

Harnessing the Blue:

Charting Pakistan's Economic Potential

Author:



Vice Admiral Iftikhar Ahmed Rao (Retd)

Vice Admiral Iftikhar Ahmed Rao (Retd) holds over 40 years of maritime experience serving onboard ships, and also as a naval aviator. He was Senior Advisor to UNDP Pakistan and is currently serving as Special Advisor to the Prime Minister on Maritime Affairs.

He raised PNS Makran at Pasni and as flag officer raised Pakistan Navy's Coastal Command, contributing significantly to Pakistan's coastal development. He was Deputy Chief of the Naval Staff (Operations) and was a member of the Gwadar Port Implementation Committee.

He is also a former Managing Director of the Karachi Shipyard and is credited for its turnaround. He is renowned for his books entitled, "Elements of Blue Economy" and "Gwadar Bay to Sir Creek – Golden coasts of Pakistan". His third book intitled "Maritime Security - Challenges and Responses in a Changing World" is under print.



© Pexels/ Victor Puente

Oceans, seas, and coastal areas hold monumental importance to humanity and, in recent years, have become even more important. They play a vital role in sustaining life on Earth and are important for biodiversity, climate regulation, oxygen production, carbon sequestration, and food security.

The Organization of Economic Cooperation and Development (OECD) describes the ocean as the next 'Great Economic Frontier' as it holds potential for wealth and economic growth, employment, and innovation.¹ Additionally, the value added by oceans to the global economy is estimated to be USD 1.5 trillion annually and might rise to USD 3

trillion by 2030. By harnessing the potential of the blue economy, countries can create livelihoods, alleviate poverty, and enhance standards of living for communities, while simultaneously safeguarding the diversity of marine ecosystems. In addition to this, leveraging the blue economy can also foster sustainable development, by supporting climate-resilient infrastructure, and focusing on renewable energy, ecotourism, and a more equitable distribution of the benefits of blue economic resources.

Given their significance, protecting and conserving these water resources is crucial for the resilience and well-being of present and future generations.

1. OECD, "Ocean economy and innovation," 2023. [Online]. Available: <https://www.oecd.org/ocean/topics/ocean-economy/>.



Fishermen at Kemari District, Karachi.

© UNDP Pakistan

What is Blue Economy?

According to the World Bank, blue economy refers to all economic activities related to oceans, seas, coasts, and inland water systems contributing to sustainable, inclusive, and environmentally friendly economic growth. The blue economy seeks to protect and restore the health, productivity, and resilience of oceans and marine ecosystems; maintains their biodiversity; and enables conservation and sustainable use. Realizing its worth, the Sustainable Development Goals (SDGs) connect blue economy to sustainable development through SDGs 14 to 17.²

This concept was introduced at the Rio+20 United Nations Conference on Sustainable Development in Rio de Janeiro in June 2012.³ It is an alternative approach to sustainable development, with oceans being the central focus of the approach. Moreover, blue economy composes of multiple existing and newly emerging sectors such as offshore oil and gas, marine transport, seabed mining, ports, tourism, fisheries, aquaculture, biotechnology, tidal and wave energy, wind and thermal energy, and blue carbon.

High Potential Sectors for Sustainable Blue Growth



Renewable Energy



Offshore Oil & Gas



Marine Transport



Fisheries & Aquaculture



Marine & Coastal Tourism

2. World Bank and United Nations Department of Economic and Social Affairs, "The Potential of the Blue Economy: Increasing Long-term Benefits of the Sustainable Use of Marine Resources for Small Island Developing States and Coastal Least Developed Countries," World Bank, Washington DC, 2017.

3. "Blue Economy Concept Paper," July 2023. [Online]. Available: <https://sustainabledevelopment.un.org/content/documents/2978BEconcept.pdf>.

Blue Economy's Global Promise

Marine transport remains the most economical and efficient means of transportation for goods and trade; more than 80% of the world trade is carried by sea. According to the United Nations Conference on Trade and Development (UNCTAD), world sea-borne trade has risen from about half a billion tonnes in 1950 to 11 billion tonnes in 2018.⁴ Fisheries hold great significance for the maritime sector. Globally, total fisheries and aquaculture production reached a record 214 million tonnes in 2020, with 58.5 million people employed in the primary sector. Moreover, it is estimated that 600 million livelihoods depend on fisheries and aquaculture.

In 2019, travel and tourism contributed more than 10% of the world's Gross Domestic Product (GDP) and employed over 333 million people.⁵ About 80% of all tourism is related to marine and coastal tourism, a significant part of the blue economy worldwide. Similarly, offshore oil contributes 37% to the world's total oil production. Blue economy serves as an impetus for the development of emerging sectors, such as wind, tidal, wave, and thermal energies, which are great sources of renewable marine energy. The report 'Offshore Wind Outlook 2019' by the International Energy Agency (IEA) indicates that offshore wind power has the potential to generate more than 18 times the global electricity demand today.⁶

CASE STUDY:*

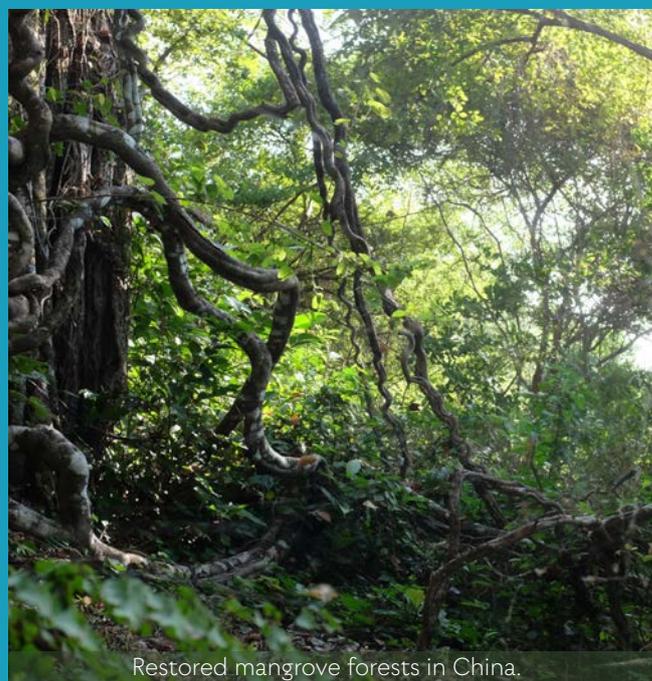
Mangrove Restoration in Guangxi, China

Globally, over 3 billion people depend on marine and coastal biodiversity for their livelihoods. UNDP's Ocean Governance Programme, through the Global Environmental Facility's Small Grants Programme (SGP) and UNDP's Large Marine Ecosystems programme, works to support the blue economy to protect the environment and resulting livelihoods.

To this end, local communities, with support from SGP, have designed and implemented projects that serve to reconcile the environmental and socio-economic dimensions of ocean management. One of these projects was the restoration and sustainable management of mangrove forests in Guangxi, China, to support eco-aquaculture.

This led to substantial environmental impacts, such as the reforestation of 300 acres of mangroves in three coastal cities of Beihai, Qinzhou and Fang Chenggang, and the rehabilitation of the natural habitats of many marine species and birds. The project also supported mangrove conservation and marine protection trainings for 90 villagers and 800 students, and led to a 40% increase in the production value of fish-farm areas. This project

therefore showcases the importance of science-based solutions for mangrove restoration and livelihood improvement to the community.



Restored mangrove forests in China.

© SDP China

* United Nations Development Programme. 2018. Blue Economy: Community Solutions. UNDP, New York.

4. UNCTAD, "World seaborne trade," 2022. [Online]. Available: <https://unctadstat.unctad.org/EN/Index.html>.

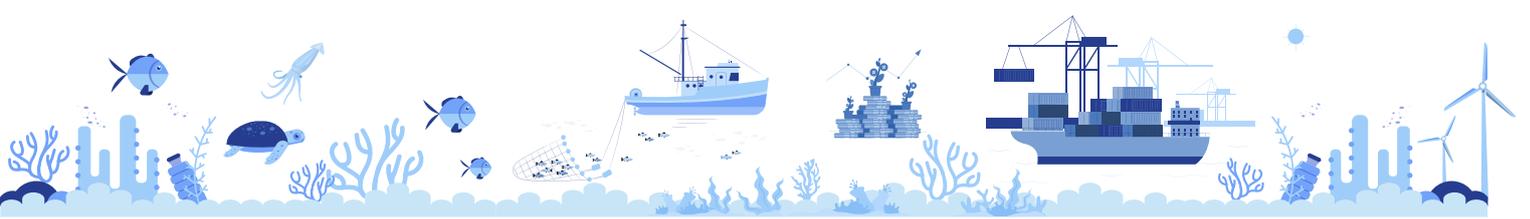
5. Asian Development Bank, "With These Actions, Coastal and Marine Tourism can have a Bright Future," 11 July 2022. [Online]. Available: <https://www.adb.org/news/features/these-actions-coastal-and-marine-tourism-can-have-bright-future>.

6. International Energy Agency, "Offshore Wind Outlook," IEA, Paris, 2019.

Regional Mapping of Key Blue Economy Initiatives in Asia-Pacific

Countries	Geographical Area	Blue Economy Sectors	Economic Potential of Blue Economy
Bangladesh	A coastline of 710 km	<ul style="list-style-type: none"> Fisheries Coastal aquaculture Marine tourism Marine trade and navigation Shipbuilding Ship recycling industry 	<ul style="list-style-type: none"> US\$6,193 million (2014-2015) Total fish production is 3.7 million tonnes contributing 3.7% to the GDP Ranked 5th in the world for aquaculture production The country has one of the largest inland water transportation systems in the world There are 125 shipping yards with annual turnover of \$2.4 billion Seagoing going ships are expected to upgrade their capacity to 25000 DWT^v
Indonesia	<ul style="list-style-type: none"> 17,508 islands with a total area of about 5.1 million km² 	<ul style="list-style-type: none"> Coastal culture and capture fishery Treasure-laden shipwrecks Marine tourism Coral reefs Seagrass and mangroves 	<ul style="list-style-type: none"> US\$1.338 billion^{vi}
Malaysia	<ul style="list-style-type: none"> Maritime space is double the country's land areaⁱ 	<ul style="list-style-type: none"> Maritime industry Oil and gas Fisheries 	<ul style="list-style-type: none"> Contributing up to 23% of the GDP Maritime Industry makes up 40% of the GDP with 15% coming from oil and gas and 9.4% from fisheries More than 90% of the country's exports are by sea
Maldives	<ul style="list-style-type: none"> 1,190 coral islands scattered over 90,000 km² 	<ul style="list-style-type: none"> Tourism related industries Construction Transport and communications Fisheries 	<ul style="list-style-type: none"> Maldives blue economy accounts for about 36% of GDP^{vii} Tourism makes 28% of the GDP Fisheries 6.4% of GDP in 2020, which made up 98% of exports
Phillippines	<ul style="list-style-type: none"> 2.2 million km², which is over seven times larger than its land areaⁱⁱ 	<ul style="list-style-type: none"> Coastal and marine tourism Fisheries and aquaculture Manufacturing Shipbuilding 	<ul style="list-style-type: none"> US\$11.9 billion accounting for 7% in terms of the country's GDP Ranked 4th largest ship producer Domestic Ship repair generate 90% of the domestic shipyard revenue Coral reefs, mangroves, and seagrasses provide combined benefit of \$6.2 billion annually Coastal and marine tourism contributes \$3 billion Fisheries and aquaculture contribute 20% and manufacturing 19% to the nation's GDP
Thailand	<ul style="list-style-type: none"> A coastline of 3,148 kmⁱⁱⁱ 	<ul style="list-style-type: none"> Fisheries Aqua and mariculture Coastal and marine tourism Shipping and ports Shipbuilding and repair Marine energy Manufacturing 	<ul style="list-style-type: none"> Thailand's ocean economy is estimated to be worth US\$ 118.19 billion which is 30% of its GDP Manufacturing sector is the largest contributor with a share of 50% The country's Exclusive Economic Zone (EEZ) covers about 420,280 km² Marine and costal resources is estimated to be \$36 billion
Viet Nam	<ul style="list-style-type: none"> A coastline of 3,260 km 	<ul style="list-style-type: none"> Fisheries Renewable energy Oil and gas Tourism Transport Environment and ecosystem Aquaculture including sea cucumbers and seaweed 	<ul style="list-style-type: none"> Marine GDP accounts for approximately 48% of the country's GDP Fish deposits are around 5 million tonnes a year Annual fish catch is around 2.3 million tonnes Annual marine aquaculture output expects to reach 850,000 tonnes with export turnover estimated to be between US\$0.8 billion and \$1 billion
China	<ul style="list-style-type: none"> A coastline of about 32,000 km^{iv} 	<ul style="list-style-type: none"> Ocean fishery Aquaculture Transportation Sea tourism Ocean energy Marine manufacturing industry Emerging industries like seawater desalination, marine energy, and marine biopharmaceutics 	<ul style="list-style-type: none"> Worth US\$1.35 trillion in 2021 which was 8% of the country's GDP Blue economy will exceed 10 trillion yuan^{viii} Offshore oil and gas to exceed 60 million tonnes^{ix} Eight ports in the world's top ten Cargo of the nation's ports is 15.55 billion tonnes^x Home to more than 20,000 species making up 10% of the global marine species

* For sources, please see page 15



Institutional Structure/Policies

- Establishment of Blue Economy Cell
- International and national workshops and consultations on blue economy
- Two phases of 'Safe and Environmentally Sound Ship Recycling' in Bangladesh (SENSREC) project

- Blue Economy Plan with The Spectrum Solution Group (TSSG)
- IndoBlue concept
- Blue Economy Development Framework 2021
- Development of a 'Blue Economy Road Map' with support from national and international partners

- Incorporating SDG 14 into the 11th and 12th Malaysian Plan (MP)^{xii}
- Malaysia's Roadmap Towards Single Use Plastics 2018-2030

- Implementation of coastal protection projects to preserve wetlands and marine ecosystems
- Sewerage Treatment Plan with support from the World Bank in Hulhumale
- Building climate smart and resilient islands to strengthen the implementation of Nationally Determined Contribution (NDC)
- Master Plan for Sustainable Fisheries in Maldives (MASPLAN) 'Sector Sustainable Fisheries Development Plan of the Important Sub-sectors 2016-2025' (SFDPIS) -Goals, Objectives, and Projects

- 'National State of the Oceans and Coasts (SOC) Report'

- Chon Buri Integrated Coastal Management Project (ICM)
- Department of Fisheries (DOF) developed a 'Fisheries Management Plan 2015-2019'
- Implementation of Port, Safety, Health, and Environmental Management (PSHEMS) at Bangkok and Laem Chabang Ports
- Joint Statement on Partnership in Oil Spill Preparedness and Response in the Gulf
- Thailand's 'Roadmap on Plastic Waste Management 2018-2030'
- 'National State of Oceans and Coasts (NSOC)' report sponsored by Global Environment Facility (GEF) and United Nations Development Programme (UNDP)
- The World Bank's market studies on plastic circulation in Thailand

- Strategy for sustainable development of Viet Nam's marine economy 2030
- UNDP's 'Blue economy Scenarios for Viet Nam' report in partnership with Viet Nam Administration of Seas and Islands (VASI)

- The 'Outline of the National Ocean Economic Development Plan'^{xiii}
- '14th Five Year Plan' in the working with major focus on building a modern ocean industrial system^{xiii}
- China's blue economy includes three levels:
 - (i) Blue Economic Belt
 - (ii) Blue Economic Zone
 - (iii) Blue Economic Circle

Challenges

- Marine Pollution such as ocean acidification and blue carbon
- Frequent flooding
- Lack of trained personnel
- Poor ocean governance
- Lack of an integrated approach amongst the different institutions

- Overfishing
- Depletion of fish stocks
- Insufficient data and lack of stock management

- Threat to biodiversity and ecosystem due to overpopulation, pollution, and unplanned coastal development
- Degradation of mangrove forests
- Lack of information and quality data for effective ocean management

- Decline of per capita ground water and rainwater by 34% by 2035
- Rising sea levels due to climate change
- Untreated sewage and waste pollution

- 3rd largest contributor to marine plastic
- Degrading mangrove trees
- Lack of proper planning and research
- Lack of certified industries, subcontractors, and efficient workforce
- Ranked 66 out of 100 on the Ocean Health Index^{xiv}

- Top six countries contributing to marine plastic pollution
- Overfishing
- Illegal, Unreported, and Unregulated (IUU) fishing
- Threat to seabed and breeding grounds due to mechanized fishing gears

- Decreasing marine biodiversity and aquatic resources due to plastic waste pollution
- Weak marine monitoring, forecasting, and warning facilities

- China's marine ecosystem is under threat due to Japan dumping over 1 million tonnes of nuclear wastewater into the sea^{xv}

A Sectoral Snapshot

Blue economy is particularly critical for developing countries, such as Pakistan. With a large coastline of 1050 kilometres, the country has many opportunities for developing its blue economy. It holds the 74th position out of 125 in terms of coastal states' rankings.⁷ The country's rich marine potential includes biodiversity, hydrocarbons, rare minerals, and different fisheries. Pakistan also contains the sixth largest mangrove region in the world with a yearly worth of US\$20 million. Moreover, it includes a vast variety of onshore living resources such as 776 species of sharks, lobsters, sea snakes, shrimps, and non-living resources like beaches, bays, ports, and lagoons.

Currently, it contributes an estimated \$1 billion which is approximately 0.5% of the country's GDP. Considering the strengths from Pakistan's perspective, it is labour intensive with a deep seashore and is located at the mouth of the gulf from where most of the oil and huge seaborne trade passes. If Pakistan has the requisite assets and facilities, it will thrive in the sector.

Shipping

Pakistan National Shipping Corporation (PNSC) is the only shipping company in Pakistan which operates 12 ships.⁸ Currently, the country's seaborne trade is more than 100 million tonnes with PNSC's share of around 10%.

Strengths

- Availability of manpower
- Employment generation potential
- Location of ports can capture regional transit trade in addition to domestic requirements

Weaknesses

- Shortage of ships
- Lack of private sector engagement
- Lack of awareness at decision-making level

Opportunities

- Existing domestic demand
- National ship lifting is only 10% creating a potential gap of 90%.
- Annual freight bill of \$5 billion



An aerial view of the Gwadar coastline, Balochistan.

© UNDP Pakistan

Threats

- Lack of conducive policies
- Inconsistencies in policies
- Lack of engagement from the private sector

Seafarers

Globally, there are around 1.9 million seafarers. The demand is growing for Standards of Training, Certification and Watchkeeping for Seafarer (STCW) certified officers and, by 2026, it is estimated that there will be a need for an additional 89,510 officers.⁹ Pakistan has supplied many trained seafarers in the past, but due to a lack of appropriate training and management, it has declined over time. Arranging necessary trainings can allow for a better supply of skilled seafarers to meet the rising global demand.

Strengths

- Availability of labour

Weaknesses

- Insufficient training facilities
- Complicated and out of date regulations and procedures
- Bureaucratic hurdles for seafarers

Opportunities

- Great global demand

7. The World Bank, "Pakistan Coastline," 7 November 2017. [Online]. Available: <https://datacatalog.worldbank.org/search/dataset/0038465>.

8. Pakistan National Shipping Corporation, "Company Profile." [Online]. Available: <https://pnsc.com.pk/about-us.html>.

9. "BIMCO/ICS Seafarer Workforce Report predicts serious seafarer shortage," 30 June 2021. [Online]. Available: <https://container-news.com/bimco-ics-seafarer-workforce-report-predicts-serious-seafarer-shortage/>.

Threats

- Nonadherence to international standards

Ports

Pakistan is known to have three ports with surplus capacity. However, despite the Afghan trade, the ports have an occupancy rate of less than 50%. There is a strong need for innovation, planning, and implementation of policies to help increase the efficiency and utilization of ports. Mapping a master plan of ports with the support of international organizations is essential for better coordination among ports and for revenue generation.

Strengths

- Location at the mouth of the gulf

Weaknesses

- Lack of modern infrastructure and related facilities
- Lacking a master plan for ports and its implementation
- Complicated procedures at the ports
- Lack of digitisation
- Multiple agencies involved at the ports
- Inefficiencies and length of ships' turnaround time

Opportunities

- Growth in national demand
- Regional transit trade opportunities for Afghanistan, CARs, and the region
- China Pakistan Economic Corridor (CPEC) related opportunities

Threats

- Security
- Lack of consistency in policies
- Ports to hinterland approaches and transport systems

Shipbreaking and Recycling

Shipbreaking and Recycling is a hub for labour intensive countries like Bangladesh, India and Pakistan. Historically, Gadani in Pakistan was one of the largest shipbreaking yards in the world due to its topography and tidal system.¹⁰

Strengths

- Availability of relatively inexpensive labour
- Location
- Suitable beaches



A boatwright in front of an unfinished boat in Gwadar.

© Mariam Altaf & Zainab Altaf

Ship Recycling / Breaking 2020

Country	Tonnage (1000s)	Percentage
Bangladesh	6 694	38.5
India	5 061	29.1
Pakistan	2 890	16.6
Turkey	1 598	9.2
China	195	1.1
Row	962	5.5
Total	17 401	100.0

- Demand for steel

Weaknesses

- Lack of proper government intervention
- Non-adherence to safety and health requirements.
- Lack of trained personnel
- Noncompliance of international protocols like Hong Kong Convention

10. N. Hameed, "SHIPBREAKING INDUSTRY OF PAKISTAN PROBLEMS AND PROSPECTS," Maritime Study Forum, 2019.

Opportunities

- International demand for ship recycling industry
- Employment opportunities
- Contribution to the national economy

Threats

- Lack of consistent and appropriate policies
- Ever-increasing international requirements of compliance

Shipbuilding and Repair

Pakistan has only one relatively small shipyard, Karachi Shipyard and Engineering Works. It was built in 1956 and has a maximum docking capacity of up to 26,000 DWT, which is rather small.¹¹ World leading shipyards including those in the Gulf have docking capacities of up to 600,000 DWT. Pakistan, having abundance of manpower and a deep seashore, has big potential in this sector.

Strengths

- Availability of manpower
- Deep water ports
- Location at the mouth of the gulf

Weaknesses

- Appropriate enabling policies
- Inadequate fiscal incentives
- Lack of appropriate infrastructure and facilities
- Only one small shipyard: Karachi Shipyard and Engineering Works (KSEW)

Opportunities

- Catalyst for industrial and economic development
- Global demand
- Employment opportunities



A group of fishermen collecting catch at Gwadar Jati.

© UNDP Pakistan



A boatwright sanding a wooden boat at Kemari District, Karachi.

© UNDP Pakistan

Threats

- Inconsistency in policies

Fisheries

The share of fisheries in Pakistan's GDP is only 0.3%, with capture fishery being the most dominant. During the country's fiscal year 2022, total fish production was recorded at 696,000 Metric Tonnes (MT) (marine: 468,000 MT and inland: 228,000 MT). During the same period, a total of 116,500 MT of fish and fishery preparation amounting to \$310 million were exported. Major buyers of the country include China, Thailand, Malaysia, Middle East, Sri Lanka, and Japan.

Pakistan has favourable agro-climatic conditions for aquaculture along with fresh and brackish water. In 2020, fisheries and aquaculture production reached a record of 214 million tonnes globally which is worth about \$424 billion. The production of aquatic animals in 2020 was more than 60% higher than the average in the 1990s, largely due to increasing aquaculture production.¹² Global demand for protein-rich fisheries products is rising, providing opportunities for ocean-facing countries such as Pakistan.

Increased marine fish production can be worth \$400 million and \$1200 million for the country over the next 30 years if management of marine resources is improved. Moreover, putting aquaculture on a growth trajectory that matches those of India and Bangladesh would expand the industry to an annual production of over 560,000 tonnes in the span of 10 years. Improved value ad-

11. H. Musings, "Pakistan Shipbuilding Industry and Blue Economy," 17 December 2017. [Online]. Available: <http://www.riazhaq.com/2020/12/pakistan-shipbuilding-industry-and-blue.html>.

12. F. Markus, "Record fisheries and aquaculture production makes critical contribution to global food security," 29 June 2022. [Online]. Available: <https://www.fao.org/newsroom/detail/record-fisheries-aquaculture-production-contributes-food-security-290622/en>.



The Sphinx of Balochistan at Hingol National Park.

© Bilal Mirza, CC BY 2.0.

dition, by fulfilling international standards for quality control, in postharvest value chains can further improve fisheries' economic contribution and meet demands of global markets.

Strengths

- Large EEZ and coastal inland waters like Khor Kalmat and Indus basin's mangroves areas
- Fishing communities

Weaknesses

- Inadequate policies and implementation
- Overfishing in sea areas
- Lack of aquaculture development
- Lack of value addition
- Lack of updated fisheries database
- Lack of coordination between federal and provincial fisheries authorities

Opportunities

- Domestic demand as well as exports potential
- Employment opportunities
- Favourable agro-climatic conditions for aquaculture along with fresh and brackish water

Threats

- Inconsistent policies
- Lack of Implementation of policies and regulations
- Declining fish stocks at sea

Tourism

Pakistan has a coastal line of more than 1000 kilometres with great potential for tourism. Tourism opportunities range from beaches to eco-tourism, parks, archaeological sites, and religious places.¹³ Some of these include Hingol Park, Balochistan Sphinx, Chandra Gup, Princess of Hope, and tombs of soldiers of Muhammad Bin Qasim (712 AD).

Strengths

- Serene beaches, eco-tourism, parks, archaeological sites, and religious places

Weaknesses

- Lack of appropriate policies, especially for marine and coastal tourism
- Lack of appropriate facilities
- Lack of promotion and incentives
- Lack of Integrated Coastal Zone Management (ICZM)

Opportunities

- National, regional, and global demand
- Abundance of sites for different types of tourism

Threats

- Security of tourists
- Inconsistent policies

13. Iftikhar Ahmed Rao, Elements of Blue Economy, Islamabad: IPS Press, 2020.

Inland Water Transport

Geographically, many major parts of Pakistan are close to the rivers. There are numerous canals, some of which join various rivers, making it one of the largest canal systems in the world. Inland waterways available in the country are approximately 30,000 kilometre in length.

Historically, Pakistan has used inland water transportation for navigation. Recent studies have highlighted the importance of inland water transportation for reducing freight transportation and road congestion. An example of this is the Government of Punjab's recent interest in the establishment of the Inland Water Transport Development Company.

The company has carried out Phase-I as a pilot project stretching 220 kilometres from Attock to Daudkhel on the northern section of River Indus. A small base has also been established at Daudkhel.



© iwt.punjab.gov.pk

	Europe ¹⁴	USA ¹⁵	China ¹⁶	Brazil ¹⁷	Pakistan ¹⁸
Available waterways (km)	40,000	40,233	127,000	50,000	30,000
Cargo Volume (MT)	551	770	7,472	45	NA
Main waterway	Rhine-Maine-Danube corridor	Mississippi	Yangtze	Amazon	Indus

Strengths

- 30,000 kilometres of internal waterways system
- Historical background in river transport system, especially the Indus River

Weaknesses

- Lack of decision-making
- Undeveloped infrastructure and facilities

Opportunities

- Rivers running from north to south covering almost the entire country
- Huge canal systems linking river areas to rest of the country which can further facilitate waterborne transportation
- Economical and sustainable

Threats

- Inconsistent policies (A company established for this purpose is non-functional now)

Ocean Seabed Resources

Pakistan's Exclusive Economic Zone (EEZ) and extended continental shelf area, a total of 290,000 km², is assumed to be rich in seabed resources.¹⁹ However, its potential has not been fully surveyed and explored yet. Offshore oil and gas explorations started in the 1960s with around 18 offshore exploratory wells drilled so far and many to occur in the future.

Strengths

- Large seabed area

14. Inland Navigation Europe, "Why invest in inland waterways & ports?," 7 November 2017. [Online]. Available: www.inlandnavigation.eu.

15. "U.S. Waterborne Freight," 2019. [Online]. Available: <https://www.bts.gov/content/us-waterborne-freight>.

16. National Bureau of Statistics (China), "National Data," December 2019. [Online]. Available: www.data.stats.gov.cn.

17. World Wide Inland Navigation Network, "SOUTH AMERICA Brazil Inland Waterways," December 2019. [Online]. Available: <https://www.winn.org/brazil-inland-waterways>.

18. N. Desk, "Seminar: Experts for inland water transport mode for cargo," 20 June 2013. [Online]. Available: <https://tribune.com.pk/story/566162/seminar-experts-for-inland-water-transport-mode-for-cargo/>.

19. NIO, "National Institute of Oceanography Karachi, Pakistan," [Online]. Available: <https://niopk.gov.pk/introduction.html>.

Weaknesses

- Not properly surveyed yet for potential resources

Opportunities

- Offshore drilling

Threats

- Lack of attention and resources for sustainable projects

Ocean Energy

Pakistan can derive energy from its strong and predictable monsoon winds. The Alternate Energy Development Board (AEDB) was established due to this reason.²⁰ The coastal belt of Pakistan has a wind corridor that is 60 km wide and 180 km long with a wind power potential of up to 50,000 Megawatt (MW) for generating electricity.²¹

Strengths

- Predictable strong winds and a long coastline



Weaknesses

- Lack of appropriate policies and infrastructure

Opportunities

- Wind, wave, and tidal energy

Threats

- Lack of available resources

Priority Areas

Despite Pakistan's prospects, there are several challenges that need to be addressed. Inconsistent policies, lack of ownership, high import duty and multiple layers of taxation are major obstacles hindering the true potential of blue economy in Pakistan. Similarly, persistent use of conventional fishing methods, unmonitored overfishing by large industrial trawlers, and dilapidated fish stocks and processing infrastructure at harbours impede development. Additionally, a lack of updated fisheries database, failed coordination between federal and provincial fisheries authorities, unskilled labour, and poor compliance with international health and safety measures, has made Pakistan's fish exports uncompetitive both in terms of price and quality.²²

The problem of exploitation of marine fisheries stocks also stands as a challenge for the country. At present, systematic deficiencies in aquaculture like biosecurity - surveillance, quarantine facilities, and animal health diag-



A discarded boat on the shore of the Arabian Sea, Pakistan.

© UNDP Pakistan

nostic capacity - are all limited.²³ Addressing marine pollution, such as oil pollution due to accidental oil spills, is also an issue, with the Tasman Spirit case being one such example.²⁴ Moreover, plastic debris is detrimental to

20. Alternative Energy Development Board, "Functions of AEDB," [Online]. Available: <https://www.aedb.org/about-us/terms-of-reference>.

21. "Wind Energy Country Analyses Pakistan," [Online]. Available: https://energypedia.info/wiki/Wind_Energy_Country_Analyses_Pakistan#:~:text=As%20per%20the%20collected%20data,wide%20and%20180%20km%20long.

22. N. Hussain, "PAKISTAN'S BLUE ECONOMY POTENTIAL, CHALLENGES AND PROSPECTS," Strategic Thought, 2022.

23. S. A. Husain, "Fishery resources and development policy in Pakistan," GeoJournal, p. 395-411, 1992.

24. M. Alam, "KARACHI: Pakistan to claim \$2bn from owners of Tasman," 31 May 2005. [Online]. Available: <https://www.dawn.com/news/141429/karachi-pakistan-to-claim-2bn-from-owners-of-tasman>.



Plastic pollution on the shore of the Arabian Sea, Pakistan.

© UNDP Pakistan

oceans, which is when gallons of raw sewage or untreated industrial waste from Karachi flows into the harbour.

The country is also facing the problem of abandoned, lost, or discarded fishing gear (ALDFG), often referred to

as ghost gear, which poses a threat to the marine ecosystem.²⁵ Last and most importantly, there is a need for an Integrated Coastal Resource Management (ICRM) where different departments and sectors work in harmony to address issues and help the industry flourish and thrive.

Recommendations

Policy Level

- Prepare and implement Integrated Coastal Zone Management (ICZM) in coordination with all stakeholders.
Ministry of Climate Change
- Prepare the National Policy and implementation plan for blue economy with appropriate resource allocation.
Ministry of Maritime Affairs; Ministry of Planning, Development & Special Initiatives
- Prepare a Blue Economy Development Framework (BEDF) in accordance with the World bank format:
 - a. Data, analysis, and dissemination
 - b. Policy, institutional, and fiscal reforms
 - c. Fostering investment**Ministry of Maritime Affairs; Ministry of Planning, Development & Special Initiatives**
- Establish a Blue Economy Cell for real time coordination, as present in Bangladesh.
Prime Minister's Secretariat

25. World Wide Fund, "#StopGhostGear Together We Can Change This" https://www.wwfpak.org/issues/plastic_pollution/ghost_gear/.

- Incorporate blue economy SDG 14, Life Below Water, in our 5-year development plans with resource allocation like Malaysia has done in their '11th Malaysia Plan (2016-2020)' and in the '12th Malaysia Plan (2021-2025).²⁶

Ministry of Planning, Development & Special Initiatives

- Prepare "National State of Oceans and Coast Reports" with help from Southeast Asian countries Indonesia, Thailand, and Philippines.

Ministry of Maritime Affairs

- Update and Issuance of:
 - a. National Maritime Policy (last issued in 2002, revision under process since 2013).
 - b. Pakistan Merchant Marine Policy – 2001 (Amended 15 November 2019, but needs a comprehensive revision, not just a few amendments, while ensuring private sector participation).
 - c. Merchant Shipping Ordinance 2001 (MSO) which is essential for legal cover to all maritime activities.

Ministry of Maritime Affairs; Ministry of Defence

- Master plan for ports and prioritizing the type of goods and services that need to be optimized at each port. **Ministry of Maritime Affairs**

- Assess ports inefficiencies with the help of International Maritime Organisation (IMO) and then appropriate actions to improve their efficiencies.

Ministry of Maritime Affairs

- Implementation of Port, Safety, Health, and Environmental Management System (PSHEMS).

Ministry of Maritime Affairs

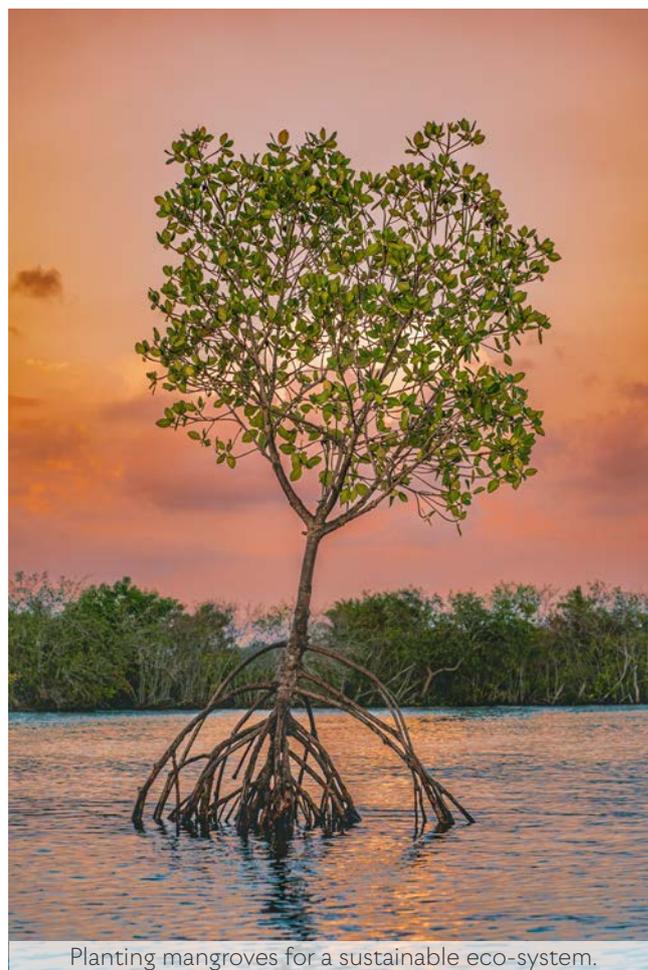
- Prepare and implement Maritime Education and Training Plan to meet global demand for seafarers.

Ministry of Maritime Affairs

Marine Environment

- Consider Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)-like set up for our region.²⁷ PEMSEA was implemented by UNDP and executed by IMO.

Ministry of Maritime Affairs



Planting mangroves for a sustainable eco-system.

© Pexels/ Nandhu Kumar

- Prepare and implement a roadmap towards zero single use plastics with a plan for Net Zero.

Ministry of Climate Change

- Plan to protect valuable ecosystem services and natural resources, and ensure right species of mangroves with suitable hydrological characteristics for plantation in our environment. Learning can be sought from Philippines' unsuccessful attempts.

Ministry of Climate Change

- Involvement of the private sector in mangrove restoration.

Ministry of Climate Change

- Setting up coastal protection projects with support from international organizations such as the World Bank.

Ministry of Climate Change with provinces and other stakeholders

26. R. M. Rozaimy, J. Soon-Yew, N. A. S. A. Rahman, K. Lai-Kuan and N. H. N. Manas, "Blue Economy in Malaysia: An Endeavour of Achieving the Sustainable Development Goals (SDGs)," *International Journal of Academic Research in Economics and Management and Sciences*, vol. 11, no. 3, p. 289–309, 2022.

27. Partnerships in Environmental Management for the Seas of East Asia, "Sustainable Development Strategy for the Seas of East Asia (SDS-SEA)," [Online]. Available: <https://www.pemsea.org/>.

Marine and Coastal Tourism

- Plan for environment friendly and sustainable marine and coastal tourism. Developing mangroves ecotourism in coastal communities like Philippines, along with other forms of tourism. At present, this sector is neglected in Pakistan and earns only about US\$50,000 per annum, whereas the potential is estimated to be \$4-5 Billion.²⁸

Ministry of Tourism /Pakistan Tourism Development Corporation (PTDC) in coordination with provinces and other stakeholders

Inland Water Transportation

- Undergo research, prepare, and implement a national level inland water transportation system for sustainable and cheaper means of transportation.

Ministry Maritime Affairs, Ministry of Water Resources, Water and Power Development Authority (WAPDA) in coordination with provinces and other stakeholders

Fisheries

- Focus on aquaculture, mariculture, and pen culture fisheries like Bangladesh and India.
- Close loop fishing export by setting up a pilot project with private sector participation such as certified boats, landing and handling jetties, and processing facilities.
- Arranging an 'Adaptive Co-management' by the government and local communities that focuses on fish protection, juvenile conservation, illegal gear control, and overall ecosystem resilience involving all stakeholders. Synergistic impact of all the initiatives will help our fishing industry and local communities.
- There is a need for regulations and incentives. Partnerships with Thailand's Crab seed bank initiatives, which allow gravid females to reproduce by releasing gravid females from fishermen's crab traps, either by cooperation or trading is an example to start with.²⁹

Federal and Provincial Ministries of Fisheries and Fisheries Development Board (FDB)



Bangladesh practising sustainable aquaculture.

© essfeed.com

Shipbuilding and Recycling

- Attract and facilitate international shipyards to set up their facilities here by leveraging the country's location at the mouth of the gulf and its abundant labour force.
Ministry of Defence Production; Ministry of Maritime Affairs; Ministry of Planning, Development & Special Initiatives
- Feasibility studies (financial, technical, and legal) for new shipyards including possible and preferable locations. It will facilitate setting up new shipyards with total cost expected to be around \$1.5 million.
Ministry of Defence Production; Ministry of Maritime Affairs; Ministry of Planning, Development & Special Initiatives
- Encourage and facilitate private sector in shipbuilding with appropriate policies and incentives, on a JV basis or smaller yards.
Ministry of Defence Production; Ministry of Maritime Affairs

28. M. A. Alam, "Assessing the potential of Coastal Tourism in Pakistan," 5 November 2020. [Online]. Available: <https://www.maritimestudyforum.org/assessing-the-potential-of-coastal-tourism-in-pakistan/>.

29. Aquatic Resources Research Institute, Chulalongkorn University, "Crab bank success story: Project on Si Chang island achieves remarkable 60% survival rate," [Online]. Available: <http://www.sustainability.chula.ac.th/report/2779/>.

- In terms of ship recycling and breaking:
 - a. Declare it as an industry and assign a ministry for it, such as Ministry of Industries.
 - b. Immediate steps to implement the Hong Kong convention followed by EU Ship Recycling Regulation and Basel conventions.
 - c. Necessary actions be initiated for a program for Safe and Environmentally Sound Ship Recycling project (SENSREC) similar to the one in Bangladesh.³⁰ Estimated cost for Pakistan is expected to be \$4.5 million with annual turnover of more than \$2 billion.

Prime Minister's Office; Ministry of Industries; Ministry of Planning, Development & Special Initiatives



© Pixabay

Development Initiatives

- Assist and facilitate in preparing and implementing marine policies and Integrated Coastal Zone Management (ICZM).
- Consider a set up like PEMSEA implemented by UNDP and executed by IMO.
- Help in a close loop fishing export project, which can then be extended to the entire fishing sector.
- In terms of shipbreaking and recycling, a Safe and Environmentally Sound Ship Recycling project (SENSREC) similar to the one in Bangladesh can be established, which could be implemented by IMO and funded by EU countries.
- Facilitate feasibility studies for new shipyards including possible and preferable locations. Moreover, assist with setting up new shipyards and encourage private sector participation in shipbuilding and smaller yards, and help coordination with the EU countries.
- Set up pollution control projects like the ones in Maldives, Thailand, and Malaysia with funding from UNDP.
- Encourage stakeholders and the corporate sector of EU, US, Japan, and Korea to participate in Special Economic Zones (SEZs) and partner with the Government of Pakistan.
- Encourage environmentally friendly marine and coastal tourism like a closed loop pilot project along the Makran and Sindh coasts.

30. International Maritime Organization, "Safe and Environmentally Sound Ship Recycling in Bangladesh - Phase II," 2020. [Online]. Available: <https://www.imo.org/en/GoogleSearch/SearchPosts/Default.aspx?q=sensrec>.

References:

- i. A. H. M. Azam, M. R. K. Zainuddin and T. Sarmidi, "Malaysia's Blue Economy: Position, Initiatives, and Challenges," Economic Research Institute for ASEAN and East Asia, Malaysia, 2023.
- ii. S. A. Valenzuela, "Growing the Philippine Blue Economy: Policy Challenges and Opportunities," ATENEO SCHOOL OF GOVERNMENT WORKING PAPER SERIES, pp. 1-28, 2017.
- iii. Academic library, "Thailand, Australia: Blue Economy of the Indian Ocean," 2023. [Online]. Available: <https://ebrary.net/189890/environment/thailand>.
- iv. Xinhua, "Steering China toward a strong maritime country," 8 June 2022. [Online]. Available: http://english.scio.gov.cn/m/topnews/2022-06/08/content_78260212.htm.
- v. K. Alam, "BLUE ECONOMY –DEVELOPMENT OF SEA RESOURCES FOR BANGLADESH," 2023. [Online]. Available: <https://mofa.gov.bd/site/page/8c5b2a3f-9873-4f27-8761-2737db83c2ec>.
- vi. Z. Anna, "Unlocking Indonesia's potential through a blue economy," 13 June 2023. [Online]. Available: <https://www.eco-business.com/opinion/unlocking-indonesias-potential-through-a-blue-economy/>.
- vii. Asian Development Bank, "Report and Recommendation of the President to the Board of Directors," ADB, Maldives, 2022.
- viii. K. Yin, "Annual Report On The Development Of China's Marine Economy," Social Sciences Academic Press, China, 2022.
- ix. China National Offshore Oil Corporation, "China Marine Energy Development Report," 2022.
- x. S. I. S. Institute, "Global Port Development 2021," 2022.
- xi. I. M. M. Zaideen and C. M. F. Ramli, "Sustainable blue economy," 15 February 2022. [Online]. Available: <https://www.thesundaily.my/home/sustainable-blue-economy-LC8859782>.
- xii. The National Bureau of Asia Research, "China's Ocean Economic Development Plan," 30 April 2023. [Online]. Available: <https://www.nbr.org/event/chinas-ocean-economic-development-plan-regional-strategic-economic-and-political-implications/>.
- xiii. State Council of China, "The 12th Five-Year Plan for National Economic and Social Development," China's National People's Congress, 2011.
- xiv. Ocean Health Index, "Philippines", 2022, <https://oceanhealthindex.org/regions/philippines/>.
- xv. The Guardian, "Fukushima water to be released into ocean in next few months, says Japan," 13 January 2023. [Online]. Available: <https://www.theguardian.com/environment/2023/jan/13/fukushima-water-to-be-released-into-ocean-in-next-few-months-says-japan>.

Copyright © 2023

United Nations Development Programme Pakistan

4th Floor, Serena Business Complex, Khayaban-e-Suharwady, Sector G-5/1, P. O. Box 1051, Islamabad, Pakistan

For feedback, please write to us at: pak.communications@undp.org

Disclaimer:

The views expressed in this publication are those of the authors and do not necessarily represent those of the United Nations, including UNDP or the UN Member States. UNDP has copyrights to all images and visuals used in the policy brief.

