

Challenges and Prospects of Blue Economy for Pakistan

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<https://doi.org/10.62345/jads.2023.12.3.119>

Abstract

A nation endowed with a vast coastline and maritime resources, Pakistan's blue economy presents challenges and promising prospects. As a maritime nation with an extensive coastline along the Arabian Sea, Pakistan possesses substantial untapped potential in its marine resources, including fisheries, aquaculture, shipping, and coastal tourism. This qualitative research article identifies key challenges that hinder the growth of Pakistan's blue economy, such as overfishing, pollution, inadequate infrastructure, and regulatory gaps. It also explores the implications of climate change on the maritime environment and the need for sustainable practices, highlighting the immense prospects for Pakistan's blue economy, including job creation, increased exports and economic diversification. It discusses the importance of integrated policy frameworks, international collaboration, and technology adoption in unlocking this potential. In conclusion, this article underscores the importance of addressing the challenges while harnessing the prospects of Pakistan's blue economy. This article offers insights into the complexities surrounding Pakistan's blue economy, identifying key challenges and outlining potential pathways to leverage its marine resources for sustainable economic growth using a mixed research method.

Keywords: Blue Economy, Challenges, Prospects, Technology, Policy Frameworks, Coastline.

Introduction

The maritime industry is more than just a sector. It is a parallel economy through which all other economic sectors pass. The blue economy is the new developmental turn in the world, especially for the countries with seas (UNDC, 2012, p. 18). A blue economy is an idea of using resources that are low-carbon, energy-efficient, and environmentally friendly more efficiently and sustainably. It is an economy based on exchange, collaboration, unity, adaptability, and interdependence. Over the last few years, "Blue Economy" and "Blue Growth" have become popular in international policy. According to Gunter Pauli, the blue economy is the unceasing utilization of resources without damage to nature and surroundings. Globally, the Green/Brown economy has given way to the Blue Economy because of the need for sustainable development, considering the expanding world population and diminishing land resources³. The idea behind the blue economy is to sustainably commercialize the ocean, for which traditional efforts are also being made to strengthen the blue component of the green economy, which was also included in the green economy in Blue World Report (Monnereau & Failler, 2014, p. 14). Its area is around 803,940 square kilometers, and being close to three powerful nations, Russia, China, and India,

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Compliance with ethical standards: There are no conflicts of interest (financial or non-financial). This study did not receive any funding.

makes Pakistan unique. It has been observed that Pakistan can transform its huge maritime area into the region's hub for the blue economy. It can link the West and Central Asia, the West and the Muslim world, and the USA and China. (Jehan, Kasi, & Qadir, 2019, p. 02). The Pakistani government has acknowledged the potential of the blue economy and is taking measures to support its growth, such as

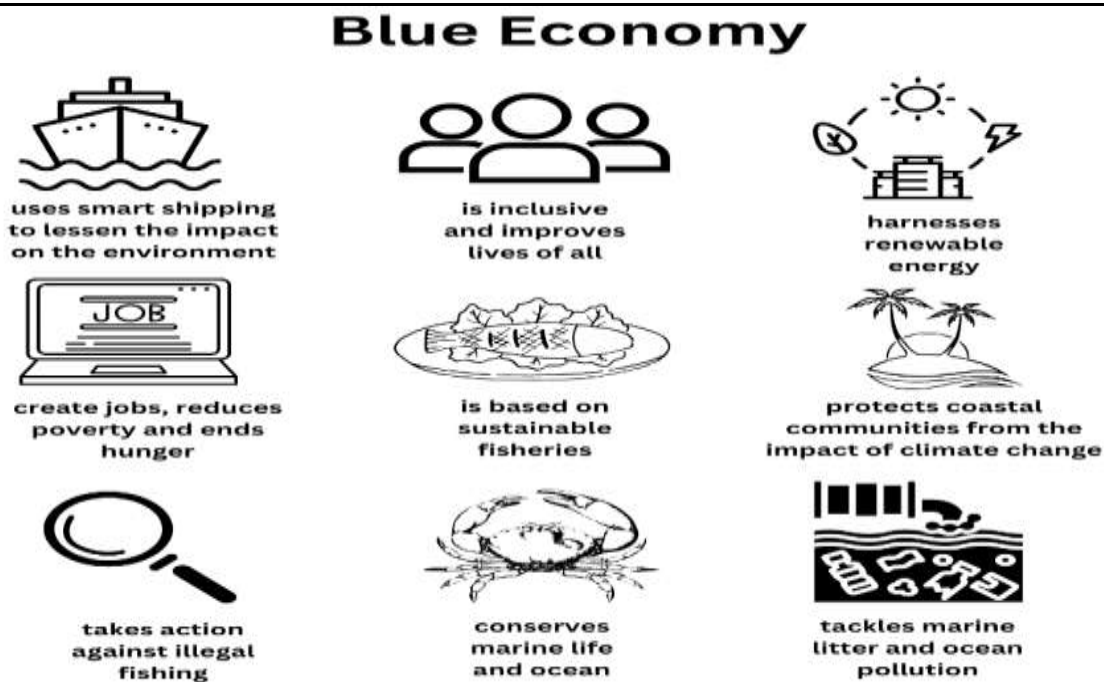
1. Establishing special economic zones.
2. Investing in port infrastructure.
3. Enhancing maritime safety and security.

Pakistan treasures its natural resources, with the Indian Ocean holding particular significance for several reasons. Its prime geographic location is a crucial link between the Northern Atlantic and the Asia-Pacific, vital in the contemporary era of burgeoning international trade. This is accentuated by the extensive global fleet of over 90,000 commercial ships, moving a staggering 9.84 billion tons annually. This study aims to understand the concept of the blue economy for Pakistan, the potential it holds for the country to take it out from the economic debts, and all the challenges it faces in advancing the blue economy.

Prospects of Blue Economy for Pakistan

Pakistan is a resource-rich country, and geographically, it has a superior strategic orientation due to its location on the doorstep of Indian Ocean energy corridors. There is an urgent need to focus on the prospects of the Blue Economy in Pakistan to provide human security to the people while also assisting the country in achieving sustainable economic progress.

Figure 1: Sector of Blue Economy of Pakistan



Source: (Voyer, Quirk, McIlgorm, & Azmi, 2018).

Infrastructure of Ports

The port infrastructure is the most critical component of the economic potential generated by maritime resources. A state can obtain a location where ships can dock and various types of cargo can be controlled. The hinterland links of these ports and harbors are equally essential. Strong rail and road networks that transport the load to the destinations should be managed as part of the infrastructure. Because of the numerous job opportunities created by the development of these ports, people can benefit from substantial growth opportunities and even escape their current economic predicament. There are three main commercial ports in Pakistan:

1. Karachi Port
2. Muhammad Bin Qasim Port
3. Gwadar Port

The port of Karachi is the oldest in Pakistan and has been operational since 1887. Karachi Port Trust (KPT) is the organization in charge of running the Karachi Port. The Karachi Port has a total of 33 berths. Karachi is also home to Bin Qasim Port. Out of these, three are designated for managing liquid cargo, such as molasses and oil, while 30 are intended for handling containers and solid freight. Between 2018 and 2019, the load at Karachi Port decreased primarily because of the country's reduced imports and the relocation of the coal cargo to Port Qasim. The third port in Pakistan is Gwadar. The China-Pakistan Economic Corridor (CPEC) efforts have attracted attention. It is Baluchistan's first port on the southern Arabian Sea coast. Gwadar is located 635 kilometers from Karachi and 120 kilometers from Iran. Due to its proximity to the Persian Gulf, the Gwadar is strategically important.

Shipping

Although Pakistan has a vast potential for shipping, the country currently only has one flag carrier corporation, the Pakistan National Shipping Corporation (PNSC). The Pakistan National Shipping Corporation brought in roughly 10,070 million rupees in revenue in 2018. However, the Covid-19 crisis significantly raised freight rates according to the statistics of Pakistani sea trade and PNSCs for the year (2020-2021). According to the United Nations Convention on Trade and Development (UNCTAD), Pakistan's yearly goods bill is expected to be between US\$4 and US\$5 billion. Such a large sum of money for goods bill reimbursement complicates the problems with the payment balance. Therefore, Pakistan should have as many Pakistan-flagged vessels as possible to minimize such compensations. The surge in vessel numbers promises an expansion in the shipping sector, enhancing maritime trade and offering increased job opportunities for seafarers. This could accelerate the growth of the blue economy through the marine industry. Pakistan operates a fleet of 13 ships, comprising five cargo ships and eight oil tankers. However, safety regulations restrict older-generation cargo ships from European seas, confining their operations to routes between the west coasts of South America and Africa. The oil tankers manage around 35 per cent of Pakistan's oil imports. Notably, maritime experts advocate for each nation to possess its fleet. Yet, Pakistan relies heavily on foreign shipping companies, paying billions annually to transport its cargo abroad, handling just 10 per cent of its shipping needs. To effectively contribute to the blue economy, Pakistan must bolster its fleet size, unlike the mere twofold increase it has seen, especially compared to Bangladesh's growth from 40 to 80 ships and India's ownership of 1,000 flags carriers.⁴

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Ship Breaking

Shipbreaking, a form of recycling within the maritime industry, significantly contributes to Pakistan's economy by providing employment, utilizing cost-effective labor, and producing affordable steel. After Bangladesh and India, Pakistan is one of the foremost nations engaged in this practice. The country's extensive beaches, high tides, and other environmental conditions offer a favorable landscape for shipbreaking operations. As ships primarily comprise steel, this industry is a valuable source of raw materials. As per the Pakistan Shipbreaking Association, it's characterized by its labor-intensive nature, contributing significantly to direct and indirect employment opportunities engaging around 20,000 individuals directly within the shipbreaking sector. Gadani, a significant shipbreaking site in Pakistan, was once the world's second-largest industry approximately two decades ago. Comprising 128 plots resembling workshops with 27-28 operators, it peaked in 1983 with 85 ships. However, currently, it doesn't host any ships, marking a considerable decline from its former prominence⁵. On the contrary, India and Bangladesh are not taking lion share in the ship breaking industry. There are few issues:

1. Financial condition of Pakistan is not stable because of which LC is not opening to purchase new ship.
2. Change in tax regime in every budget. Ship breaker is not aware of the new policy.
3. Globally, we must amplify and ratify a few conventions in ship breaking industry like HKC, EU convention and Basel convention.

If Pakistan does not follow these conventions, then no one in the world would be willing to sell ship to us. India has recognized some convention and some they have rectified, and Bangladesh is also in process. So, they are over hedge us. China, turkey is also in this industry where Pakistan stands at number four. It contributes majorly to the blue economy of Pakistan as well. This industry feeds about 70 sub industries like steel. There are two types of iron bars make in Pakistan.

1. Refined steel
2. Gadani steel

The steel produced at Gadani is cheaper which is majorly used in the construction of houses. Other than this Gadani provides raw material in Gujranwala, Sialkot, Wazirabad, Gujrat for the cottage industry of cutlery, crockery, sewing machine, washing machines, motors, water pipes, steel pipes used for drainages. It provides foreign exchange to the country. Medical skewers, cutlery, bathroom fittings are all sourced through Gadani iron bars.⁶

Mangroves

The expansive coastline of Baluchistan houses mangroves, a protective forest against floodwaters. The Indus delta in Sindh once harbored the 5th largest delta globally, featuring a vast expanse of approximately 200,000 acres of mangroves. However, the current status reveals a decline, with a recorded count of 47,600 mangroves according to a 2010 study, a number that some NGOs have pushed to approximately 75,000. Yet, Pakistan's mangrove coverage lags significantly behind its historical figures. These mangroves serve as vital fish hatcheries, having lost eight types of mangroves over time. Efforts by the navy, coastal development authorities, and wildlife departments aim to revive the mangrove forests, recognizing their critical ecological importance. Mangroves, though, require centuries to develop, and while Pakistan endeavors to reignite their

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growth, the rate of mangrove depletion surpasses the efforts toward regeneration. The decline in mangroves poses a threat to the habitat of fish, shrimp, and oysters, affecting their population and compromising the ecosystem.⁷ In regions like Thatta, Badin, and along the Makran coast, the absence of mangroves exacerbates the impact of natural disasters such as cyclones and floods, leading to significant losses.⁸

Coral Reefs

The benefits of coral reefs are that 25 percent of the marine species are found in coral reefs and in Pakistan only 1 percent has been discovered which are not even in records. Coral reefs are protected areas in different countries but here they don't even know that we have coral reefs and they have destroyed many of them. No fish have been left in that area because these are the areas where fishes breed and by taking out the big fish from the surface, the ecosystem and the fishing system has been destroyed. There are different species of shrimps and crabs which are also destroyed along with the mangroves and coral reefs. Overfishing also destroys the coral reefs. There are special fishes that clean the coral reefs and by overfishing they also get destroyed.

Fishing and Seafood

Fishing and seafood are the foundation of Pakistan's blue economy and sustainable economic growth. It seeks to achieve economic growth by completing the Sustainable Development Goal 14 (SDG-14). According to the 2017 census, Pakistan has a total population of 213 million, placing it fifth on the list of the world's most populous countries. The country's performance in critical social sectors like health, education, and nutrition is poor, even though the poverty rate is declining compared to earlier decades. The fishing industry is a significant source of nutrition and food in the nation. Fishing in Pakistan is a \$1.2 billion sector that supports about 1.8 million employees. In addition, a significant portion of Pakistan's exported goods come from the fisheries sector of the seafood industry. The demand for fish and marine food has grown over time, and the industry is predicted to expand by 50 per cent more over the next 15 years. Compared to the regional average of \$7 per kilogram, fish costs 2.5 to 2.75 dollars per kilogram in Pakistan. An expert points out Pakistan's fish population has decreased by 80 per cent due to inadequate management. Despite earning \$450 million from fish exports annually, Pakistan encounters intermittent bans from the European Union due to outdated and unhygienic fishing techniques. Presently, the country operates 28,000 fishing boats, far surpassing the estimated sustainable range of 7,000-8,000, indicating overfishing. In the realm of the blue economy, sustaining fish stocks is crucial for future generations, necessitating the preservation of food sources, ecosystems, and biodiversity. Pakistan can potentially boost fish exports from \$450 million to \$1 billion, but it requires collaboration with experts to prevent wastage. Unfortunately, the use of juvenile fish as chicken feed disrupts the fish's reproductive cycle⁹.

⁷Commodore retired Baber Bilal. Director main ocean study center at national institute of maritime affairs (NIMA). Looks after the Blue economy and geo-strategic matters of Indian Ocean.

⁸Commander Tariq Mahmood main field of work is underwater warfare. Discovered coral reefs in Maktola Island-Makran coast.

⁹Commodore retired Baber Bilal. Director main ocean study center at national institute of maritime affairs (NIMA). Looks after the Blue economy and geo-strategic matters of Indian Ocean.

Table 1: Number of Fisheries Imported from Pakistan

Year	Total fish exported in million tons	Earning in US\$
2009-2010	133,200	296
2010-2011	134,624	315
2011-2012	138,680	317
2012-2013	150,498	369
2013-2014	137,381	349
2014-2015	130,358	325
2016-2017	152,858	394

Source: (Shahzad, 2020).

Maritime Tourism

One in four of the new jobs created globally in 2019 were in the travel and tourism industry, which, according to the World Travel & Tourism Council (WTTC), contributed 10.4 percent to the world's GDP. On the other hand, Pakistan's GDP only had a 3.3 percent contribution from this sector, indicating significant room for expansion. The current administration is interested in expanding Pakistan's maritime tourist industry. Out of the total revenue earned by marine tourism in Pakistan in 2017, only 1 percent came from coastal tourism. Marine tourism has a lot of potential for Pakistan; Hingol National Park, Mud Volcanoes, Beach Lagoons, Beach Sports, and Cruise Ships all have significant economic potential. Recognition of important stakeholders is crucial for public-private partnerships and other projects that aim to benefit from this industry. For it, the departments need to work to:

- Provide a safe environment for not only foreign tourists but for the local ones also.
- Ease of doing business.
- Sustainable policies¹⁰.

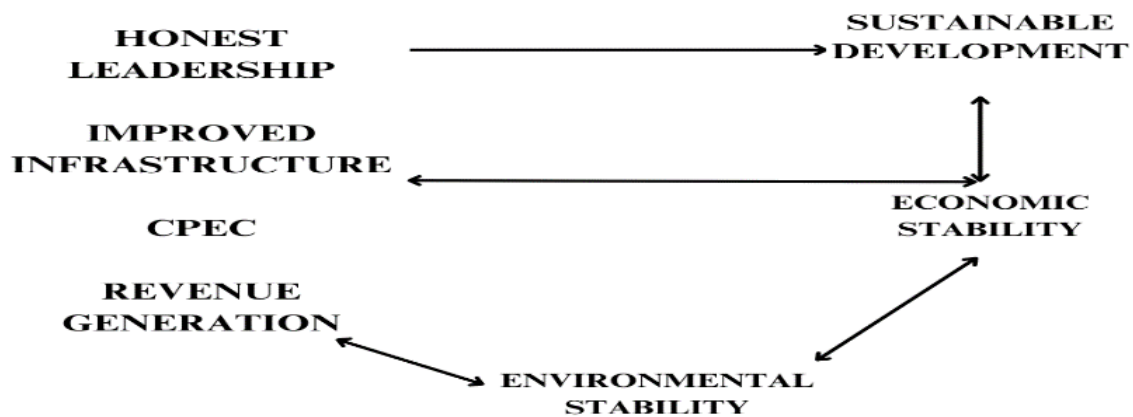
CPEC and Blue Economy of Pakistan

The fast-track building of Gwadar port with full capacity is essential to Pakistan's great chances of utilizing the untapped and undiscovered riches of oceanic resources. For Pakistan to establish itself as a significant littoral state in the Asia-Pacific region, Gwadar's geographic location is crucial. Increased dock facilities can enable trade connectivity from China/Central Asia into the Persian Gulf and the ASEAN region, and the port's full capacity has the potential to repair and maintain Both domestic and foreign vessels. It can also provide the local population with significant employment and infrastructure opportunities. Furthermore, the complete operationalization of Gwadar port is necessary for the Belt and Road Initiative (BRI), a \$3.5 trillion investment initiative led by China, and its flagship project, the China-Pakistan Economic Corridor (CPEC). The BRI project, in which Gwadar plays a crucial part, is intended to travel from Gwadar to the ports of Oman, Aden, and Djibouti in Africa. It would allow Pakistan to stretch out over the ocean into the Middle East and Africa. The additional possibility is the potential spinoff benefit of the \$600 billion 25-year Sino-Iran deal, which might enter Iran via Gwadar. It has another route for establishing regional trade and economic connectivity with Iran, the GCC nations, and other countries. e (Khattak, 2023, p. 08).

¹⁰Retired. Vice Admiral Captain Dr. Ahmed Saeed Director General National Institute of Maritime Affairs.

Pakistan's maritime security is a critical concern for both China and Pakistan. To ensure the smooth trade flow from the Arabian Sea to Kashghar, the Pakistani government has made significant initiatives to protect the trade routes under the CPEC framework. The BRI's trillion-dollar project in China is regarded as having its jugular vein in the CPEC (Rafiq, 2020, p. 10) (Iqbal, 2023, p. 09). If these projects are completed, they will transform the future of every region they intend to move. Pakistan and China could regulate all activities in the Indian Ocean if the CPEC is completed within the specified time frame and Gwadar and its associated infrastructure are built.

Figure 2: Role of Leadership in Sustainable Development



Source: (Voyer, Schofield, Azmi, Warner, & McIlgorm, 2018).

The Pakistan Navy must therefore Prioritize to increase the number of patrol ships and quick interceptor vessels in order to secure the sea passages across the Indian Ocean.

Challenges of Blue Economy for Pakistan

The Pakistan Navy must, therefore, prioritize increasing the number of patrol ships and quick interceptor vessels to secure the sea passages across the Indian Ocean.

Challenges of Blue Economy for Pakistan

The government proclaimed 2020 the "Year of Blue Economy," yet nothing has been done in this area. There is no doubt that Pakistan has tremendous potential for the blue economy, and the recent change in the political system has strongly emphasized it. However, several significant obstacles exist to developing the blue economy in Pakistan.¹¹ This has resulted in the government's unwillingness to concentrate on the crucial industries that could assist in resolving the problems preventing the growth of the blue economy. The following is a list of some of these barriers' salient features:

Marine Pollution

Marine pollution significantly undermines Pakistan's potential in the blue economy. Despite being a signatory to the London Convention to prevent ocean waste, Pakistan continues to discharge

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substantial amounts of litter into the sea, comprising plastic bags, bottles, and even infectious hospital waste. The consequence is the transformation of the once azure waters at prominent tourist sites into a dismal black hue. This plastic debris not only mars coastal beauty but also imperils marine life. The country's neglect and indifference toward maritime trade further eroded its vast economic resources. This pollution is a pressing challenge obstructing the development of Pakistan's blue economy. Industrial waste and municipal solid waste are the primary contributors to sea pollution. The absence of adequate sewage treatment facilities and dysfunctional disposal systems exacerbates the problem. Especially in areas near the Qasim Port, rapid industrialization, particularly in oil refining, chemical production, and leather tanning, releases various pollutants like heavy metals, fertilizers, and hydrocarbons. Effluents from these sectors contain many harmful substances, impacting human health and significantly contaminating coastal and marine habitats, notably in Karachi Harbor and Port Qasim. The pollution not only endangers marine life but also degrades water quality, shortens the lifespan of assets and infrastructure, and accelerates the deterioration of ships. Understanding the contributing factors to pollution in the Karachi port and its environs is crucial for addressing these pressing issues.¹²

Poor Infrastructure

The poor infrastructure near ports depresses the genuine prospect of the blue economy of Pakistan. The problem with the absence of more roads and railway lines is that it slows down the logistics chain across the country. Among these, Pakistan's transportation industry needs more-maintained roads, lengthy journeys and inadequate travel, notably via railway (Sodhar, 2022, p. 04). The infrastructure and resources needed to realize the blue economy's promise must be improved. Due to its lack of infrastructure, Pakistan cannot regulate deposition problems and the byproduct of its maritime resources. Pakistan's blue economy is now having significant issues because of weak infrastructure and governance, and "Maritime Blindness" is the only cause.

Policy Making

To start something, a proper framework is needed, called policy making, and policy should be initially based on specific statistical data so that the facts are clear based on which the policy must be made. Pakistan needs help with execution, and it is in the form of central government responsibilities and provincial government responsibilities. The 18th amendment has helped in it as the maritime power has yet to be acquired as it must be, so there is still confusion. For example, Fishing is done under two categories. Territorial water is under the provincial government, and TEZ and high seas are under the central government. The confusion is that the fisherman needs to abide by it. It goes beyond this area when it does not find fish in 10 nautical miles. There should be only one permit for them, and concerned departments are working on them too. Another issue is zoning. Every country has made its zone. They do fish for specific fish in that zone. Zones are created because if any species is depleted there, they can make specific arrangements to protect the area and ban those areas for around 2-3 years so that the fish can breed and indigenous species can revive. Pakistan doesn't have protected areas, but the concerned departments are working on it, for which we have a team on board.

¹² Commodore R. Prof. Dr. Sajid Mehmood Shehzad. Vice chancellor Minhaj University, Lahore.

Sea Blindness

Government institutions in Pakistan remain primarily fixated on land-centric endeavors, neglecting the potential of maritime resources, which presents a significant challenge. Similarly, public engagement in preserving marine resources needs to be improved. By supporting and sponsoring concerned departments or individuals, the government could significantly enhance the utilization of these marine resources. Not only would this create new economic opportunities, but it could also serve as a source of income for underprivileged communities.¹³

Pakistan must catch up in scientific exploration, often relying on international expertise for basic tasks. An illustrative instance is the mining of minerals in Baluchistan, where Pakistan had to engage a team from Australia, incurring substantial expenses and subsequently granting them an equal share in the minerals that rightly should have belonged to Pakistan. Despite having a vast coastline of 1000 square kilometers and an Exclusive Economic Zone (EEZ) extending around 260,000 square kilometers, the area beyond 200 nautical miles remains largely unexplored. Surprisingly, no significant discoveries relating to gas, electricity, or other potential resources have been made in this vast expanse.¹⁴

Overfishing

Technology-related overfishing brought on by unmanaged access to fish stocks, increased demand, and under-resourced fishing is a significant challenge for Pakistan in the blue economy sector. According to the FAO, 30 per cent of fish stocks are overexploited, depleted, or recovering, while about 58 per cent of fish populations are fully exploited. Fish populations are further weakened by illicit, unreported, and unregulated fishing, which results in yearly fish captures of 11 to 26 million tons or \$10 to 22 billion in illegal or unreported revenue.

Climate Change

Examples of slow-onset events are an upward trend in sea level and greater frequency and intensity of weather patterns. It is known that variations in water temperature, bitterness, and main oceanic currents, among other things, represent a threat to marine organisms and their ecosystems, even though the long-term implications of climate change on ocean systems are unclear.

Untreated Sewage

The continuous release of millions of tons of untreated sewage into the Arabian Sea and our beaches poses the biggest threat to the marine economy and biodiversity. As a result, mangroves, aquatic ecology, and other natural resources are swiftly lost. Additionally, the Indus Delta's inland expansion and rise in sea level significantly impact marine biodiversity.

Lack of Technology, Research, and Development

Regarding technology, research, and development, Pakistan falls behind other countries. The seas' tides provide energy potential, but Pakistan cannot exploit these opportunities due to slow technological development.

Lack of Awareness

The public needs to understand such vast areas of opportunity and development. Pakistan's income has declined due to poor fishing education practices. Various human activities have destroyed the

¹³Retired. Vice Admiral Captain Dr. Ahmed Saeed. Director General National Institute of Maritime Affairs.

¹⁴Commander Tariq Mahmood main field of work is underwater warfare. He discovered coral reefs in Maktola Island-Makran coast.

coastal ecology in seashore and coastal areas. No attention has yet to be paid to the fact that many sea species are in danger of extinction. Additionally, there are many other significant obstacles, such as unrestricted fishing, excessive fishing, illegal nets and bull trawls, a shortage of fish processing and other products, etc. (Syed & Safdar, 2021, p. 12)

Lack of Management

The operations of government organizations and their administrative frameworks for managing coastal and marine areas in Pakistan consistently conflict with one another. The government adopts a top-down policy implementation approach to best utilize the natural resources present in coastal and marine areas. It has chosen a sector-based management approach to regulate coastal and marine areas, whereby numerous federal and provincial bodies have been granted the right to carry out their economic and management activities independently. Overlapping activities and unclear rules spark conflicts between groups, weakening the natural functions of coastal and marine areas. These effects have a direct and indirect impact on the way of life for local coastal residents. Additionally, the nation lacks a legal framework that would support an integrated management strategy for the wise use of marine and coastal resources. National-level organizations, however, have legal obligations to the seaside and marine environments that are often governed by national law. Such responsibilities focus on natural resources and shift the focus away from the actual participants in exploiting and managing resources (Jattak, 2022, p. 05)

Unfair Trades

The economy of island nations depends heavily on Exclusive Economic Zones (EEZ), areas in which a state has exclusive rights to the exploration and exploitation of maritime resources. These zones frequently dwarf the corresponding land mass and administrative capability of the accompanying state. In Tuvalu, for example, the EEZ is more than 26,000 times larger than the land area. Furthermore, a large portion of the value from the worldwide trade in seafood is outside the developing nations where it was produced, much less in fishing communities.

Conclusion

Pakistan's blue economy holds immense promise as a catalyst for economic growth and sustainable development. While facing notable challenges such as overfishing and environmental degradation, the nation can tap into its rich maritime resources and leverage them for job creation, increased exports, and economic diversification. Pakistan must prioritize sustainable practices, infrastructure development, and regulatory reforms to unlock this potential. International collaboration and technological innovation will be instrumental in realizing the vision of a thriving blue economy. By navigating these challenges effectively and seizing the prospects presented by its maritime assets, Pakistan can bolster its economic resilience and play a pivotal role in the responsible stewardship of its marine environment, ensuring prosperity for future generations.

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