformative agenda. If effectively implemented, these measures could contribute to the development of a more sustainable, cost-efficient, and resilient logistics framework in India.

Despite the centrality of maritime transport to India's external trade—accounting for approximately 95 per cent of trade by volume and nearly 70 per cent by value—the country remains heavily dependent on imported containers and exhibits limited domestic shipbuilding capacity. At present, India's share of global shipbuilding output remains below 1 per cent, highlighting a significant gap between current capabilities and the stated national ambition of emerging as one of the world's top five shipbuilding nations by 2047. Addressing this gap will require sustained investment, technological upgrading, and coordinated industrial policy.

In parallel, developmental initiatives at historically significant maritime sites such as Lothal and Dholavira offer opportunities to strengthen cultural identity and heritage-based exchange while supporting tourism, education, and public awareness. By linking India's ancient seafaring traditions with its

contemporary maritime ambitions, such initiatives contribute to a more holistic vision of maritime development that integrates economic, strategic, and cultural dimensions.

Conclusion

This study has critically examined the evolving contours of India's Blue Economy within a broader regional and global political-economic context, revealing both its transformative promise and the structural constraints that circumscribe its realisation. The analysis demonstrates that although oceans constitute a foundational pillar of economic growth, food security, energy transition, trade connectivity, and coastal livelihoods, prevailing patterns of ocean use in India continue to be characterized by sectoral fragmentation, extractive logics, and regulatory insufficiency. The growing dependence on marine resources has not been accompanied by commensurate advances in ecosystem stewardship, thereby exposing a fundamental contradiction between development aspirations and the declining resilience of marine and coastal systems.

In the Indian context, this expanded paradigm is reinforced by structural maritime advantages, including an extensive coastline, a large Exclusive Economic Zone, substantial fisheries and aquaculture output, expanding port and logistics infrastructure, and increasing engagement with offshore renewable energy and deep-sea exploration. Policy initiatives such as the Deep Ocean Mission, the Pradhan Mantri Matsya Sampada Yojana, port-led development strategies, and enhanced budgetary allocations to maritime sectors signal an explicit reorientation of national development priorities toward ocean-based growth.

Overall, the study concludes that India's Blue Economy cannot be sustainably advanced through isolated sectoral interventions or growth-centric policy frameworks alone. Rather, it requires a fundamental reorientation toward an integrated, science-based, and governance-driven approach that explicitly acknowledges ecological limits, addresses institutional fragmentation, and reconciles economic objectives with social equity and long-term environmental stewardship. Embedding sustainability, resilience, and inclusivity at the core of blue economy planning is therefore not merely an environmental or ethical imperative, but a strategic necessity for mitigating systemic risks, enhancing policy coherence, and ensuring the long-term viability of India's maritime development pathway within an increasingly uncertain regional and global ocean governance landscape.

Suggestions

- **Strengthen Integrated Ocean Governance**

India should move towards a comprehensive, whole-of-government ocean governance framework by enhancing coordination among ministries responsible for fisheries, shipping, energy, environment, tourism, and defence. The establishment of a centralized national maritime authority or strengthened inter-ministerial coordination mechanism would reduce policy fragmentation and improve regulatory coherence across blue economy sectors.

- **Institutionalize Marine Spatial Planning (MSP)**

The adoption of marine spatial planning at national and regional levels should be prioritized to balance competing uses such as fisheries, tourism, shipping, offshore energy, and conservation. MSP can serve as a critical tool for minimizing conflicts, safeguarding ecologically sensitive areas, and optimizing the allocation of marine space within ecological thresholds.

- **Promote Sustainable Fisheries and Coastal Livelihoods**

Sustainable fisheries management must be strengthened through science-based stock assessments, regulation of fishing effort, and effective control of illegal, unreported, and unregulated (IUU) fishing. Greater emphasis should be placed on community-based fisheries governance, alternative livelihoods, and value-chain development to enhance income security for coastal populations while reducing pressure on marine resources.

- **Advance Green and Resilient Maritime Infrastructure**

Investment in climate-resilient and low-carbon port and shipping infrastructure should be accelerated to enhance trade resilience amid growing geopolitical and climate-related disruptions. Policies promoting coastal shipping, inland waterways, and green shipping corridors can reduce emissions, lower logistics costs, and strengthen supply chain stability.

References

1. Adiga, Deepak D., Satish B. Shenoy, Pramod B. Salunkhe, and Suresh Sampath. 2025. "An Overview of the Hydrogen Value Chain in Energy Transitioning Economies: A Focus on India." *International Journal of Hydrogen Energy* 187 (November): 152099. <https://doi.org/10.1016/j.ijhydene.2025.152099>.
2. Agarwala, Nitin. 2022. "Powering India's Blue Economy through Ocean Energy." *Australian Journal of Maritime & Ocean Affairs* 14 (4): 270–96. <https://doi.org/10.1080/18366503.2021.1954494>.
3. Ananta, Arnoldus S., and Reniel B. Cabral. 2026. "Achieving Sustainable Fisheries and Livelihoods from Sasi Laut in a Blue Economy in Indonesia." *Marine Policy* 187 (May): 107032. <https://doi.org/10.1016/j.marpol.2026.107032>.
4. Appiott, Joseph, Amardeep Dhanju, and Biliانا Cicin-Sain. 2014. "Encouraging Renewable Energy in the Offshore Environment." *Ocean & Coastal Management* 90 (March): 58–64. <https://doi.org/10.1016/j.ocecoaman.2013.11.001>.
5. Asif, Dr Muhammad. 2022a. "Blue Economy and Power Politics in the Indian Ocean: Challenges and Opportunities." *Journal of Nautical Eye and Strategic Studies* 2 (2): 2–37.
6. Asif, Dr Muhammad. 2022b. "Blue Economy and Power Politics in the Indian Ocean: Challenges and Opportunities." *Journal of Nautical Eye and Strategic Studies* 2 (2): 2–37.
7. Bari, Abdullahel. 2017. "Our Oceans and the Blue Economy: Opportunities and Challenges." *Procedia Engineering* 194: 5–11. <https://doi.org/10.1016/j.proeng.2017.08.109>.
8. Carney Almroth, Bethanie, and Håkan Eggert. 2019. "Marine Plastic Pollution: Sources, Impacts, and Policy Issues." *Review of Environmental Economics and Policy* 13 (2): 317–26. <https://doi.org/10.1093/reep/rez012>.
9. Colgan, Charles S. 2013. "The Ocean Economy of the United States: Measurement, Distribution, & Trends." *Ocean & Coastal Management* 71 (January): 334–43. <https://doi.org/10.1016/j.ocecoaman.2012.08.018>.
10. Das, Nandan, Kalyan De, Amrita Sen, and Bibekananda Maiti. 2025. "Anthropogenic Litter Pollution in the Mangrove Blue Carbon Ecosystem: Unveiling the Spatial Distribution, Composition, Source Delineation and Mitigation Measures along the Goa Coast, India." *Journal of Hazardous Materials Advances* 18 (May): 100679. <https://doi.org/10.1016/j.hazadv.2025.100679>.
11. Doyle, Timothy. 2018. "Blue Economy and the Indian Ocean Rim." *Journal of the Indian Ocean Region* 14 (1): 1–6. <https://doi.org/10.1080/19480881.2018.1421450>.
12. "Goal 14 | Department of Economic and Social Affairs." n.d. Accessed January 31, 2026. <https://sdgs.un.org/goals/goal14>.
13. Hoareau, Kelly. 2025. "Knowledge, Power and the Blue Economy: Breaking down Barriers." *Marine Policy* 182 (December): 106883. <https://doi.org/10.1016/j.marpol.2025.106883>.
14. Lee, Ki-Hoon, Junsung Noh, and Jong Seong Khim. 2020. "The Blue Economy and the United Nations' Sustainable Development Goals: Challenges and Opportunities." *Environment International* 137 (April): 105528. <https://doi.org/10.1016/j.envint.2020.105528>.
15. Li, Huajun, Xinmeng Zeng, Torgeir Moan, and Kun Xu. 2025. "Technological Development and Challenges in Emerging Ocean Industries and Infrastructures." *Engineering* 55 (December): 14–20. <https://doi.org/10.1016/j.eng.2025.08.022>.
16. Llewellyn, Lyndon E., Susan English, and Sharon Barnwell. 2016. "A Roadmap to a Sustainable Indian Ocean Blue Economy." *Journal of the Indian Ocean Region* 12 (1): 52–66. <https://doi.org/10.1080/19480881.2016.1138713>.
17. "Oceans and Seas | Department of Economic and Social Affairs." n.d. Accessed January 31, 2026. <https://sdgs.un.org/topics/oceans-and-seas>.
18. Pauli, Gunter A. 2010. *The Blue Economy: 10 Years, 100 Innovations, 100 Million Jobs*. Paradigm Publications.

19. Ramnath, Kalyani. 2022. "Making Maritime Boundaries in the Bay of Bengal." *Law and History Review* 40 (3): 561–78. <https://doi.org/10.1017/S0738248022000396>.
20. Shah, Hardik, and R. Ramesh. 2022. "Development-Aligned Mangrove Conservation Strategy for Enhanced Blue Economy: A Successful Model from Gujarat, India." *Estuarine, Coastal and Shelf Science* 274 (September): 107929. <https://doi.org/10.1016/j.ecss.2022.107929>.
21. Singh, Rashmi. 2019. "India's Maritime Security and Policy: An Imperative for the Blue Economy." In *India in South Asia: Challenges and Management*, edited by Amit Ranjan. Springer. https://doi.org/10.1007/978-981-13-2020-0_17.
22. "Strategic Vectors of Coastal Tourism Development as a Blue Economy Component in the International Dimension - ProQuest." n.d. Accessed February 5, 2026. <https://www.proquest.com/openview/21db220da60d1104690b83f5d31c5758/1?pq-origsite=gscholar&cbl=466419>.
23. Trenggono, S. W., I. Meilano, H. Latief, et al. 2025. "Developing a Marine and Fisheries Blue Economy Index for Indonesia: A Comprehensive Assessment Framework." *Sustainable Futures* 10 (December): 101440. <https://doi.org/10.1016/j.sftr.2025.101440>.
24. Troehler, Janosch. 2018. "Can The Blue Economy Make The World More Sustainable?" *Medium*, September 27. <https://janoschtroehler.medium.com/can-the-blue-economy-make-the-world-more-sustainable-205f7435b9b6>.
25. UNDP. n.d. "Goal 14: Life Below Water | Sustainable Development Goals | United Nations Development Programme." Accessed February 2, 2026. <https://www.undp.org/sustainable-development-goals/below-water>.
26. United Nations Conference on Trade and Development. 2025a. *Chapter 2: World Shipping Fleet and Services*. https://unctad.org/system/files/official-document/rmt2025ch2_en.pdf.
27. United Nations Conference on Trade and Development. 2025b. *Chapter 4: Port Performance and Maritime Trade Facilitation*. https://unctad.org/system/files/official-document/rmt2025ch4_en.pdf.
28. United Nations Conference on Trade and Development. 2025c. *Chapter 5: Legal Issues and Regulatory Developments*. https://unctad.org/system/files/official-document/rmt2025ch5_en.pdf.
29. Upadhyay, Dinoj K., and Manoranjan Mishra. 2020a. "Blue Economy: Emerging Global Trends and India's Multilateral Cooperation." *Maritime Affairs: Journal of the National Maritime Foundation of India* 16 (1): 30–45. <https://doi.org/10.1080/09733159.2020.1785087>.
30. Upadhyay, Dinoj K., and Manoranjan Mishra. 2020b. "Blue Economy: Emerging Global Trends and India's Multilateral Cooperation." *Maritime Affairs: Journal of the National Maritime Foundation of India* 16 (1): 30–45. <https://doi.org/10.1080/09733159.2020.1785087>.
31. Vedachalam, N., M. Ravindran, and M. A. Atmanand. 2019. "Technology Developments for the Strategic Indian Blue Economy." *Marine Georesources & Geotechnology* 37 (7): 828–44. <https://doi.org/10.1080/1064119X.2018.1501625>.
32. World Economic Forum. 2019. "Why the Ocean Holds the Key to Sustainable Development." January 14. <https://www.weforum.org/stories/2019/01/the-oceans-hold-the-key-to-sustainable-development/>.

