

# Conflict Resolution and Long-term Planning: A Case Study of Bangladesh's Marine Areas

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## Abstract

Bangladesh has a significant maritime area (118,813 km<sup>2</sup>), about equal to its land area. As a result, this vast marine area has prompted Bangladesh to exploit its maritime resources in a sustainable manner, which has been dubbed the “Blue Economy.” Bangladesh's maritime region is used for a number of activities, including fishing, shipbuilding, shipping, oil and gas exploration, tourism, energy, and military exercises. User-user conflict and user-environment conflict are the two main kinds of conflict in Bangladesh's marine areas. This study is based on a survey of several published research papers, articles, and reports, among other things, and is used to identify roughly various aspects of the marine region. This study reveals that Bangladesh's maritime region offers huge strength and opportunity. However, the strength is not exploited, and the opportunity is not utilized. The paper identifies potential challenges, opportunities, and offers some strategic ways for implementing a long-term management plan in Bangladesh's marine sector. This study discusses potential challenges and opportunities in identifying major conflicts among maritime activities, as well as the role of compatibility matrix analysis in resolving those conflicts. Based on the authors' fieldwork, ground observation, book studies, and other research, they selected and conducted a compatibility matrix analysis of the existing operations in Bangladesh's marine areas. The compatibility of each use was also taken into account with conflicts between marine operations and biodiversity conservation emerging as the main concerns. A maritime court should be established to ensure the peace and protection of the maritime border; modern technology can be used for exploration, exploitation, conservation, and management of maritime resources; and all stakeholders, whether individuals or groups, should work together to achieve a balanced ecosystem. The purpose of the study is to apply compatibility matrix analysis to resolve maritime region conflicts, which will be useful in determining strategic maritime spatial planning implementation strategies.

**Keywords:** Bangladesh's maritime regions, opportunities and challenges, compatibility matrix analysis, conflict resolution

## INTRODUCTION

Bangladesh acquired 118,813 km<sup>2</sup> of water area in the Bay of Bengal in 2012 and 2014, roughly equivalent to its land territory, following the resolution of maritime border disputes with neighboring countries Myanmar and India. Bangladesh, as a maritime country, is attempting to utilize its coastal and marine resources in a planned manner to attain blue economy goals that would assist the United Nations meet its sustainable development goals. Bangladesh's coast is part of the vast Bay of Bengal marine environment, which is rich in biodiversity. Artisanal and commercial fishing, shipping, oil and gas exploration, undersea cable, shipbreaking, and tourism are all part of blue economic growth [1]. The ocean and coastal areas make up the maritime zone [2], and it is estimated

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that oceans surround over 70% of the world's land area, with sea routes accounting for 90% of global trade [3, 4] Bangladesh now has a potential supply of natural resources because of the revised maritime limits [5, 6]. Furthermore, various new ocean industries have been found in the maritime zone [7, 8] and it is estimated that the resources recovered from the Bay of Bengal account for 81% of the resources accessible in the region's land area [9].

One of the primary blue economy potentials for Bangladesh is marine life resources, specifically fisheries. The Ministry of Fisheries and Livestock is Bangladesh's highest-ranking government agency in charge of managing the country's fisheries resources. Fisheries and livestock are the ministry's two divisions. The Fisheries Division is in charge of functions concerning fisheries resources in general and maritime fisheries in particular. The Division is responsible for the development of schemes, the coordination of national policy, the utilization of fish and fish wastes, the development of fisheries resources and fishing, the management of fisheries resources, fish conservation, and the control, management, and development of [10]. The Ministry has five agencies involved in the management of marine fisheries resources, either directly or indirectly. Here are the organizations: Department of Fisheries, Marine Fisheries Academy, Bangladesh Fisheries Research Institute, Bangladesh Fisheries Development Corporation, Fisheries and Livestock Information Office. The Ministry of Shipping is Bangladesh's main organization for shipping policy and management. The Ministry is in charge of developing policies and strategies to ensure that various initiatives related to standard shipping operations are implemented quickly [11]. The Ministry of Shipping's marine shipping objectives include modernization of sea ports; the development of an efficient maritime workforce; secure and inexpensive freight transit; and international trade facilitation [12]. There are seven subordinate departments and organizations that deal specifically with marine shipping and operations. Department of Shipping, Bangladesh Shipping Corporation, Marine Academy, National Maritime Institution, Chittagong Port Authority, Mongla Port Authority, and Payra Port Authority are among the departments and agencies involved. Bangladesh's non-living resources, such as oil, gas, minerals, and renewable energy, are critical to the blue economy industries. To deal with these sectors, the Ministry of Power, Energy, and Mineral Resources is responsible. The Ministry is divided into two departments, each of which is led by a secretary: the Power Division and the Energy and Mineral Resources division. Oil and gas have their own divisions within the Energy and Mineral Resources Division [13]. The Ministry of Oil, Gas, Minerals, and Renewable Energy has six subordinate entities that handle operations connected to oil, gas, minerals, and renewable energy in Bangladesh. Energy and Mineral Resources Division, Sustainable and Renewable Energy Development Authority (SREDA), Petrobangla, Geological Survey of Bangladesh, Bangladesh Hydrocarbon Unit, and Bangladesh Energy Regulatory Commission (BERC) are the agencies involved. The Ministry of Defense is in charge of ensuring the safety and security of Bangladesh's land, air, and maritime borders. The Defense Ministry and the Armed Forces are functionally integrated. Conducting a survey of the water region and developing a map for shipping are two of the Ministry's maritime security tasks, as are research and updates on Bangladesh's meteorological features. Bangladesh's Navy, Coast Guard, Bangladesh Space Research and Remote Sensing Organization (SPARRSO), Bangladesh Meteorological Department, and Survey of Bangladesh are the five subordinate and connected organizations that deal with Bangladesh's marine security. Potential stakeholders in Bangladesh's maritime sectors were identified as 17 ministries, 12 authorities, 11 departments, 8 corporations, 2 cells, 9 industries, 12 institutes, and 22 communities [14].

Bangladesh has significant potential to develop its blue economy, particularly through its marine resources such as fisheries. The Ministry of Fisheries and Livestock is the primary government agency responsible for managing the country's fisheries resources. This ministry is divided into two main divisions: Fisheries and Livestock. The Fisheries Division specifically focuses on the oversight and development of both inland and maritime fisheries. Its key responsibilities include creating and implementing development schemes, coordinating national policies, utilizing fish and fish by-products, enhancing fisheries resources, managing fish stocks, conserving fish populations, and regulating the fishing industry [15].

Five key agencies under the Ministry of Fisheries and Livestock play a role in managing marine fisheries resources:

1. Department of Fisheries
2. Marine Fisheries Academy
3. Bangladesh Fisheries Research Institute
4. Bangladesh Fisheries Development Corporation
5. Fisheries and Livestock Information Office

The Ministry of Shipping plays a critical role in shaping shipping policies and overseeing maritime operations in Bangladesh. Its responsibilities include developing policies to promote efficient and safe shipping practices, modernizing seaports, building a skilled maritime workforce, ensuring secure and cost-effective freight transport, and facilitating international trade [16, 17]. The Ministry of Shipping oversees seven key organizations focused on marine shipping and port management:

1. Department of Shipping
2. Bangladesh Shipping Corporation
3. Marine Academy
4. National Maritime Institute
5. Chittagong Port Authority
6. Mongla Port Authority
7. Payra Port Authority

Non-living marine resources, including oil, gas, minerals, and renewable energy, are also vital to Bangladesh's blue economy. The Ministry of Power, Energy, and Mineral Resources is responsible for managing these resources. It consists of two main divisions: the Power Division and the Energy and Mineral Resources Division, which specifically deals with oil, gas, and mineral resources [18]. Six organizations under this ministry manage operations related to energy and minerals:

1. Energy and Mineral Resources Division
2. Sustainable and Renewable Energy Development Authority (SREDA)
3. Petrobangla
4. Geological Survey of Bangladesh
5. Bangladesh Hydrocarbon Unit
6. Bangladesh Energy Regulatory Commission (BERC)

The Ministry of Defense ensures the security of Bangladesh's land, air, and maritime borders. It works closely with the Armed Forces to protect national interests. Its maritime security duties include surveying marine areas, mapping for navigation and shipping, conducting research, and monitoring meteorological conditions. Key organizations involved in marine security under the Ministry of Defense include:

1. Bangladesh Navy
2. Bangladesh Coast Guard
3. Bangladesh Space Research and Remote Sensing Organization (SPARRSO)
4. Bangladesh Meteorological Department
5. Survey of Bangladesh

In summary, Bangladesh's blue economy involves a wide range of stakeholders, including 17 ministries, 12 authorities, 11 departments, 8 corporations, 2 cells, 9 industries, 12 institutes, and 22 communities [19]. These stakeholders are essential for the sustainable development and management of the country's marine and maritime resources.

When two interests collide in the same geographic region, a conflict occurs. The government should establish the area of each use in order to settle the conflict between new and current uses. Bangladesh is constructing an offshore liquified natural gas (LNG) plant that might cause fishery disputes [20]. In

order to identify conflicts that are directly or indirectly related to the Chittagong port, the primary blue economy sectors that are being stressed are fishing, oil and gas exploitation, marine tourism, nature and biodiversity protection, military drills, and maritime transportation [21]. In the Bay of Bengal's territorial waters, there are four important fishing grounds: South patches, South of South patches, Middle Fishing Ground, and Swatch of No Ground [22]. The provision of animal protein depends heavily on the fishing industry. Over sixteen million individuals, or about 11% of the workforce, are employed in this industry [23]. The three main sectors of the fishing industry are inland capture, inland culture, and coastal and marine fisheries (industrial and artisanal fisheries) [24]. Industrial fishing, sometimes known as deep sea fishing, uses large trawlers to gather fish at depths of 40 to 100 m, whereas artisanal fishing occurs at depths of 10 to 30 m [25]. Chittagong Port is visited by merchant ships, coastal ships, and inland ships. In the fiscal year 2019–2020, 3764 foreign ships berthed in the port of Chittagong [26]. The possibility of increased conflict between the port and fishing sectors when they arrive at the Chittagong Port exists since there is no permitted shipping route or Traffic Separation Scheme (TSS) to separate these two historic industries. Fishing boats and their nets regularly present navigation challenges for cargo ships along the St. Martin-Coxsazar-Maheshkhali-Kutubdia route. A few years ago, a commercial ship and a fishing boat collided close to Elephant Point (St. Martin), sinking the fishing boat and killing the fisherman. SWOT (strength, weakness, opportunity, and threat) analysis is used to determine a competitive advantage and strategy for any item. They define a strength as a skill or resource that may be employed efficiently to attain a goal. Bangladesh's maritime region is rich in natural resources, and its appropriate usage benefits the country's economy. Bull et al. [21] define weakness as a flaw, limitation, or defect that prevents the achievement of the objectives. The failure to properly utilize natural resources is a key weakness in the maritime environment. Furthermore, various government flaws have hampered the development of maritime regions [21]. An opportunity is defined as “any beneficial event within the framework of any organization.” The marine region has several wonderful opportunities both nationally and globally, including strong connections with neighboring nations and contacts with international organizations, all of which contribute to economic growth. A threat, on the other hand, is any negative condition that might harm the institution's strategy [27–29].

Coastal people make a living by relying on the environment's commodities and services, which has resulted in biodiversity loss in the ecosystem. To develop sustainable and comprehensive ocean governance, Bangladesh must strike a good balance between the usage and conservation of marine protected areas. A greater understanding of the environment and ocean is required to establish a comprehensive scheme of marine space and to realize blue economy goals [30]. With a population of 165 million people, Bangladesh is one of the world's most populous countries. Its coastline is home to about 10 million people, resulting in a population density of 1000 people per square kilometer. Coastal people make a living by exploiting the ecosystem's goods and services, resulting in biodiversity loss in the ecosystem. There are many conflicts between sectoral operations because all sectors are competing for area allocation [31]. As a result, in order to achieve long-term blue growth, Bangladesh must settle disputes between diverse marine operations in order to achieve sustainable development. There is a dearth of coordination among Bangladesh's ministries. Inter-ministerial cooperation is essential to resolve problems.

There is a lack of knowledge of the ocean, but on the other hand, there is a push for economic expansion owing to the large population. There are numerous conflicts between sectoral operations due to the fact that all sectors are competing for area allocation [32]. To develop a sustainable and comprehensive ocean governance, Bangladesh must strike a good balance between the usage and conservation of marine protected areas. A deeper understanding of the ecosystem and ocean is required to establish a holistic vision of marine space and achieve blue economy goals. Global warming and climate change have a significant impact on Bangladesh's marine areas. Ocean acidification and sea level rise are rapidly altering the present environment. As a result, Bangladesh must consider the impact of climate change on marine areas when implementing maritime spatial planning (MSP) [33]. Bangladesh's marine region is threatened by numerous acts of violence that obstruct the appropriate use

of the maritime sector's capabilities and prospects. The current research is based on secondary sources such as published papers, research articles, and reports, among others. The study's goals were to identify potential possibilities and difficulties among various activities of marine regions and to research a compatibility matrix analysis between the features of the maritime zone. The research will also provide some strategic ways for implementing MSP in the maritime region. Followings are the main objectives of this study:

- To expand and strengthen the marine industry while resolving issues.
- To achieve and maintain a good marine environment.
- To achieve UN sustainable goals, especially SDG goal 1, no poverty; SDG goal 2, Zero hunger; SDG goal 8, Decent work, and economic growth; SDG goal 13, Climate action; and SDG goal 14, Life below water.
- To meet the goals of the Bangladesh Delta Plan 2100 (BDP-2100).
- Finding a potential solution to maintain a healthy marine environment while achieving long-term blue growth in Bangladesh.

## STUDY AREA

Bangladesh's "Exclusive Economic Zone (EEZ)" is defined as a region of the sea beyond and adjacent to the territorial sea that extends to a line that is 200 nautical miles from the territorial sea baselines/normal baseline of the nearest shore. The EEZ of Bangladesh consists of an area of sea extending to a line with geographical coordinates of 18°15'54.12"N, 89°21'47.56"E (along the Bangladesh-India Maritime Boundary line) and 17°52'34.06"N, 90° 15'466"E (along the Bangladesh-Myanmar Maritime Boundary line), respectively [34]. The Maldives, India, Sri Lanka, Bangladesh, Myanmar, Thailand, Indonesia, and Malaysia have been the basin nations of the marine zone [35]. Bangladesh's marine zone consists of 19 districts and the Bay of Bengal (Figure 1). The EEZ includes 164,000 km<sup>2</sup> in the Bay of Bengal, while the shelf covers 66,440 km<sup>2</sup> [36]. A total of 200 nautical miles of EEZ and 354 nautical miles of continental shelf are available. Bangladesh just obtained the unique right to explore, utilize, protect, and manage marine resources across a huge region of the Bay of Bengal covering 118,813 km<sup>2</sup> [37].

## MATERIALS AND METHOD

This study was based on a review of previous articles on maritime strategy, conflicts activities, Marine Spatial Planning, and Blue Economy. These publications were found on Google Scholar, Research Gate, Science Direct, and through keyword-based online searches.

All of these studies are qualitative research projects that employ both primary and secondary data, with the exception of this study, which exclusively used secondary data from the literature review. We used comparative research, analytical tools, and literature studies to compare MSP implementation in different countries. We interviewed officials from governmental and non-governmental organizations, as well as a variety of stakeholders. Based on our research, we have provided recommendations through a compatibility matrix analysis for resolving maritime issues that would promote the implementation of MSP in Bangladesh [38].

## POSSIBILITIES IN BANGLADESH'S MARINE AREAS

Bangladesh's marine sector is rich in natural resources and offers several options for their utilization. Proper utilization of the abundant natural resources in the sea region aids in the growth of Bangladesh's ties with other nations as well as its economic development. Furthermore, via reciprocal engagement, the manufacturing and recycling industries, as well as the port and tourist sectors, flourish, boosting Bangladesh's gross domestic product (GDP). Bangladesh has several renewable energy sources, but because of a lack of contemporary technology, they are not being investigated. Furthermore, the absence of proper rules and regulations stifles the expansion of the port and tourism industries, resulting in a drop in national income. Natural resources and renewable energy will be effectively harnessed and

utilized, and the marine commerce and trade sectors will be promoted, thanks to advances in contemporary technology and the application of law and regulation. Furthermore, international cooperation can help to safeguard water and forest resources [39].

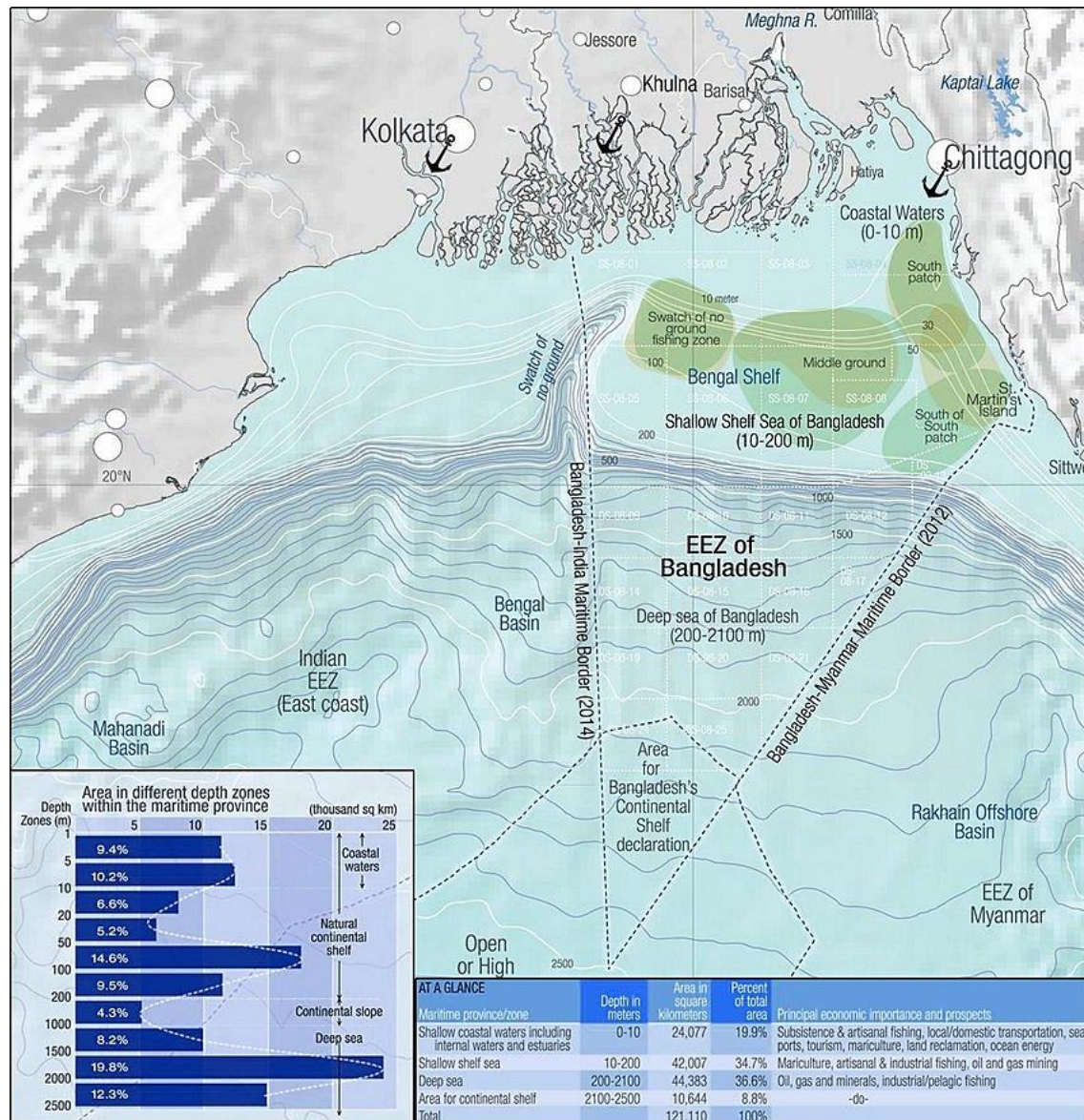


Figure 1. Exclusive Economic Zone (EEZ) of Bangladesh.

### Fisheries Abundance

The Government of Bangladesh has proclaimed a 698-square-kilometer marine reserve area and a 1738 km<sup>2</sup> marine protected area (MPA) in the Bay of Bengal. Shrimp and *hilsa* are extracted from the maritime zone at roughly 7.46% and 43.46%, respectively, while marine water resources provide about 16% of Bangladesh's overall fish production [40].

### Natural Gas

Natural gas is one of the most important petroleum resources, and Bangladesh has 27 gas fields. In 1988, the entire nation was split into 23 blocks for the purpose of conducting a sound gas search, with 16–21 no blocks falling in the maritime zones. At the beginning of 2017, the estimated recoverable gas resource was 12.43 TCF (trillion cubic feet), but by the end of 2017, it had risen to 27.12 TCF [41]. Condensate production is over 5000 L (liters) and gas production is above 40000 mmcf (millimeter

cubic feet) in the 2018–2019 fiscal year [42]. Global energy consumption has grown as a result of expanding economic activity. About 62% of the world's energy supply is made up of oil and gas, with offshore production making up about one-third of this [43]. Bangladesh is the fourteenth-largest natural gas producer in Asia [44]. Bangladesh has so far found 27 gas fields, including the Sangu and Kutubdia gas resources, both of which are offshore. There are 26 offshore blocks in Bangladesh, with 15 deep water blocks and 11 shallow water blocks [45]. While Kutubdia deposits of 0.04 Tcf have not yet been produced, Sangu reserves of 0.8 Tcf have been depleted. Offshore Block No. 16 has been used to produce natural gas since 1998, while Blocks 4, 9, 11, 12, 16 and 21's primary tender and negotiation were also successfully completed [46]. Production at the Sangu gas field has been suspended since October 1, 2013, and will remain that way until it is decommissioned [47].

### **Sea Salt Production**

Production of sea salt has long been a tradition along the coasts of Cox's Bazar and Chittagong. Salt farming has just started in the coastal belts of Khulna and Satkhira. In the 2009–2010 fiscal year, 17.07 MT (metric tons) of sea salt were produced. The ancient approach produces 17.25 MT of salt per acre in Bangladesh, whereas the current method produces 21 MT [48].

### **Shipbuilding**

Shipbuilding is a highly competitive industry in the worldwide market, with tanker and container shipbuilding likely to emerge from the bulk carrier sector. Shipbuilding has the potential to increase moderately during the next decade. The market for seaborne freight is growing at a 6% to 8% annual rate, while the market for new shipbuilding is growing at a 3% to 4% annual rate [49].

### **Tourism**

Maritime tourism is one of the most important sources of revenue in South Asian countries (Bangladesh, India, Maldives, Pakistan, and Sri Lanka), which have 2% of the world's coastline. Bangladesh is a coastal country with a lot of promise for marine tourism because it has the world's largest sea beach, Cox's Bazar, a coral island called St. Martin, and the Sundarbans mangrove forest. Bangladesh is home to Cox's Bazar, the world's longest sea beach, as well as Teknaf, St. Martin's Island, Kuakata, and other tourist destinations. In addition, throughout the past several decades, Sundarbans-based tourism has flourished in Bangladesh's western region. The GDP and employment contribution of the national tourist sector are 4.3% of GDP and 3.8% of total employment, respectively. In Bangladesh, tourism is divided into three categories: business, leisure, and officials, which contributed 42%, 23%, and 17%, respectively, and investment in the tourist sector is predicted to rise at a rate of more than 9% each year [50].

### **Port and Maritime Logistics**

With increased container traffic, the Chittagong Port is a significant contribution to the country's national economy. It is ranked 76th among the world's top 100 container-handling marine ports. The port mainly dealt with containerized manufactured goods such as textiles, leather goods, seafood, raw materials, fertilizers, and so on. Mongla port in Bagerhat district and Payra port on the western side of the Rabnadbud waterway are two more ports in Bangladesh.

### **Marine Renewable Energy**

To address Bangladesh's energy issue, renewable energy sources such as wind, solar, biomass, hydropower, and geothermal energy are available. In Bangladesh, hydro, solar, and wind account for 60%, 39.5%, and 0.5% of total energy consumption, respectively, for a total share of 3%. In Bangladesh, solar energy is the fastest-growing renewable energy industry.

### **Shipbuilding and Ship Recycling**

Bangladesh, the world's leading ship recycling country, was named the world's largest ship recycling country in 2015, according to the International Maritime Organization. Bangladesh's marine manufacturing and ship recycling businesses recycled around 175 ships worth roughly 1.8 million light

displacement tons (LDTs) every year from the previous decade to 2015. In Bangladesh's ship recycling businesses, an average of 2,000,000 MT of various types of obsolete ships is recycled each year, with an average of 1,833,461 MT of recoverable components generated. Thousands of skilled and semi-skilled people from around the country are employed in these industries.

### **International Maritime Boundary**

By using the blue ocean to its south, the new maritime sea-boundary with India and Myanmar provides a fresh possibility for sustainable economic growth. Bangladesh and its neighbors have a healthy relationship because of this maritime boundary. In order to utilize maritime resources, India, the Maldives, and Sri Lanka created a working group in 2011. It urged India, Myanmar, and other countries to work together to harvest resources from the Bay of Bengal.

### **Interaction with an International Organization**

Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand are members of the Bay of Bengal initiative for MultiSectoral Technical and Economic Collaboration (BIMSTEC), a regional bloc based on the promise of cooperation. This organization is concerned with the economy, development, commerce, and investment in the region. Bangladesh ratified the Asia-Pacific Economic Agreement (APTA) in 2005, which allowed it to close trade disparities with countries including China, South Korea, and India. Bangladesh is a member of the World Trade Organization (WTO), which deals with issues of the global trading system.

### **Relationships with Adjacent Nations**

Bangladesh has kept friendly relations with Bhutan, the Maldives, Nepal, Sri Lanka, and India, among other countries. Despite the fact that there are maritime boundary disputes, the resolution of these conflicts is bringing Bangladesh and India closer together. Bangladesh and Nepal have agreed to promote their countries' land transportation systems.

### **Connected to the Indian Ocean**

A vast U-shaped basin with a southern entrance to the Indian Ocean at its topography defines the Bay of Bengal, an extended northern section of the Indian Ocean. The Gulf of Oman's geological formation is comparable to that of the Indus River Basin and the western margin of the Indian Peninsula. The Bay of Bengal's link to the Indian Ocean improves its communication with neighboring nations, such as India, which helps to build Bangladesh's economy.

### **Connected to a Foreign Seaport**

India has 13 main ports, seven of which are located on the country's eastern coast, including the Andaman and Nicobar Islands. Kolkata-Haldia, Paradip, Visakhapatnam, and Chennai are key ports for India's marine commerce with Bangladesh. Containerized goods are being transported from Kolkata to Pangaon's inland waterway port by Bangladeshi shipping companies. To make bilateral commerce more competitive, India and other countries are looking into exporting commodities such as agricultural grains and raw materials for apparel via marine channels.

### **Tidal Halophytic Mangrove Forest**

The Sundarbans, in the southwest corner of Bangladesh, are the world's biggest single block of tidal halophytic mangrove forest. The Ganga-Brahmaputra delta, where the delta meets the Bay of Bengal, is abundant in natural resources. It is also a hub for economic activity, including timber harvesting, fishing, and honey production, with roughly 200 islands connected by 400 interconnecting creeks, tidal rivers, and canals. The Sundarbans were proclaimed a reserve forest in 1875, and three wildlife sanctuaries were established subsequently. In 1997, the Sundarbans were listed as a UNESCO World Heritage.

### **Ganga-Brahmaputra Delta**

The Ganga-Brahmaputra delta is a region in Asia where the Ganga and Brahmaputra rivers meet and flow into the Bay of Bengal. This delta is the world's biggest, with Bangladesh accounting for around

two-thirds of the overall delta. The Ganges Delta is one of the world's most productive areas, with a delta width of around 350 km. Bangladesh's Prime Minister stated, "Our people have a long history with Bluewater. As a time-honored obligation, we are devoted to conserving and protecting our bay." The government of Bangladesh recently published a background document titled "Strategy for Ocean and River Resource Management" for the seventh five-year plan (2016–2020) to promote equitable development and growth in the maritime sector. The Bangladesh Delta Plan-2100 (BDP-2100) takes into account a number of criteria that exist in the marine region and have a reciprocal interaction. The Bangladesh Planning Commission's (BPC) General Economic Division (GED) has developed BDP-2100 with the assistance of the Government of the Netherlands (GoN) to address the issues of climate change and natural disasters. The BDP-2100 seeks to eradicate severe poverty and achieve upper-middle-income status by 2030 and upper-income status by 2041. Aside from that, BDP-2100 has some specific goals, such as improving water security and proficiency in water usage, ensuring safety from floods and climate change-related disasters, maintaining and preserving wetlands and ecosystems, and ensuring sustainable and integrated river systems and estuary management in marine areas and other parts of the country. BDP-2100 extends the middle-term delta strategy until 2050 while taking into account its longer-term effects until 2100.

### **Submarine Fan**

The Bengal fan is the world's biggest undersea fan, and it is influenced by the availability of adherent rivers like the Ganges and Brahmaputra sediment load, as well as minor sediment contributions from other Bangladeshi and Indian river systems. The floor of the Bay of Bengal entirely covers the Bengal fan.

### **POTENTIAL DIFFICULTIES IN BANGLADESH'S MARITIME REGIONS**

In the marine environment, there are a number of hazards that may be mitigated through judicious use of money and resources. By resolving international disputes among trans-boundary nations, natural resources in maritime regions may be safeguarded from different crimes, and manufacturing and recycling sectors can be promoted via public-private partnerships (PPP). Climate change is a serious threat to the marine environment, and it has had a substantial impact on maritime commerce and trade in the last year. These industries can expand more quickly if the necessary precautions and technologies are taken to reduce the impact of natural disasters. In the maritime regions, there are certain main shortcomings and risks that obstruct the region's growth. The natural resources and renewable energy sources of the marine areas may be appropriately used by employing contemporary technology and enforcing rules and regulations, and the growth of the maritime commerce and trade sector can be hastened by shutting down illicit operations. Too many national and international threats loom over this region. Foreign risks may be difficult to counter, but national threats may be countered by taking the necessary precautions. Multiple violations in this area can be avoided if the necessary precautions are taken and the offender is properly punished. Furthermore, improved public awareness and government and non-governmental actions are used to control climate change and marine habitat degradation.

### **Illegal, Unreported, and Unregulated Fishing**

Bangladesh has been ranked 47th in a new global index that ranks countries that are vulnerable, prevalent, and prone to illegal, unreported, and unregulated (IUU) fishing. Bangladesh has a marine coastline that is ranked based on indexing score, with an indexing value of 2.41 (1 being the best and 5 being the worst). The illicit trade in baby *hilsa* (locally known as 'Jatka') is the deadliest of the illegal fishing activities. Only 118,000 MT of fish and shrimp are lawfully collected out of a total yearly production of 389,000 MT. The balance of the 271,000 MT of fish and shrimp are harvested by foreign boats and trawlers.

### **Deficiency in Oil and Gas Extraction**

Despite the fact that oil and gas are abundant natural resources in the maritime regions, Bangladesh is unable to extract them at a rate sufficient to meet demand owing to a lack of contemporary technologies. In fiscal year 2014–2015, Bangladesh Petroleum Corporation (BPC) imported 1.297 MMT (million metric tons) of crude oil and 4.095 MMT (million metric tons) of refined oil, with diesel

accounting for 63%. According to a recent assessment, there is no oil and gas drilling in Bangladesh's deep offshore block.

### **Coastal Water Pollution**

Although Bangladesh is mostly an agricultural country, industrial sectors account for roughly a tenth of its GDP, and many of these are located along the riverbank. Because wastewater is not treated before it is dumped, it pollutes all bodies of water. The water in the coastal area is also contaminated by chemical fertilizers used on land and oil spilled from ships. According to the International Maritime Organization (IMO), carbon emissions from ship sectors are expected to rise by 50% to 250% between 2010 and 2050.

### **Lack of Regulation**

Despite 48 years of independence, the marine zone is still unable to secure enormous water territories like land borders due to the concerns of two bordering governments and a lack of legal and economic administration. The Government of Bangladesh has been unable to establish a code for marine issues and to comply with UNCLOS (United Nations Convention on the Law of the Sea) maritime laws and regulations since the beginning of the negotiations. Despite the fact that the water area is bigger than the land area, the maritime region has not been formed as a separate maritime court. UNCLOS also addressed the future of marine technology for the discovery, exploitation, conservation, and management of marine resources, as well as international regulation and national legislation for the prevention, reduction, and control of marine pollution, but Bangladesh has yet to implement this strategy for marine environmental pollution control and resource management. Inadequate regulation exists to prevent the entry of fishing ships, fishermen, and goods from neighboring countries, as well as to regulate environmental damage in the marine zone.

### **Lack of Monitoring Port**

The most challenging obstacles to port monitoring in Bangladesh include inefficient operations and maintenance, a poor security system, infrastructure hurdles, the reverse transit system, limited information and communications technology (ICT) expertise, the entire banking system, and so on. The absence of customs clearance, human resource scarcity, institutionally informal practices inside the port, insufficient digitalization, and other challenges are the most prominent concerns surrounding operations and maintenance inefficiencies in the Chittagong Port. Poor transport infrastructure and excessively continual siltation owing to the Farakka barrage in India are the key monitoring issues for Mongla port.

### **Illegal Container Trade**

According to Mokbul Ahmed, Chief of Bangladesh Covered Van Truck Goods Transporters' organization, 96% to 98% of lorries in Bangladesh are manufactured from shipping containers, and the body of a lorry costs between 2 and 2.5 lakh to construct. The cost of building a lorry's body is low since it is done without paying taxes or paying unlawful fees. The shipping containers that are taken from other countries and are legally permitted to return with export or empty items are sold in the local market with tax evasion and then used to create vehicles and temporary dwellings due to the customs authority's incompetence and lack of supervision. At Chattogram, at least 57 empty containers with tracking numbers have been discovered in various container selling stores and enterprises.

### **Lack of Technology for Marine Renewable Energy**

In Bangladesh, there are no suitable contemporary technologies for finding and exploiting marine mineral resources and renewable energy, and renewable energy sources account for just 3% of total power production. The formation of negative intensity in the renewable energy sector is verified by insufficient technical advancement. In Bangladesh's marine region, a lack of trained personnel, skilled labor, engineering, and operational capabilities also stifles innovation and growth in the renewable energy sector.

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### **Lack of Ecosystem Protection**

A substantial portion of the coastal population's quality of life is progressively deteriorating due to the marine environment. Many coastal dwellers suffer from climate change and sea-level rise, which are frequently threats to the ecological stability of the coastal zone due to both natural and man-made risks.

### **Armed Robbery, Theft, and Maritime Piracy**

Armed robbery, theft, and maritime piracy all pose a danger to marine security in the maritime area, affecting global commerce flows and Bangladesh's economic growth. According to the International Maritime Bureau (IMB) of the International Chamber of Commerce, Bangladesh's territorial waters are at a high risk of armed robbery targeting ships. According to the Cox's Bazar District Fishing Trawler Owners Association (CBDFTOA), pirates have seized over 1000 fishing vessels and collected over \$1.28 million in ransom money from MR Million Rupee.

### **Arms and Drug Smuggling**

In the Bay of Bengal, drug traffickers and foreign terrorist groups occasionally work together, making it a difficult assignment for Bangladesh's long-established national security services. The Bay of Bengal's marine region is surrounded by Pakistan's "Golden Crescent," which shares the sea with Myanmar's "Golden Triangle." These places are known to be hotbeds of illegal weapons and drug trafficking, posing a considerable security risk. Through the Bay of Bengal, traffickers from India and Myanmar deliver Yabba and other illicit drugs and narcotics to Bangladeshis. The Bangladesh Coast Guard (BCG) and navy police in Cox's Bazar, Bangladesh, impounded multiple fishing boats armed with guns and drugs between 2012 and 2019.

### **Human Trafficking**

Men working overseas with phony employment offers make up a large portion of the victims of human trafficking in Bangladesh, who are then mistreated in the form of forced labor or debt bondage. Some children are sold into slavery by their parents, while others are forced into work or sexual prostitution by deception and physical abuse. Women and children from Bangladesh are also transported to India for commercial sexual exploitation.

### **Terrorism and Sabotage at Sea**

Among the key common maritime risks, sabotage and terrorism at sea are becoming a serious worldwide security issue. According to the Suritec Piracy Report of 2014, imminent seaborne risks will arise in South China, the Gulf of Guinea, and Bangladesh. Pirates pillage fish and mineral resources and help smuggle small and heavy weaponry. They also support local gangs, corrupt authorities, and police personnel.

### **Transboundary Problem and Issue**

The eight Bay of Bengal nations identified three significant transboundary challenges, while the Bay of Bengal large marine ecosystem (BOBLME) recognizes three primary difficulties, including coral reef, seagrass, and mangrove degradation; overexploitation of live marine resources; pollution; and water quality. The availability and distribution of transboundary waters causes dissatisfaction, skepticism, and disagreement among stakeholders. The transboundary has significant ecological repercussions as a result of water diversion, as well as its national and regional importance between Bangladesh and India.

### **The Issue of Geopolitics**

The opening of Myanmar has far-reaching repercussions for the geopolitics of the Bay of Bengal in the maritime area. India is also taking initiatives to take advantage of excellent prospects and address possible difficulties. Despite the fact that the Bay of Bengal is changing dramatically, it remains a

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natural sphere of influence for India, and New Delhi's concerns and interests in the Bay of Bengal are important to New Delhi.

### **Climate Change**

Climate change has made Bangladesh's marine region one of the country's most susceptible. The coastal ecosystem is especially vulnerable to mangroves, tidal deltas, and low-pressure coastal plains, as well as sandy beaches, coastal wetlands, estuaries, and coral reefs. A one-meter rise in sea level will destroy the world's most important ecosystem, the Sundarbans. Over the past 200 years, at least 70 strong cyclones have threatened Bangladesh's coastal area, killing over 900,000 people. Salinity damaged about 53% of coastal regions, and coastal aquaculture dropped as a result of a temperature increase of 32°C. Around 140,000 to 160,000 families rely on fishing in the coastal areas, which are being ravaged by extreme weather.

### **Degradation of Marine Habitats**

The Bay of Bengal is a biodiverse region with many fragile and unprotected species. Transboundary concerns are the primary cause of marine habitat deterioration. The root causes of the issues are the coastal poor's food security needs, a lack of coastal development planning, increased trade in coastal habitat products, coastal growth and industrial development, insufficient marine protected areas and enforcement, upstream growth affecting water flow, concentrated upstream agricultural practices, and increased tourism.

### **Conflict Analysis through Compatibility Matrix Analysis**

Conflict arises when two interests converge in the same region. In order to resolve the dispute between new and old uses, the nation should define each use's territory. Fishery disputes may result from Bangladesh's construction of an offshore LNG project. Bangladesh's marine area is used by a number of industries, including fishing, shipbuilding, shipping, oil and gas exploration, tourism, wind energy, and the military. The Bangladeshi government has identified six key sectors as its top priorities. The priority list includes the fishing industry; port and shipping; environmental and conservation; oil and gas extraction; coastal businesses including ship construction, ship recycling, and salt production; as well as tourism and recreation. In these domains, disagreements might take one of two kinds. The first is a quarrel in the sea involving user-user conflict, while the second is a dispute between users and their environment.

In the marine sector of Bangladesh, there are two different forms of conflict: user-user conflict and user-environment conflict. In order to overcome all of these challenges, the administration is therefore attempting to involve all parties in the decision-making process. The study's compatibility matrix illustrates different stakeholder activities in Bangladesh's maritime region as assessed by an interview, professional judgments, literature research, and other methods. Two of Bangladesh's most important marine industries are fishing and shipping. The government must first recognize the difficulties and conflicts that these two sectors encounter. Ocean zoning and a place-based management plan, according to research, can help to reduce stakeholder conflicts. The government should include NGO's, researchers, scientists, local leaders, ethnic groups, labor organizations, sports clubs, and religious groups early on in the dispute resolution process for different marine activities. All of these groups have a role to play. There are two types of disputes at Chittagong port: user-user conflict (port with other maritime sectors) and port-coastal and ocean environment conflict. Chittagong port is a tidal port at the Karnafully River's estuary, with both riverine and coastline space inside its port limits. The fishing grounds (South Patches), as well as Marine Protected Areas (MPAs) such as St. Martin Island, are all located close to the port's edge. The biodiversity of the fishing ground is severely harmed by merchant ship traffic to and from Chittagong Port (especially South Patches). This site has previously been designated as a marine reserve by the Department of the Environment. According to the responders, maritime pollution, particularly from ships, is a significant violation of international standards, as they dump their rubbish and bilge anywhere in the ocean, including within the Chittagong Port limit at night

Bangladesh has three types of maritime transportation: merchant vessels, coastal vessels, and inland vessels. Inland watercraft in Bangladesh usually travel along the coast (up to 12 nautical miles) and the inland canal. Cargo ships, tankers, gas carriers, container ships, passenger ships, and small boats are examples of inland vessels. According to the response, small inland vessels are the main cause of navigational dangers in the Karnaphuli. Other vessels (inland, fishing, navy ships, etc.) are not permitted to pass through the port channel during high tide.

Chittagong Port has no conflict with Army or Air Force activity, although they have produced a few valuable conflictual examples with naval exercises. The Bangladesh Navy, among other things, protects the Chittagong port. Chittagong port is also home to the Bangladesh Navy's Chittagong Base and the Bangladesh Naval Academy; it is the home base of the Bangladesh Navy Fleet, which includes two submarines, which are docked alongside the Chittagong port's cargo terminal. Due to the coexistence of the naval station and port, at least 7 collisions between navy ships and cargo ships occurred in the port region in the last decade. A serious collision between the Panamanian flagship *Eagle Strength* and the Bangladeshi flagship *Banga Biraj* in the year 2003, according to Chittagong Port Authority (CPA) troops, damaged 18 navy ships and jetty equipment. The Panamanian flagship was hit unintentionally, and 16 navy personnel were injured. In 2005, the MV *CEC Copenhagen* collided with three navy warships for the second time. Two cruise ships do not call at Chittagong Port because they are on their way to Cox's Bazar and St. Martin. Two tourist attractions are located within the Chittagong port boundary: Patenga sea beach and Parki beach. These locations are popular with local tourists and are not well developed. For a short tour, a few speedboats are used. To attract more tourists to these sites, respondents proposed incorporating water activities like sailing, resting, and surfing. According to the respondent's interview, there is no potential conflict between Chittagong Port and marine tourism because the tourism business outside or inside the port boundary is undeveloped, and restricted activities such as speedboat excursions have only been launched near the beach area.

Due to the absence of a safe harbor or fish harbor, Bangladesh's fishing industry has two major problems: a shortage of sea room in the port area and a higher danger of maritime accidents in the river channel. A senior BMFA Bangladesh Marine Fisheries Authority official proposed that fishing harbors for both industrial and artisanal fisheries be built along the Karnaphuli River's bank, particularly outside the port's boundary, by involving appropriate stakeholders such as the fisheries department, the Port Authority, and others, in order to lessen the conflict between Chittagong Port and the fishing industry on this issue. The fishing sector usually has issues since there is no shipping route or traffic separation scheme (TSS) outside of the pilot boarding ground/anchorage, which prevents it from covering the whole port limit. Respondents think that by separating shipping and fishing zones, this conflict can be resolved. They also think that different areas should be designated for different uses, such as a zone for artisanal fishing where industrial fishing is forbidden, another zone for artisanal fishing, and a zone for shipping where fishers can only navigate but not fish. The naval base's placement in the Chittagong Port is a source of worry for both sectors. The naval facility has already seen a number of mishaps involving different kinds of ships. According to CPA officials, who noted that they have been historically constructed, the port and naval base cannot be transferred. Their fleet's activity is increasing quickly, so if they add more ships, it should be possible to disperse them to both sides in another area. In accordance with a BMA response, meticulous coordination is required to prevent collisions from happening as a result of Navy vessel movements, maritime exercises, and other operations.

Respondents suggested completing a feasibility study and consulting key players before building and creating a shipping route in order to reduce any issues in the future. There should not be a feasibility study done in a certain industry. According to the research article, disagreements among many stakeholders may be settled through negotiations, integration, regular meetings, and changing mindsets. Port operations are typically hampered by maritime traffic, especially small inland barges. According to respondents, this issue might be resolved by ensuring that those involved have adequate training and

are competent. The Bangladeshi government should connect its inland waterways, coastal, and ocean regions and incorporate its stakeholders early in the planning process to reduce or ameliorate disputes in order to achieve sustainable growth of its marine sector. The Bangladeshi government has the power to divide marine regions into priority areas (shipping routes, ship anchorages, and sand extraction), reserved areas (which need a particular permitting procedure), and forbidden zones (MPA, ECA, and different valuable endangered fishing grounds like *Hilsa*). The restricted zone would provide protection for several other operations, including sand mining, oil and gas exploration, port activity, shipping, tourism, and others. A challenging issue that must be solved as part of conflict resolution is the lack of integration of stakeholders' jobs and responsibilities. As a consequence, both respondents thought that if the government looked into improving "integration" techniques for all stakeholders' work, disagreements may be diminished. According to respondents, holding regular meetings among stakeholders might aid in integration and conflict resolution. As a consequence, stakeholders will be able to express their thoughts, intentions, and aspirations about ocean utilization. They will not be able to reach practical agreements or solve issues before that.

A compatibility matrix study of the current activities in Bangladesh's maritime regions was chosen and carried out based on the authors' fieldwork, ground observation, literature review, and other research. Each use's compatibility was considered (Table 1), with conflicts between maritime activities and biodiversity conservation appearing as the primary issues. To guarantee the conservation of biodiversity while enabling advancements in economic growth and standards of living. Three different protection zone levels are: The purpose of a restricted access zone (no enter, no take) is to keep ecologically valuable ecosystems undisturbed by human activity, with the exception of authorized scientific study. The sanctuary zone (entry but no take) offers a high level of protection and is a place where it is forbidden to injure or remove any flora or animals. Swimming, snorkeling, diving, beach-related activities (sunbathing), and cultural activities are examples of low-impact tourist activities that are permitted. An area designated as a habitat protection zone (entrance and limited take) provides for a variety of recreational and subsistence fishing activities as long as they do not severely impact the habitat's structural elements, fish populations, or biological processes. Compatibility matrix analysis has been widely utilized to unify all separate management approaches in order to avoid or reduce conflicts amongst users. It's a handy technique for resolving conflict between a variety of users by identifying compatible and incompatible usage and allowing potentially compatible activities to continue while incompatible activities are separated. Compatibility matrix analysis, when correctly implemented, may have enormous economic, social, and environmental advantages. Compatibility is the capacity of two things or events to exist or take place simultaneously without difficulty or conflict. It is impossible for two things or activities to coexist happily if they are incompatible. What is meant by "probably compatible" is most certainly the cohabitation or mutual co-occurring of two things or activities.

## RECOMMENDATIONS

The MSP approach to resolving conflicts consists of four steps: (1) planning ahead of time; (2) identifying and analyzing current disputes; (3) identifying and analyzing future conditions; and (4) developing alternative allocation strategies. Throughout the process, stakeholders are involved in these steps. Stakeholder engagement is a difficult aspect of MSP, but it should begin early in the process. Regular meetings, debates, and symposiums can all help to engage stakeholders early in the MSP process. According to the results of the interview analysis, all of the sectorial activities are intertwined in ocean space, resulting in conflict. Marine zoning can be used to separate these overlapping activities. MSP is frequently referred to as "ocean zoning," but it is actually a toolset of MSP that brings together diverse users by distinguishing acceptable and unsuitable uses in the ocean space and keeping them side by side for sustainable ocean uses. Marine zoning and allocation plans that solve multiple use conflicts are increasingly being developed using MSP. Many coastal and maritime countries have recently begun to employ MSP as a new management tool for coastal and oceanic governance and conflict management (user-user and user-environment). MSP is being implemented in stages in about 70 countries around the world.

**Table 1.** A compatibility matrix analysis of Bangladesh's Exclusive Economic Zone's (EEZ's) marine waters, with existing user–user and user–environment conflicts

Activity	Fishing	Shipping lines	Port activity	Tourism	Oil and gas exploration	Sand mining	Ship anchorages/harbors	Prohibited zones (MPA, ECA)
Fishing	Y	X	X	X	X	X	X	O
Shipping lines	X	Y	X	X	X	X	X	X
Port activity	X	Y	Y	X	X	X	O	X
Tourism	X	X	X	Y	X	X	O	X
Oil and gas exploration	X	X	X	X	Y	X	X	X
Sand mining	X	X	X	X	X	Y	X	X
Ship anchorages/harbors	X	O	O	O	X	X	Y	X
MPA: Marine Protected Area ECA: Emission Control Area	O	X	X	X	X	X	X	Y

*Note:* Y– compatible, X – incompatible, and O – probably compatible

On the other hand, MSP is a simple strategy that decreases conflict between different users (human-human, human-coastal, and ocean-environment) and makes the conflict and compatibilities public so that the problem may be solved. For example, the port sector may detect disagreement with other sectors and collaborate with them to resolve the dispute using a multi-objective approach. Land spatial planning is comparable to MSP, but the context and planning dimensions differ since the land is static, whereas the ocean environment is dynamic.

The absence of data on MSP in Bangladesh is the principal weakness. There isn't enough data on the internet because Bangladesh is still in the early stages of adopting MSP. Bangladesh has the following challenges in implementing a successful MSP:

#### **Data Availability**

In Bangladesh, there is insufficient geographical data to execute an efficient MSP. However, the University of Chittagong's Institute of Marine Sciences and Fisheries (IMSF) is gathering all relevant data to meet the country's future needs. They are releasing a maritime region map titled “Maritime Province of Bangladesh,” which contains information on marine areas

#### **Lack of Understanding of the Ocean and Environment**

The coastal people of Bangladesh lack sufficient understanding of the ocean and environment. The majority of them are uneducated and rely on fishing and farming for a living. The government should endeavor to educate these ignorant and hungry people about ocean and environmental concerns so that they become more concerned about them.

#### **Stakeholder Engagement**

The government must identify all stakeholders and offer a workshop or seminar for them so that they may engage. In Bangladesh, political and administrative stakeholders are actively involved in the implementation of every problem. Non-public stakeholders are not involved in policymaking. The government should make an effort to involve these non-public stakeholders in policymaking.

#### **Global Climate Change**

Bangladesh is severely impacted by global ocean warming, which is changing the current state of the ocean and causing a reallocation of commodities and services offered by the ecosystem. As a result, ocean users that rely on such services are shifting their locations in Bangladesh's EEZ, resulting in confrontations amongst ocean users.

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For the reasons listed below, MSP is more useful as a resource management tool than most traditional planning methodologies. MSP implementation will resolve the conflict.

- *MSP minimizes biodiversity impact:* The marine ecosystem is quickly deteriorating as a result of human interventions in the twenty-first century. The best way to reducing environmental deterioration is ecosystem-based management (EBM). MSP has become a key instrument for EBM in many countries, eliminating human interference in the ecosystem.
- *MSP improves climate change resilience:* All maritime uses, including fisheries, tourism, aquaculture, recreation, and biodiversity, are being impacted by climate change. Climate-aware MSP can be a useful tool for planning for future problems and uncertainties in marine conservation.
- *MSP enhances connectivity:* One of the best features of MSP is that it connects various sectors that use the sea, resulting in effective governance. It is extremely difficult to achieve a country's future aim if there are no linkages amongst its authorities. As a result, MSP will assist Bangladesh in achieving its long-term aim of connecting all authorities, acting as a connecting agent amongst them.
- *MSP improves regional cooperation:* Because all seas are interrelated and marine ecosystems do not respect political boundaries, MSP allows for international planning outside national jurisdiction waters. Many combined cross-border MSP projects are underway, assisting in greater regional coordination and the development of a single vision. Cross-border MSP projects include planning the Bothnia Sea, maritime spatial planning in the Adriatic Sea, and ESPN between Portugal and Spain.

## CONCLUSIONS

Bangladesh recently gained a large maritime boundary from two neighboring countries, prompting the government to consider the blue economy. However, a proper ocean management tool is required to fulfill this blue economy desire, and Bangladesh is still in the early stages of managing its maritime resources. The purpose of this study was to identify important conflicts among marine operations, as well as prospective difficulties and possibilities, and to describe how compatibility matrix analysis may be used to resolve such conflicts. This qualitative research is the preliminary study of ocean zoning plan and hopefully will be very helpful to implement MSP in Bangladesh's marine areas. MSP is the most effective method for implementing ecosystem-based models in maritime environments. Furthermore, it is a multidimensional use management tool for marine regions that aids in the resolution of disputes amongst ocean users. Its finest feature is its integrated approach, and its goals are to ensure ecological, economic, and social benefits. The Government of Bangladesh must identify stakeholders and involve them in policymaking through seminars, workshops, and public awareness campaigns. Regular stakeholder meetings, ocean zoning, and a place-based management plan can also help to reduce stakeholder disputes in the maritime environment. MSP as an effective strategy for resolving conflict among a number of stakeholders using an integrated management approach. Effective multiple-use management in the EEZ does not necessitate abandoning single-purpose regulatory regimes; rather, it necessitates better compatibility among those regimes and improved means for resolving unavoidable disputes. As single-purpose regulatory programs mature, congress and administrative agencies should look at ways to prevent needless conflicts and enhance trade-offs when they are inevitable. Congress should modify its legislative mandates, elucidate the desired objectives within and within programs in more detail, and reassume legislative responsibility for tough policy decisions. The administrative agencies should strengthen systems for producing and exchanging information as well as recognize and resolve possible conflicts among marine initiatives. Conflict resolution, port environment sustainability, and ocean environment are all possibilities for the study's conclusion. In order to achieve long-term blue growth in Bangladesh, this study recognized many challenges and discovered a solution.

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