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FORTUNE AT THE BOTTOM OF THE BAY

INVESTMENT PROSPECTS IN THE BAY OF BENGAL

Authors

Mushfiqur Rahman
Sajid Amit

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Acronyms and Abbreviations

1. EEZ - Exclusive Economic Zone
2. GDP - Gross Domestic Product
3. KII - Key Informant Interviews
4. GVA - Gross Value Added
5. ULAB - University of Liberal Arts Bangladesh
6. BBS - Bangladesh Bureau of Statistics
7. DoF - Department of Fisheries
8. UNCTAD - United Nations Conference on Trade and Development
9. IMO - International Maritime Organization
10. BAPEX - Bangladesh Petroleum Exploration and Production Company Limited
11. PPA - Power Purchase Agreement
12. R&D - Research and Development
13. AI - Artificial Intelligence
14. MENA - Middle East and North Africa
15. LNG - Liquefied Natural Gas
16. TCF - Trillion Cubic Feet
17. BPC - Bangladesh Parjatan Corporation
18. RAS - Recirculating Aquaculture System
19. HACCP - Hazard Analysis and Critical Control Points
20. MSC - Marine Stewardship Council
21. SIA - Social Impact Assessment
22. EIA - Environmental Impact Assessment
23. SDG - Sustainable Development Goals
24. IUU - Illegal, Unreported, and Unregulated
25. PPP - Public-Private Partnership
26. DWT - Deadweight Tonnage

Executive Summary

Bangladesh's economic foundations have traditionally rested on land-based industries, with the Ready-Made Garments (RMG) sector being the cornerstone of its economic performance. However, as global markets become increasingly competitive and subject to disruptions, there is a growing need for diversification. In this context, the Blue Economy presents an underexplored yet strategically critical opportunity.

Despite its vast maritime resources, Bangladesh's blue economy has not emerged as an attractive destination for investors. This chronic lack of investment has further constrained the sector's ability to reach its full potential. At present, the blue economy remains limited in scope, with exploration ironically confined to just three or four sectors—namely, shallow marine fishing, local tourism, and shipbuilding.

The sector faces numerous challenges: limited technological advancement in marine fisheries and aquaculture, slow progress in shipbuilding, an underdeveloped logistics infrastructure, and a tourism industry that is largely domestic. These issues have collectively dwarfed the potential of the blue economy of Bangladesh. Moreover, despite confirmed hydrocarbon reserves in the seabed, extraction has yet to begin. Emerging sectors such as renewable energy and marine biotechnology remain largely absent from Bangladesh's long-term strategic vision. The root causes of this stagnation lie in systemic investment gaps and policy constraints, which continue to hinder the sector's evolution and its integration into the broader economy.

This paper aims to address these challenges by uncovering the untapped potential of Bangladesh's Blue Economy. To better understand the investment readiness of various sectors, we divide the analysis into two blocks: traditional Blue Economy sectors, which have matured and offer stable returns, and emerging sectors, which present significant growth opportunities and high potential returns. In the process, we also examine the systemic gaps, policy hurdles, and investment requirements necessary to enable the growth factors. Key insights from our findings are summarized below:

Key Sectoral Opportunities

1. **Fisheries and Aquaculture:** As a cornerstone of Bangladesh's economy, the fisheries sector requires modernization. Investments in deep-sea fishing fleets equipped with advanced refrigeration and sonar technology can enhance catch quality and increase operational range. Establishing processing zones at key ports such as Chattogram and Mongla would bolster export competitiveness. Furthermore, comprehensive marine stock assessments are necessary to ensure sustainable resource management and inform evidence-based policymaking.
2. **Shipbuilding and Maritime Transport:** While Bangladesh's shipbuilding industry has demonstrated steady growth, substantial investment is required to scale up production capacity for larger, eco-efficient vessels. Enhancing shipyard capabilities to construct vessels up to 15,000 DWT, alongside workforce training and skill development, will be crucial. Infrastructure upgrades at major ports, including the deep-sea port at Matarbari, are essential to mitigating congestion and accommodating larger vessels. Additionally, integrating automation and digital cargo-handling solutions will enhance operational efficiency and competitiveness.

3. **Coastal and Marine Tourism:** Bangladesh's coastal regions, particularly Cox's Bazar and Saint Martin's Island, present significant opportunities for sustainable tourism development. Strategic investments in eco-friendly infrastructure and community-based tourism initiatives can generate employment and economic growth while preserving the integrity of local ecosystems. Proper zoning regulations and environmental safeguards will be crucial in ensuring long-term sustainability.
4. **Offshore Oil and Gas:** Bangladesh's deep-sea blocks contain untapped hydrocarbon reserves. Attracting investment in exploration and extraction, supported by policy incentives and technological advancements, can help meet the nation's growing energy demands while enhancing its appeal to foreign investors. A clear regulatory framework and improved fiscal incentives will be necessary to accelerate progress in this sector.
5. **Renewable Energy and Marine Biotechnology:** Emerging sectors such as offshore renewable energy (wind and solar) and marine biotechnology emerges as high-growth potential. Investments in research and commercialization of marine products, including seaweed, could position Bangladesh as a regional leader in bio-based industries.

1. Introduction

Bangladesh's economy has long been anchored in land-based industries, with the Ready-Made Garments (RMG) sector standing as its highest grossing sector. Currently, RMG is responsible for 13% of GDP, 85% of export earnings, and employing over four million workers, which is comparatively landmark if we look into other sectors contribution. However, as global markets grow increasingly competitive and supply chain disruption takes place, a timely pivot towards export diversification becomes imperative. In the face of such challenges, tapping into untapped sectors, particularly in the maritime domain, must become Bangladesh's next frontier.

Maritime sectors present a critical and underutilized opportunity in this context. Bangladesh controls 118,813 square kilometers of the Bay of Bengal, an area exceeding 1.5 times its landmass, yet its maritime economy remains limited to shallow-water fishing, domestic tourism, and small-scale shipbuilding. In contrast, the global Blue Economy is expanding rapidly, encompassing high-value industries such as deep-sea fishing, offshore energy, marine biotechnology, and ocean-based renewables. Valued at €1.5 trillion today and projected to reach €3 trillion by 2030 (OECD, 2016), this space has considerable potential that remains largely untapped by Bangladesh.

Despite its strategic location, Bangladesh's current maritime footprint captures only a fraction of this potential. To capitalize on its marine assets, the country must shift from traditional, low-yield activities to higher-value, innovation-driven sectors. This transition will require addressing key constraints: technological gaps, infrastructure limitations, and workforce skill shortages.

However, these challenges also come with opportunities. A targeted approach focused on sectors with high growth potential and relatively low barriers to entry could generate early momentum and attract further investment. In doing so, Bangladesh can lay the foundation for a diversified and resilient economic model.

This white paper highlights commercially viable opportunities within Bangladesh's maritime sector and offers a focused framework to develop them. It identifies sectors with near-term investment potential, maps current bottlenecks, and outlines actionable steps in infrastructure, policy, and workforce development. The aim of this paper is to build a competitive maritime economy that complements existing strengths, attracts private capital, and supports export diversification in a changing global landscape.

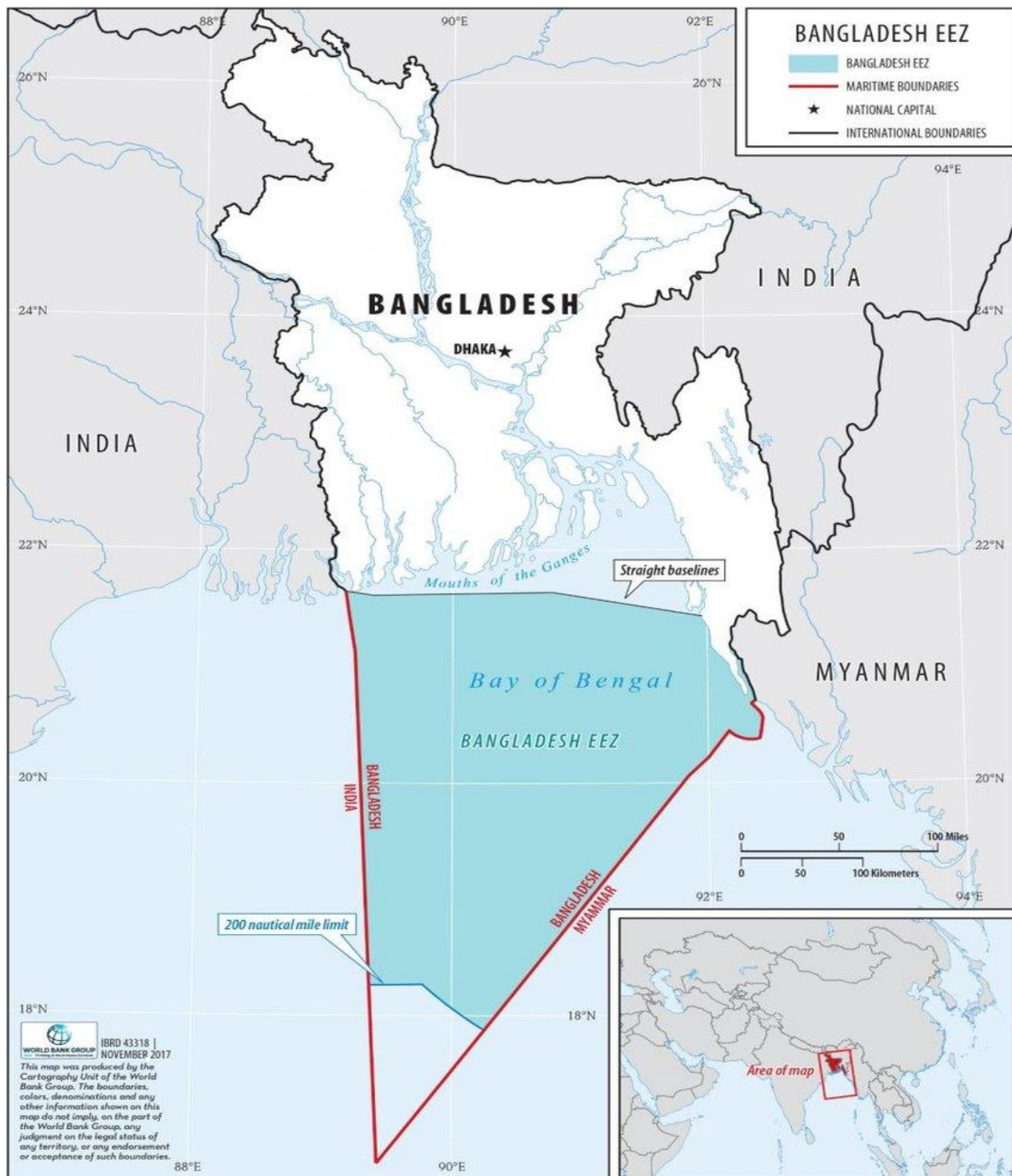


Figure 1: Bangladesh Blue Economy Exclusive Economic Zone (Toward Blue Economy, World Bank, 2023)

2. Investment Potential in Bangladesh’s Blue Economy: Traditional vs. Emerging Sectors

To better understand where Bangladesh should focus its maritime investments, it is useful to group Blue Economy sectors into two categories: traditional and emerging. This distinction, as charted below, is reflecting current maturity but also their future potential, which might provide more comprehensive outlook across sectors.

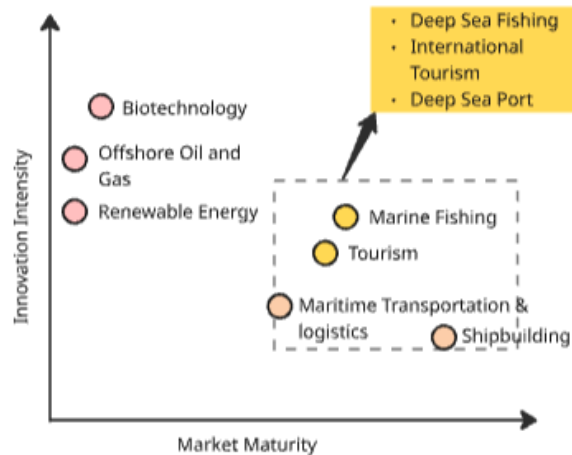


Figure 2: CES ULAB visual based on Blue Economy Sector Status and Innovation Landscape

Traditional sectors, such as marine fishing, shipbuilding, and tourism, are the current highest grossing sectors in revenue generating wise and albeit reached a maturity. These industries continue to generate consistent value, but their growth is slowing. Marine fishing, for example, is challenged by not tapping into the deep sea fishing and declining yields, and remains largely limited to shallow waters and informal practices. Shipbuilding holds potential, especially for regional markets, but lags in automation and sustainability standards. Coastal tourism, while showing signs of growth, is still oriented toward domestic travelers and lacks the infrastructure and branding to compete internationally.

These sectors, although matured, are approaching a ceiling under current models. If we are to unlock further value, it will require modernization, such as the end of technology, regulation, and market diversification. If revitalized, they can continue to play a stabilizing role in the broader maritime economy.

By contrast, a different opportunity set is emerging in sectors like marine biotechnology, offshore oil and gas, and renewable energy, which are yet to be explored. These industries are less developed but contain significantly higher upside. Marine biotechnology, for instance, could position Bangladesh as a regional supplier of marine-based products at the front of pharmaceuticals to sustainable aquafeed—provided there is sufficient investment in research and commercialization. The country’s offshore oil and gas reserves remain underexplored, but represent a potential path to energy security and strategic leverage. Meanwhile, renewable energy, particularly solar and offshore wind, displays a way to meet rising domestic energy demand while attracting green capital aligned with global sustainability goals. More detailed sectoral insights have been unpacked in the following sections.

3. Methodology

The development of this white paper follows a structured methodology that incorporates multiple data sources and research techniques to assess the current and potential state of Bangladesh's Blue Economy. The methodology is grounded in a review of foundational research and data, integrating both quantitative and qualitative approaches to offer a comprehensive understanding of the sector's economic output and investment potential.

3.1 Conceptual Framework

The concept of the Blue Economy is considered as a distinct segment of Bangladesh's broader economy. It is assessed through a combination of literature reviews, foundational reports, and country case studies, which inform the synthesis of Bangladesh's current ocean economy. Key sources include the OECD (2016) report, World Bank publications, UN DESA (2017), and academic studies by Voyer et al. (2017) and Patil et al. (2016).

3.2 Data Collection

Data was gathered from multiple reputable sources, including:

- **Primary Sources:** Stakeholder interviews, industry reports, and consultations with key experts (government officials, industry leaders).
- **Secondary Sources:** Official publications from the Bangladesh Bureau of Statistics, Ministry of Shipping, Department of Fisheries, and global research bodies like the OECD and World Bank.

3.3. Sectoral Breakdown and Synthesis

The ocean economy industries and services under review include fisheries, marine tourism, shipbuilding, offshore oil and gas, maritime transport, and coastal protection. Each sector is analyzed individually by following the process outlined above, ensuring that data is obtained from the most relevant and authoritative sources available.

3.4 Limitations and Assumptions

In order to maintain analytical rigor, the following limitations and assumptions are acknowledged:

- **Data Variability:** The availability and quality of data can vary across sectors, which may influence the completeness of the analysis.
- **Time Frame Constraints:** The data collected and analyzed is based on reports available before August 2017, meaning the study may not reflect the most current economic conditions or policy developments.
- **Sector-Specific Gaps:** Some industries, such as offshore energy, may face greater data challenges due to their underdevelopment in Bangladesh.

4. Current Context of Bangladesh’s Ocean Economy: Gross Value Added

Bangladesh’s ocean economy comprises a wide range of industries that can be grouped into seven sectors: marine fisheries and aquaculture, minerals, energy, transport and trade, tourism and recreation, carbon (Alam, 2014). Estimates of their contribution, often referred to as Gross Value Added (GVA) that rely on data from the Bangladesh Bureau of Statistics and various industry sources. While these estimates are broad approximations, they are generally useful to draw a baseline for setting and measuring progress toward Blue Economy goals.

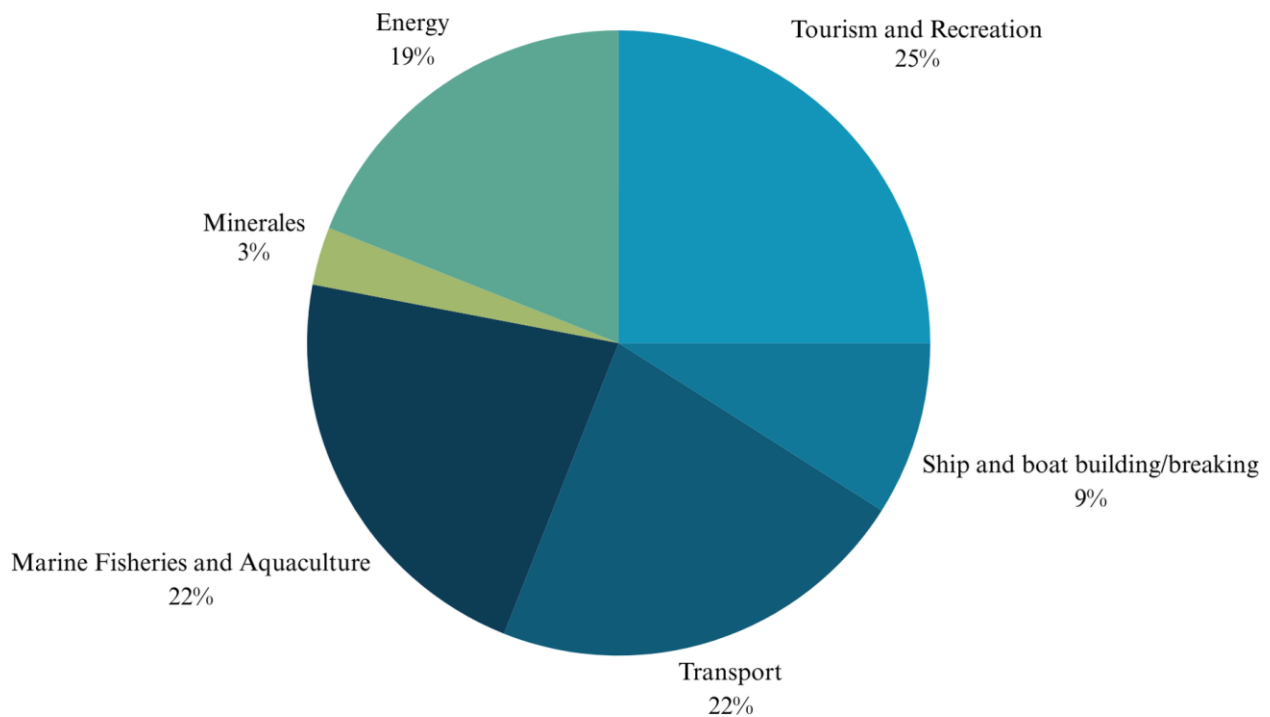


Figure 3: ULAB CES visual based on data from World Bank Report “Towards a Blue Economy: A Pathway for sustainable growth in Bangladesh- 2018”

Looking at the Gross Value Added (GVA) distribution across Bangladesh's ocean economy, we see a clear distinction between traditional and emerging sectors. Traditional sectors such as fishing, transport and trade, and tourism and recreation continue to play a dominant role in the economy, providing stability and consistent contributions. However, there is also significant potential in the emerging sectors, including aquaculture (falling under biotechnology), renewable energy, and offshore gas and oil, which present ample opportunities for further exploration and growth. These sectors, still in the early stages, shows new avenues for diversification and innovation within the Blue Economy.

5. Key Investment Opportunities in the Bay of Bengal

In the following sections, we will analyze the key investment opportunities within Bangladesh's ocean economy which will lead to an overview of the current landscape, challenges, and areas that are ripe for development. These opportunities usually span traditional sectors, such as fisheries and aquaculture, and emerging industries like offshore energy and marine tourism. This exploration aims to highlight how strategic investments and modern practices can unlock the vast potential of the Bay of Bengal as well as focus on returns on investments.

5.1 Fisheries and Aquaculture

The fisheries industry plays a crucial role in Bangladesh's social and economic development, particularly concerning foreign cash inflow, job creation, and ensuring nutritional and food security. The fishing sector in Bangladesh represented 1.50 percent of the national GDP, as reported by the Department of Fishing (DoF). The fishing industry of the nation directly and indirectly supports approximately 11 percent of the population, as noted in the Annual Report 2017 from the Department of Fisheries, Bangladesh.

5.1.1 Current Status of Bangladesh Marine Fisheries

Several surveys were conducted to assess the condition of marine fisheries resources during the 1970s and 1980s. Nonetheless, there is a lack of recent and thorough understanding regarding the fishing stocks, systematics, and the biological and ecological dimensions of the coastal and marine fisheries in Bangladesh. A total of 475 species of fish from 133 families have been identified in the coastal and marine waters of the Bay of Bengal.

If we look into methods of fish extraction practices, marine fisheries in Bangladesh are broadly divided into artisanal and industrial categories, with artisanal fisheries contributing approximately 95% of total marine fish production. However, these operations mainly occur in shallow coastal and estuarine waters, using traditional gear and small-scale mechanized or non-mechanized boats. Head of Fishing Operations at Sea Resource fishing, stated, "The sector has enormous potential if we can introduce deep-sea trawling vessels, which will require different sets of equipment, expertise, and investments. The industrial segment, which began in earnest in the early 1970s, has made notable progress in trawler-based fishing but remains underdeveloped relative to the extensive offshore and deep-sea resources available.

Parameters	Artisanal Fisheries	Industrial Fisheries
Contribution to Marine Production	~95%	~5%
Vessels and Gear	Primarily small boats (mechanized and non-mechanized); limited technology	Trawlers focusing on demersal resources, especially shrimp; limited capacity for deep-sea fishing
Geographical Scope	Coastal and estuarine waters, typically within 40–60 m depth contour	Nearshore and mid-depth waters, with minimal activity beyond 200 m depth
Primary Target Species	Coastal finfish, small pelagics, shrimp (artisanal gears)	Demersal finfish, penaeid shrimp, by-catch species
Key Constraints	Limited vessel size, inadequate training, rudimentary gear	High operational costs, insufficient technology for deeper waters

Table 1: ULAB CES table based on Key Informant Interviews (KII) with Sea Resource Fishing

Despite incremental fleet expansions, particularly in industrial trawling, large swaths of deeper waters (beyond 200 meters) remain unexplored or underutilized. Recent figures indicate that of 262 licensed industrial trawlers, only about 231 are operational, and these too are confined to a few zones (DoF, 2021). Pelagic species of higher market value (e.g., tuna, mackerel) occur in deeper waters, yet a paucity of specialized vessels and gear renders them largely inaccessible.

5.1.2 Gaps and Challenges Hindering Full Utilization

If we closely look at the holistic level challenges, this section outlines the core operational, informational, and regulatory barriers that continue to limit sectoral advancement and investment readiness.

Gaps and Challenges	Details
Limited Deep-Sea Capacity	<p>Vessel Inadequacy: Industrial trawlers are not equipped for open-ocean fishing; artisanal boats operate nearshore areas and lack the engine power or storage facilities for extended voyages.</p> <p>Technological Barriers: Advanced sonar, longlining equipment, and robust onboard refrigeration or ice-making capacities are scarce.</p>

Data Deficiency	<p>Outdated Stock Assessments: Most comprehensive surveys date back to the 1970s and 1980s, leaving policymakers and investors with insufficient information on species abundance, distribution, and ecological health.</p> <p>Research and Monitoring Gaps: Limited academic and governmental initiatives constrain the understanding of pelagic ecosystem dynamics and sustainability thresholds.</p>
Regulatory and Institutional Hurdles	<p>Complex Permitting Processes: Potential investors face uncertainty due to fragmented oversight and overlapping jurisdiction among different governmental bodies.</p> <p>Ineffective Enforcement: Monitoring, control, and surveillance (MCS) measures require strengthening to combat illegal, unreported, and unregulated (IUU) fishing.</p>

Table 2: ULAB CES visual based on industry expert assessments and stakeholder consultations

5.1.3 Potential Areas for Investment:

Notwithstanding these challenges, the fisheries sector in the Bay of Bengal presents considerable scope for responsible investment. The following areas could yield substantial returns in terms of revenue, food security, and sustainable resource management. Primarily, for investors looking to tap into Bangladesh’s vast ocean economy, modernizing the fishing fleet presents one of the most immediate and profitable opportunities. Despite its potential, the sector remains hampered by outdated equipment, with artisanal boats and small-scale trawlers dominating the industry. To unlock significant returns, investment in modern trawlers and offshore purse seiners is critical. These vessels, equipped with advanced refrigeration and fish-handling technologies, would enhance operational efficiency, increase catch quality, and minimize spoilage. Further, strategic investments in crew training programs for navigators and engineers will ensure safety, reduce downtime, and boost overall productivity. With a potential return of 3-5 times the current catch value, this investment not only promises financial gains but also presents an opportunity to help shape a more efficient, sustainable, and technologically advanced fisheries sector.

Investment Component	Est. Capital Requirement (USD)	Potential Outcome	Time Horizon
Acquisition of Modern Trawlers	1–2 million per vessel	3–5x increase in catch value	3–5 years
Upgrading Existing Vessels	200,000–500,000 per retrofit	Enhanced range and reduced spoilage	1–3 years

Crew Training & Safety Courses	~50,000 per cohort of 20–25 people	Higher efficiency, reduced operational downtime	1–2 years
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Table 3: Potential Returns on Investment in Modernized Fleets based on KII

Secondly, A well-structured scientific research and stock assessment program is essential for ensuring the long-term viability of Bangladesh’s fisheries sector. Despite the rich marine biodiversity of the Bay of Bengal, the sector remains largely under-researched, with stock assessments from the 1970s still informing policy. For investors, this is both a challenge and an opportunity. There is a clear need for joint ventures between government bodies, universities, and private firms to conduct offshore surveys and enhance resource management. By investing in sonar mapping, research vessels, and real-time data systems, investors can help build a data-driven approach to fisheries management that will not only ensure sustainability but also create a more predictable and stable environment for investment. This foundation of scientific research will unlock significant value in the long run, reducing overfishing risks and helping to optimize yields.

Finally, Despite the substantial fish catch, Bangladesh currently lacks the necessary infrastructure to fully capitalize on its marine resources. Investing in processing zones near key ports such as Chattogram and Mongla will enhance the efficiency of the supply chain and allow for value-added processing that meets international standards. Furthermore, the introduction of global certifications like HACCP and MSC will help tap into high-value export markets, positioning Bangladesh as a competitive player in the global seafood industry. Additionally, expanding fish auction markets and modern landing centers will ensure transparency and fair pricing, enhancing the sector’s overall competitiveness. These strategic investments will not only increase Bangladesh’s share in global seafood exports but also ensure that the benefits of modernization and sustainability are passed down through the value chain, creating a robust environment for growth and profitability.

5.2 Tourism

Bangladesh’s marine tourism sector is currently valued at an estimated **USD 2.5 billion** (2024), derived from comparative benchmarks and adjusted for local dynamics. Despite this sizeable baseline, the sector is mostly functioning well below its economic and ecological potential.

As of now, Tourism activity is concentrated in a handful of destinations such as Cox’s Bazar, Saint Martin’s Island, Kuakata, Maheshkhali, with ofcourse limited international penetration. The broader landscape suffers from planned infrastructure, poor last-mile connectivity, and an absence of high-yield offerings that meet global standards. Asset utilization remains low, and tourism planning has yet to account for carrying capacity or ecological sensitivity. Furthermore, Bangladesh has not capitalized on its tourism branding that limited its visibility on international stage.

However, a large coastline, low base saturation, and shifting global demand toward nature-based travel creates a narrow but compelling case for investment. Targeted capital in eco-resorts, transport, and conservation-linked experiences could significantly expand the market. Below is a snapshot of Bangladesh’s most coveted tourist destinations that showcases both opportunities and challenges for development.

Spots	Location	Main Attractions/Features	Tourist Activities	Ecological/Cultural Considerations
Cox's Bazar	Southeastern Coast	World's longest uninterrupted sandy beach	Beach recreation, water sports, sunset views	Rapid hospitality growth, requires balanced infrastructure
Saint Martin's	Off southeastern coast	Coral reefs, ecotourism hotspot	Snorkeling, scuba diving, eco-friendly stays	Ecological vulnerability; sustainable management crucial
Kuakata	Southwestern Coast	Sunrise & sunset views, pristine beaches	Paragliding, nature walks, cultural immersion	Potential for community-based tourism near fishing villages
Nijhum Dwip	Offshore (Noakhali)	Mangrove forests, spotted deer	Eco-tours, wildlife observation	High ecological sensitivity, minimal development so far
Maheshkhali	Off southeastern coast	Cultural landmarks, temple sites, dried fish trade	Cultural & ecological exploration	Requires systematic development & local community inclusion
Teknaf Peninsula	Southernmost mainland	Diverse landscapes, adventure tourism	Hiking, wildlife viewing, cultural immersion	Potential for sustainable expansion with controlled visitors

Table 4: ULAB CES visual based on KIIs and data from Bangladesh Parjatan Corporation (BPC), 2022, and ISLAM, 2024.

5.2.1 Recent Performance of Bangladesh's Tourism Sector

The influx of international tourists remains significantly below its potential albeit constrained by factors such as inadequate infrastructure, complex visa processes, and limited global marketing efforts. Below is an histogram of incoming foreign and domestic visitors in top tourist destinations:

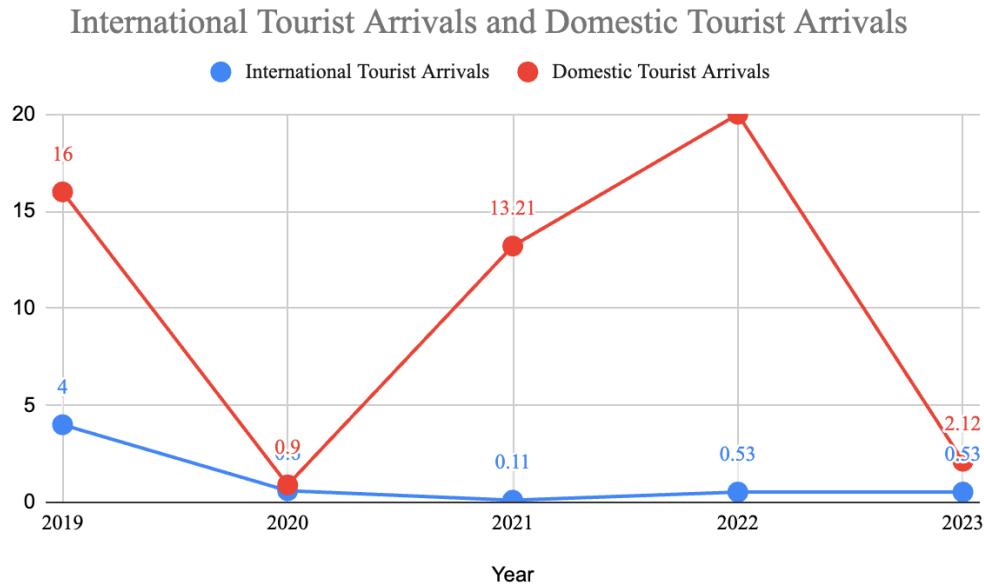


Figure 4: ULAB CES visual based on data from Bangladesh Bureau of Statistics (BBS), 2022, and World Bank Report, 2023.

5.2.2 Tiered Investment Focus for Marine & Coastal Tourism in Bangladesh

Tiered investment is critical for Bangladesh in developing its tourism sector, especially from an investment perspective as most of the places will likely take time and efforts to develop. To achieve this, focus must be placed on key tourist destinations, considering factors such as footfall, scope for expansion, and potential for overhauling existing infrastructure. If Bangladesh can attract a higher number of foreign visitors and concentrate market efforts on these pivotal areas, the tourism market could witness a 60% growth, escalating from the current USD 2.5 billion to approximately USD 4.5 billion over the next five years. The following tiered investment framework prioritizes key destinations based on their readiness to accommodate foreign visitors and outlines necessary infrastructure and tourism-related initiatives.

Destination	Priority Level	Infrastructure Focus	Tourism Focus	Key Eco-Social Considerations
Cox's Bazar	High Priority	<ul style="list-style-type: none"> - Airport expansion and modern road networks - Sustainable port and ferry terminals - Traffic flow management 	<ul style="list-style-type: none"> - Marine sports (scuba, surfing), beach leisure - Waterfront shopping, cultural festivals - Luxury resorts 	<ul style="list-style-type: none"> - Mitigate beach erosion - Minimize environmental impact amid large visitor influx - Support local entrepreneurship
Saint Martin's	High Priority	<ul style="list-style-type: none"> - Low-density eco-resort development - Strict waste-disposal infrastructure 	<ul style="list-style-type: none"> - Coral reef research tours - Eco-friendly accommodations 	<ul style="list-style-type: none"> - Coral reef and marine biodiversity preservation - Limited carrying capacity requires strict visitor regulations
Kuakata	Secondary / Emerging	<ul style="list-style-type: none"> - Moderate airport improvements - Safe, well-marked roads - Integrated signage for visitors 	<ul style="list-style-type: none"> - Sunrise & sunset beach activities - Cultural immersion with local fishers - Small-scale beach amenities 	<ul style="list-style-type: none"> - Balance between infrastructure expansion and local culture - Potential for homestays, community-run events

Nijhum Dwip	Secondary / Emerging	<ul style="list-style-type: none"> - Simple docking facilities for controlled visitor entry- Eco-friendly pathways in mangrove areas 	<ul style="list-style-type: none"> - Wildlife observation (spotted deer) - Low-density ecotourism - Small-group excursions 	<ul style="list-style-type: none"> - Preserve mangrove ecosystems - Limit tourist numbers to maintain tranquility and habitat balance
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Table 5: ULAB CES analyses based on data from Bangladesh Parjatan Corporation (BPC), 2022, and Ministry of Civil Aviation & Tourism, 2023.

5.3 Ship and Boat Building

Despite a long artisanal tradition dating back to the medieval era, Bangladesh's modern shipbuilding trajectory took off when Ananda Shipyards commenced exports in 2005, soon followed by Western Shipyard. By 2012, these two pioneers had together delivered over 20 vessels valued at more than USD 100 million, primarily multipurpose cargo ships (MPVs) and ferries (World Bank, 2013). In recent years, growing domestic demand for vessels in the 3,000 to 5,000 DWT range has propelled Bangladesh to the 14th position in global shipbuilding rankings (UNCTAD, 2021). Meanwhile, new entrants such as Meghna Group, Bashundhara Group, and Delta Shipyard are collectively building over 70 coastal vessels annually, which signals an uptick in the production capacity.

5.3.1 Growth Potential

The Bangladesh shipbuilding industry is projected to grow to USD 4.2 billion in 2024, with an annual growth rate closer to 8%. The sector is expected to reach USD 7 billion by 2030 (Source: UNCTAD, 2021; World Bank, 2022). This growth is driven by both domestic and international demand.

- **Global Market Expansion:** Short-sea shipping in Asia, Africa, and the Middle East is experiencing considerable growth, and Bangladesh's is growing constant experience in building

coastal cargo ships and ferries albeit signals hope. This expanding international demand sets the stage for investments flowing in that not only elevate production capacity but also enhance technological innovation, offering significant upside for investors in the global maritime arena.

- **Domestic Upsurge:** Strategic infrastructure improvements along critical corridors, such as the Chattogram-Dhaka route and coastal LPG channels, are fueling a surge in domestic cargo flows, thereby increasing the need for modern, higher-capacity ships. This infrastructural boom is supported by policy measures under the Shipbuilding Industry Development Policy 2020, which comes with tax incentives, streamlined licensing, and dedicated industrial zones. Together, these initiatives emerge as a friendly environment for stable domestic growth.
- **Comparative Advantages:** Bangladesh leverages competitive labor costs and duty-free access to essential raw materials to maintain a strong cost advantage in shipbuilding. An increasingly skilled workforce, bolstered by ongoing vocational training initiatives, supports higher productivity and price competitiveness even amidst rising wages. Streamlined import processes for critical inputs such as steel plates and marine equipment further control production costs, ensuring that local shipyards remain agile and capable of scaling operations. These combined advantages concretizes Bangladesh’s position in a rapidly evolving global market, presenting a compelling case for strategic, investor-focused growth.

Investment Domain	Rationale for Growth	Potential Returns	Constraints and Mitigations
Yard Expansion & Automation	<ul style="list-style-type: none"> - Higher tonnage capacity (up to 15,000 DWT or beyond) - Robotic welding, CAD/CAM for faster workflows 	<ul style="list-style-type: none"> - Broader export markets (tankers, dredgers to MENA and EU region) - Improved production speed (~30% reduction in lead times) 	<ul style="list-style-type: none"> - High capital outlay; requires stable power grid - Potential land scarcity for large-scale shipyards
Skilled Workforce Training	<ul style="list-style-type: none"> - Enhanced design, safety, and project management skills - Minimizes reliance on foreign consultants 	<ul style="list-style-type: none"> - Quality assurance for complex orders - Access to premium markets demanding high technical standards 	<ul style="list-style-type: none"> - Gap in advanced maritime curricula - Collaborations with foreign yards or institutes for knowledge transfer

<p>Local Component Manufacturing</p>	<ul style="list-style-type: none"> - Backward linkages (engines, electronics, hull fittings) - Reduced import dependency 	<ul style="list-style-type: none"> - Lower unit costs, improved value addition - Potential spin-offs into broader engineering industries 	<ul style="list-style-type: none"> - Fragmented local supplier base - Requires technology licensing or joint ventures with foreign manufacturers
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Table 6: ULAB CES visual based on data from UNCTAD (2021), IMO regulations, Shipbuilding Industry Development Policy 2020 and KII with WMShipyard

5.4 Offshore Oil and Gas

The Bay of Bengal is part of the larger Bengal Fan, one of the world’s largest sedimentary basins, which holds significant hydrocarbon potential. Current gas reserves are estimated to be 17 to 103 trillion cubic feet (TCF) of ice-like hydrate deposits containing huge amounts of methane. Data derived from 2D and 3D seismic surveys suggest that deep-sea blocks such as DS-12, DS-16, and DS-21 contain potential gas-bearing formations. While neighboring India and Myanmar have made substantial hydrocarbon discoveries in adjacent basins, Bangladesh is still taking its first steps, with only three shallow-water gas fields identified to date. As MOFA official has observed, “The Bay of Bengal holds immense untapped hydrocarbon potential. Despite the substantial discoveries made by neighboring countries, Bangladesh’s deep-sea blocks remain underexplored.”

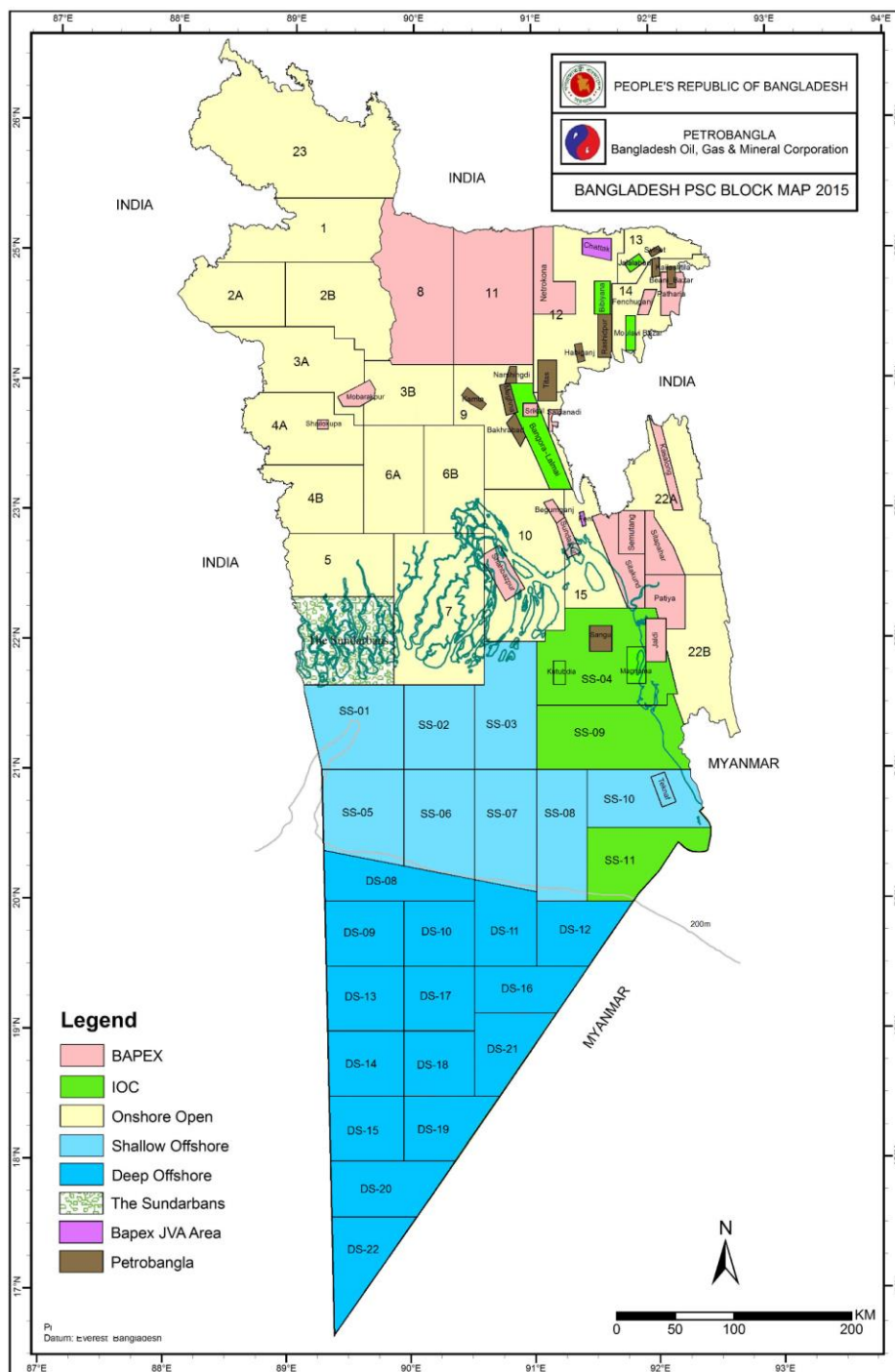


Figure 7: Bangladesh Hydrocarbon Reserve blocks derived from BAPEX (2023)

5.4.1 Investment Prospects

Underexplored Blocks with High Reserve Potential: Bangladesh has 26 offshore blocks, 15 deepwater and 11 shallow, yet less than a third have seen any exploration activity. Deep-sea blocks DS-12, DS-16, and DS-21 are of particular interest, flagged in recent 2D seismic surveys (conducted by BAPEX and TGS-Schlumberger) as gas-rich zones with multi-TCF potential. These blocks remain unawarded however. The current upstream licensing round is expected to open in late 2025, providing a near-term entry point for strategic players looking to secure frontier acreage ahead of competition.

Demand-Supply Gap Creates Urgency: Natural gas accounts for ~65% of Bangladesh's energy mix. Domestic production (~2,200 mmcf/d) falls short of demand (~3,800 mmcf/d) forcing costly LNG imports at \$14–\$18/MMBtu. Domestic gas costs under \$3/MMBtu. With industrial growth pegged at 7%+ annually. This price delta however has macro-level implications: LNG imports strain foreign exchange reserves and widen the current account deficit. For upstream investors, this translates into clear offtake demand, political alignment, and reduced market risk. Industrial users such as textiles, fertilisers, ceramics, and steel, are actively lobbying for increased domestic gas availability,

Clear Maritime Boundaries Reduce Risk: Post-delimitation rulings by ITLOS (2012, Myanmar) and PCA (2014, India) awarded Bangladesh 118,813 sq. km of uncontested EEZ and continental shelf. Legal clarity de-risks upstream investment which eliminates boundary disputes common in similar frontier markets around the world.

5.5 Renewable Energy

Bangladesh's current energy consumption from renewable sources, including off-grid sources, is a mere 3.5%. This is in contrast to other global economies. In 2021, renewables were estimated to generate 22.4% of all electricity in Japan, and in numerous European countries, the annual proportion of electricity generated from renewables exceeded 40%. In Bangladesh, the concept of renewable energy is frequently critiqued as a luxury due to the scarcity of land. In fact, Bangladesh's draft national solar energy action plan specifies that approximately 41GW of solar power will be installed by 2041.

The capacity to harvest renewable energy from the Bay of Bengal is essential for the country to realise its goal of renewable energy that contributes 40% to the national grid. In 2020, the majority of renewable energy production from the ocean was accounted for by a variety of technologies, including bottom-fixed offshore wind. The International Energy Agency predicts that offshore wind has the potential to generate 18 times the world's current electricity demand. Additionally, advancements are being made in the development of technologies that extract energy from tides and waves.

Nevertheless, numerous ocean-focused technologies are still in their infancy. In order to transition to ocean-based renewable energy for power generation, a nation must first identify its resources, determine its energy strategy, borrow existing technology, and subsequently locate investors to integrate the renewable energy into the power system, according to Tomonari Akamatsu, the director of the Division of Ocean Policy Research in the Ocean Policy Research Institute (OPRI) at the Sasakawa Peace Foundation.

5.6 Biotechnology

Blue biotechnology, though still in its nascent stage, known as marine biotechnology, is considered one of the most promising sectors in Bangladesh due to its broad applications in pharmaceuticals, food, enzymes, cosmetics, and biofuels, particularly through aquaculture. Biotechnology is a vast field, encompassing more than 19 subsectors. In the context of Bangladesh, focusing on seaweed is a strategic approach, as it offers a strong investment case and its utilization spans several of these sectors.

Seaweeds are unique in their nutritional and functional value, being rich in proteins, minerals, fibers, vitamins, and bioactive compounds. Various bioactive substances such as antibiotics, antifouling agents, anti-inflammatory, anticancer, antibacterial, and antimetabolic compounds have been isolated from different types of seaweed. These compounds have significant applications in diverse industries, including pharmaceuticals, agriculture, and cosmetics.

Looking at the global export market, seaweed plays a prominent role in Japan, where it is served in approximately 21% of meals. Research shows that between 20-38% of the Japanese population aged 40-79 consume seaweed more than five times per week, while 29-35% eat it three to four times weekly, and 25-35% consume it one to two times weekly. Seaweed consumption is widespread, with only a small percentage consuming it rarely or occasionally. Furthermore, China is rapidly catching up to Japan in terms of seaweed cultivation and export, with its seaweed production valued at around 8 billion USD..



Figure 8: Some identified seaweeds from St. Martin Island and Coks bazar (Courtesy Source Shafiuddin et.al 2019)

In the coastal area of Bangladesh 193 seaweed varieties have been identified. Out of 193 varieties, 14 varieties turned out to be commercially important. Although seaweeds have been consumed and considered as a source of earning foreign currency in many Asian countries, the scenario of seaweeds exploitation and utilization is quite opposite in Bangladesh. Other than some tribal people the utilization of seaweeds are almost nil in rest of the country. [Majumder, 2010, Sarkar, 2016]. Recently the government and some private organizations have taken some initiatives to utilize seaweeds [DoF, 2014, COAST Trust, 2013].

5.6.1 Investment Prospects

Early-Stage Ecosystem Shaping through R&D: The marine biotechnology sector in Bangladesh, particularly seaweed-based innovation, is still in its nascent stage that stemmed by a near absence of established research centers, seed banks, or industrial-scale processing facilities. This early-stage condition is not a limitation; it is precisely what makes the sector a compelling investment target. In nascent markets, the first movers have the opportunity to shape the entire value chain—from upstream cultivation techniques and strain development to downstream applications like bioactive compound extraction and product formulation. Investment in research and development is critical at this stage. Globally, seaweed-based solutions are pushing the frontiers in pharmaceuticals, cosmeceuticals, and functional foods, driven by innovations in biochemistry and extraction technologies. Bangladesh must not import these advancements wholesale—it must develop context-specific knowledge on indigenous seaweed strains, their optimal growing conditions, and compound yields. Only then can it begin to capture high-value segments rather than remaining a raw material supplier in a low-margin export model.

Strategic Export Positioning of Bangladesh: Bangladesh’s coastline and extended maritime zone provide a natural comparative advantage in seaweed cultivation. But what amplifies this potential into a competitive edge is its geographic proximity to some of the world’s most seaweed-intensive markets—Japan, China, South Korea, and Southeast Asia. These countries are not only heavy consumers of seaweed in traditional food systems; they are also investing in seaweed-based solutions for bio-packaging, animal feed, and biomedicine. Yet, while Bangladesh possesses a rich bank of native seaweed varieties—193 identified to date—it currently plays no role in this booming regional trade. The absence of export-grade processing, cold-chain logistics, and certification infrastructure has kept it out of key global supply chains. Investment, therefore, must not only aim to cultivate seaweed but also build the value-added ecosystem needed to position Bangladesh as a regional supplier.

6. Global Scenario of Blue Economy

As Bangladesh is aiming to unlock its full Blue Economy potential, it should look to countries that have already made considerable progresses. Vietnam, the Philippines, and the Maldives are fine examples of countries that successfully use their maritime resources. By looking closely at their experiences, Bangladesh can learn from their policies, strategies, and how they faced challenges. This can help Bangladesh set up its own strategies and figure out how to make the most out of its Blue Economy.

6.1 Vietnam: Using Fisheries and Maritime Trade Through Policy and Infrastructure

Vietnam has become a key player in Southeast Asia's maritime industries, especially fisheries, shipbuilding, and trade. The country's success in the maritime field didn't just happen. It's because Vietnam made some clever moves in combining sustainable practices with the right kind of investment in infrastructure. This balance has allowed them to expand their role in global maritime trade.

Key Features of Vietnam's Approach:

- **Fisheries and Aquaculture:** Vietnam is one of the world's largest seafood exporters, and the fisheries sector contributes about 4.5% to their GDP (World Bank, 2023). The country worked on modernizing its shrimp farming through advanced tech and better management practices, ensuring compliance with global food safety standards. This modernization has helped the country stay competitive in the global seafood market.
- **Marine Tourism:** With its coastal tourism infrastructure, Vietnam has made itself a major player in Southeast Asia's tourism industry. Tourist destinations like Phu Quoc Islands, Nha Trang, and Ha Long Bay draw millions of visitors every year, generating around \$30 billion in tourism revenue, which accounts for nearly 6.8% of Vietnam's GDP.
- **Maritime Infrastructure:** The strategic development of Vietnam's ports has allowed it to integrate better into global trade. For example, the Cai Mep-Thi Vai deep-sea port has been critical in linking Vietnam to China and Southeast Asia, allowing them to handle more and bigger ships.

Lessons for Bangladesh:

- Bangladesh can really learn from how Vietnam invested in both sustainable fisheries and port infrastructure. For Bangladesh, upgrading ports like Chattogram and Mongla, and even working on deep-sea ports like Matarbari, could be a game-changer. This would make the country more competitive in global shipping.
- Vietnam's shrimp farming is another great example for Bangladesh. If Bangladesh invests in modern fishery tech like recirculating aquaculture systems (RAS) and closed-containment systems, it could boost production and reduce environmental impact. This could make Bangladesh more competitive in global seafood exports, too.

6.2 The Philippines: Sustainable Fisheries Management and Marine Protected Areas (MPAs)

The Philippines, with its archipelagic geography and rich marine life, has made big strides in integrating sustainability into its fisheries and tourism sectors. What stands out about the Philippines is how they focus on community-driven resource management while also growing their Blue Economy in a responsible way.

Key Features of the Philippines' Approach:

- **Fisheries:** Fisheries contribute around 3.7% to the Philippines' GDP, providing livelihoods for over 2 million people. The Philippines took a sustainable approach by setting up over 1,000 Marine Protected Areas (MPAs), covering around 28% of its territorial waters. These MPAs help replenish fish stocks and protect marine ecosystems from overfishing.
- **Marine Tourism:** The Philippines has become one of the top destinations for eco-tourism. Places like Tubbataha Reefs Natural Park and Coron in Palawan attract tourists from all over the world. The tourism sector in the Philippines brought in nearly \$6 billion in 2022, and it continues to grow by around 7.5% annually.
- **Maritime Infrastructure:** The Philippines has also invested in improving its maritime infrastructure. The Port of Manila, for example, handled over 3 million TEUs in 2022, contributing to the country's maritime trade.

Lessons for Bangladesh:

- Bangladesh could really benefit from following the Philippines' lead in creating MPAs. Setting up MPAs around sensitive coastal regions, like Saint Martin's Island and Cox's Bazar, would help preserve marine biodiversity while also promoting sustainable fisheries and tourism practices.
- The Philippines' success in eco-tourism should also be a lesson for Bangladesh. Bangladesh has the potential to develop its coastal areas into eco-tourism hubs, especially in places like Cox's Bazar and Sonadia Island. If investments are made in eco-friendly resorts and low-impact travel experiences, Bangladesh can attract more international tourists while ensuring the environmental sustainability of these areas.

6.3 The Maldives: Using Blue Economy for Economic Stability

The Maldives, though a small island nation with limited land, has found a way to use its maritime assets to support its Economy. By far just only focusing on sustainable fisheries and tourism, the Maldives has been able to build a Blue Economy that drives its national development.

Key Features of the Maldives' Approach:

- **Fisheries:** The fisheries sector is critical in the Maldives, contributing 6.8% to GDP and providing jobs to 30% of the workforce. Through sustainable fishing practices, especially in tuna fisheries, the Maldives has become a top exporter of sashimi-grade tuna, meeting global demand while maintaining sustainability.
- **Marine Tourism:** Tourism in the Maldives is a backbone of its economy that roughly contributes 60% of GDP. Known for its luxury resorts built over coral reefs, the Maldives attracts high-end tourists, generating \$2.6 billion in 2022. The tourism sector is expected to grow at a rate of 5% annually over the next decade.

- **Marine Renewable Energy:** The Maldives is investing in ocean-based renewable energy, including wave and tidal energy, to reduce reliance on fossil fuels and ensure energy security.

Lessons for Bangladesh:

- The Maldives' focus on sustainable tuna fisheries can be a valuable lesson for Bangladesh. By adopting similar practices, Bangladesh can ensure that its fisheries remain competitive while also protecting marine life for future generations.
- Tourism in the Maldives offers another example that Bangladesh can emulate. Bangladesh has similar potential with its coastal regions, such as Saint Martin's Island. If Bangladesh invests in luxury eco-resorts and promotes marine-based activities, it could establish itself as a premium destination for tourists. With the right infrastructure and marketing, Bangladesh could tap into a growing luxury eco-tourism market.
- Finally, the Maldives' push for renewable energy shows the potential of marine-based energy solutions. Bangladesh could look into offshore wind and tidal energy to diversify its energy sources and reduce dependence on fossil fuels. This would not only help meet growing energy demands but also position Bangladesh as a leader in clean energy in the region.

7. Conclusion and Recommendation

There is no doubt that the next growth chapter of Bangladesh lies in transcending from RMG and remittance to the Blue Economy. Despite efforts to promote the sector by exploring new maritime boundaries, disjointed initiatives and the lack of a singular, independent central body responsible for Blue Economy growth have prevented it from receiving the priority it deserves. It is about time we think about this sector with the priority it warrants. While recommendations have been made within individual sectoral perspectives, to chart a broad vision and consider the Blue Economy as a whole, we propose three core suggestions that cut across sectors and keeps Blue Economy in its growth track. To this end, the following recommendations are proposed in alignment with global best practices, sustainable resource management, and long-term economic resilience.

7.1 Unified Governance and Regulatory Framework for Sustainable Blue Economy Development

For Bangladesh's Blue Economy to realize its potential, a comprehensive and unified governance framework is time-sensitive. The current fragmented regulatory approach across various maritime sectors including fisheries, energy, tourism, and shipping has led to fragmented coordination, and missed opportunities for integrated growth. A Maritime Authority, placed under the apex office, should be established as the central governing body to streamline regulatory oversight across all maritime sectors. This Authority would oversee policy implementation, compliance monitoring, and enforcement, ensuring that each sector operates within a cohesive regulatory environment that balances economic growth with environmental sustainability.

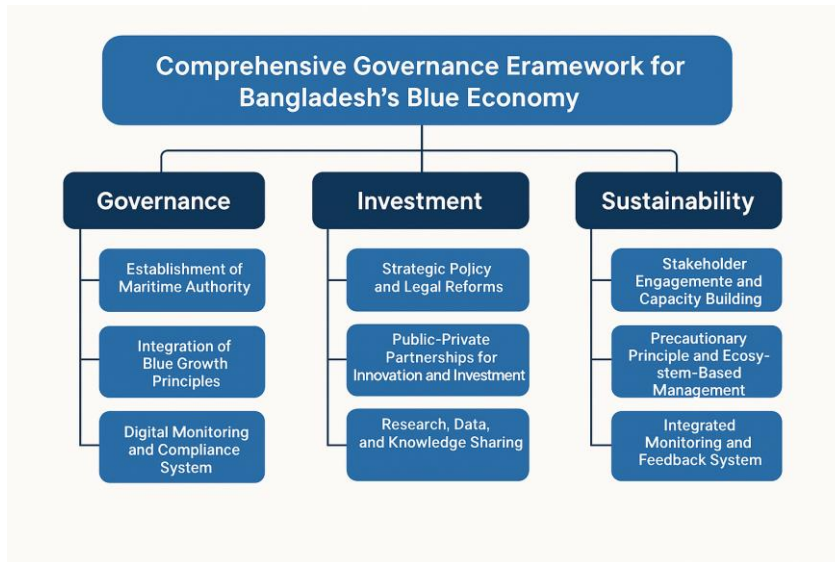


Figure 9: CES, ULAB proposed framework for Blue Economy Governance

An essential component of this governance structure is the integration of blue growth principles into national development planning. Policies should go beyond industry-specific regulations and encompass cross-sectoral coordination, with clear delineation of responsibilities and resources allocated for each

sector. For example, the government must harmonize regulations for offshore oil and gas exploration with sustainability standards for fisheries that ensures marine ecosystems are not compromised for short-term economic gains. The governance framework should incorporate the precautionary principle, perhaps a guideline that prioritizes environmental protection in the face of uncertainty. Moreover, the government should encourage public-private partnerships (PPPs) to enhance transparency, accelerate decision-making, and promote innovation.

Moving forward, the framework should also include a Digital Monitoring and Compliance System, where regulatory bodies employ advanced data analytics, satellite monitoring, and automated reporting systems to track maritime activities in real-time. This will enhance the government's capacity to enforce policies effectively and reduce the risk of illegal, unreported, and unregulated (IUU) activities, especially in sectors like deep-sea fishing and offshore oil drilling.

7.2 Policy Reforms for Long-term Sustainable Investment in the Blue Economy

A policy shift toward long-term sustainable investment is crucial for attracting both domestic and foreign investments. The government must introduce tax incentives, subsidies, and grants for projects that support sustainable practices in the Blue Economy, such as the development of offshore renewable energy, eco-tourism initiatives, and green technologies in shipping. The Blue Economy Investment Policy should prioritize resource-based incentives e.g., lower tax rates for companies that invest in environmentally friendly technologies or utilize renewable energy sources. Additionally, creating a Green Investment Fund, supported by both the government and international financial institutions, can serve as a direct funding channel for companies developing sustainable marine projects.

The government must also establish clear guidelines for environmental impact assessments (EIA) and social impact assessments (SIA) before granting licenses for projects. These assessments should evaluate potential risks to the environment and local communities and ensure that projects align with broader national objectives, such as climate resilience and social equity. For instance, large-scale fishing or tourism projects should consider the displacement effects on local communities and ecosystems. In the case of offshore oil and gas exploration, the policy must ensure that there are stringent requirements for managing oil spill risks, subsurface contamination, and the protection of marine biodiversity.

Additionally, adopting the polluter-pays principle in the Blue Economy's legal framework will create financial accountability. Companies engaging in high-impact industries, such as shipbreaking and offshore extraction, should be required to contribute to a fund dedicated to environmental restoration, biodiversity conservation, and climate adaptation. The government must ensure that regulations also promote circular economy principles that promote waste reduction, recycling, and the sustainable use of marine resources.

Lastly, to build confidence and attract investors, the government must commit to policy stability. Investment in sectors like deep-sea fisheries, offshore energy, and coastal tourism is capital-intensive and long-term. Therefore, investors need to have confidence that the regulatory landscape will remain stable and predictable over time, with clear guidelines on fiscal terms, environmental standards, and performance metrics.

7.3 Targeted Investor Strategies and Green Innovation Incentives

For investors, Bangladesh's Blue Economy is an emerging market, but it requires a strategic approach to investment in high-growth sectors. Investors should focus on sectors that are both commercially viable and environmentally responsible, such as offshore wind energy, sustainable fisheries, eco-tourism, and green shipbuilding.

Investors must embrace an innovation-driven approach to the Blue Economy, integrating cutting-edge technologies that improve operational efficiency, reduce environmental footprints, and create value-added products. For example, deep-sea trawler modernization should be a key area of investment, with technologies such as sonar mapping, advanced refrigeration systems, and AI-driven resource management improving catch value and sustainability. Similarly, the development of sustainable tourism on Bangladesh's pristine coastal areas, like Saint Martin's Island, should be encouraged through investments in eco-resorts, sustainable infrastructure, and community-based tourism initiatives that actively involve local populations in decision-making and revenue generation.

The government can host this investor behavior through financial de-risking mechanisms, such as guaranteed off-take agreements for sustainable fish products or long-term power purchase agreements (PPAs) for renewable energy projects. These mechanisms will mitigate the perceived risk for investors in new and emerging sectors, encouraging greater financial commitment.

Another key area of focus should be the development of green shipbuilding technologies and the greening of the shipping industry. Investors, both local and global, in the maritime industry must be incentivized to adopt sustainable ship design, robotic welding, energy-efficient systems, and non-toxic paints that reduce the sector's environmental footprint. To encourage innovation in this space, the government should introduce green shipbuilding certifications and provide grants for the adoption of clean technologies in ship construction and maintenance.

Finally, a well-structured blue finance mechanism should be put in place to support these initiatives. The creation of a Blue Economy Fund, which often comes with low-interest loans and risk mitigation guarantees to investors and companies adopting sustainable practices, would provide the necessary capital to mobilize green innovation across Bangladesh's maritime sectors. This approach would encourage responsible business conduct while driving significant long-term returns, both economically and environmentally.

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