

THE BLUE ECONOMY BUSINESS MODEL OF PAKISTAN: THEORETICAL PERSPECTIVE OF OPPORTUNITIES AND CHALLENGES

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ABSTRACT

Pakistan's Blue Economy, though currently underdeveloped, offers significant potential for sustainable growth. With focused efforts, strategic planning, and targeted investments, Pakistan can fully leverage its maritime resources to strengthen its economic position and bolster national security. The Blue Economy has the potential to deliver long-term economic stability and drive future growth, positioning Pakistan for greater resilience and prosperity.

INTRODUCTION

The blue economy concept encompasses the sustainable use of ocean resources to grow economics, improve livelihoods, and create jobs while preserving the health of ocean ecosystems. Water is essential for life, acts as a communication channel, and provides livelihoods. Some of the world's greatest civilizations flourished near water sources, such as the Egyptians, Babylonians, Mesopotamians, and the Indus Valley. Historical empires like Persia also used water routes to expand their influence. Around 70% of the Earth is covered by oceans, and nearly 80% of global trade occurs over maritime routes. Sea-based trade remains one of the oldest, most efficient, and cost-effective forms of transport. Historically, countries like Portugal, Scandinavia, France, and Britain built vast empires by capitalizing on maritime trade and naval power. The geopolitical theories of Captain Alfred T. Mahan highlighted the significance of sea power, driving the expansion of European empires across Asia and Africa.

The blue economy is a forward-thinking idea that aims to tap into the immense possibilities of ocean resources to fuel economic expansion, enhance living standards, and

generate employment, all while ensuring the long-term well-being and sustainability of ocean habitats. This creative strategy values the inherent worth of the ocean and its assets, striving to harmonize economic progress with environmental care

Today, maritime activity remains critical in global security. Conflicts in the Caspian Sea, South China Sea, and Korean Peninsula, along with new alliances like the Quadrilateral Security Dialogue (QUAD) and AUKUS, underscore the importance of naval power in international relations. Similarly, emerging sea-based threats, such as piracy and offshore energy security, have pushed nations to strengthen their naval capabilities. Pakistan, too, has participated in multilateral naval exercises and has repeatedly commanded the Counter-Piracy Combined Maritime Forces CTF-151. Despite this, Pakistan has historically underutilized its maritime potential due to a lack of awareness of its sea-based resources and strategic advantages. Only recently has a focus on offshore oil and gas exploration and the development of Gwadar port as part of the China-Pakistan Economic Corridor (CPEC) begun to shift attention toward Pakistan's Blue Economy. The Blue

Economy concept, first introduced in 2012, aims to promote sustainable and efficient use of ocean resources for economic growth and improved livelihoods. Pakistan, with its 1,000 km coastline and rich marine resources, has immense potential to benefit from the Blue Economy. This model includes sectors such as fisheries, maritime transport, renewable energy, and tourism and aims to balance economic development with environmental sustainability.

Conceptual Overview

Human needs and the quest for new resources drive conceptual innovation. The growing global population and increasing resource demands have fueled concerns about resource depletion, leading to a search for alternatives. This has shifted from a "Green Economy" to a "Blue Economy." While the exploitation of marine resources has long been a part of geopolitics, the idea of using oceanic resources for sustainable economic growth is relatively new.

Gunter Pauli introduced the term "Blue Economy," emphasizing the shift from scarcity to abundance by utilizing everything the oceans offer. This concept gained international attention at the 2012 UN Conference on Sustainable Development in Rio de Janeiro, which emphasized that the Blue Economy could be a viable and sustainable economic model. The UN's 2030 Sustainable Development Goals (SDGs), particularly SDG-14, aim to conserve and sustainably use marine resources.

Institutional efforts, such as the United Nations Department of Economic and Social Affairs (UNDESA) and the Global Ocean Commission, have also advocated for the sustainable use of marine resources. These efforts have spurred global organizations and countries to adopt Blue Economy strategies for economic growth and job creation. The concept has evolved to include a wide range of activities like fisheries, offshore energy, tourism, marine sports, and seabed mining, all

aimed at fostering economic growth while preserving marine ecosystems.

Global Perspective

According to Masanori Kobayashi from the Tokyo Foundation for Policy Research, the oceans, covering 72% of the Earth's surface, are crucial for human life and global economies. Nearly 44% of the world's population lives within 150 kilometers of the coast, with millions relying directly on the ocean for their livelihoods. From 2021 to 2030, the UN has declared the Decade of Ocean Science for Sustainable Development to address future challenges and promote the Blue Economy.

In 2010, the global oceanic economy was valued at \$1.5 trillion, and it is projected to reach \$3 trillion by 2030. The potential economic impact of the Blue Economy globally is estimated at \$24 trillion. Many nations, such as Japan, South Korea, and members of the ASEAN, have integrated the Blue Economy into their growth strategies. For instance, India's Blue Economy contributes significantly to its GDP, supporting 95% of its trade through maritime routes.

Pakistan's Blue Economy Potential

Pakistan possesses a 1,000 km coastline, with major seaports in Karachi, Bin Qasim, and Gwadar. Pakistan's Exclusive Economic Zone (EEZ) spans 240,000 square kilometers, with an additional continental shelf of 50,000 square kilometers. This positions Pakistan strategically near global trade routes and energy supplies, particularly near the Strait of Hormuz. Pakistan is heavily dependent on sea-based trade, with 95% of its trade and all of its oil supplies traveling via sea routes.

Despite the vast potential, Pakistan's Blue Economy remains underdeveloped, with much of its focus limited to fisheries. The country's fishing industry, for example, generates only \$450 million, though its potential is estimated at \$3 billion. Additionally, there are significant untapped opportunities in offshore energy, coastal tourism, shipbuilding, and shipbreaking industries

Potential verses Actual Utilization

Potential verses Actual Utilization Activity	Potential	Actual Utilization
Coastal Tourism	\$4.5 billion	\$0.05 million
Fisheries	\$3 billion	\$400-450 million
Seafood Exports	\$2 billion	\$450 million
Oil and Gas	\$14 billion	Nil
Minerals	\$4-5 billion	Nil
Shipbreaking	\$3 billion	\$100 million
Shipbuilding	Data not available	?
Maintenance/Repairs	Data not available	?
Jobs	5 million	1.8 million
Renewable Energy	No survey done	Nil
Coastal Development	No survey done	Nil
Offshore Development	No survey done	Nil

Source: Prepared by the Author from diverse sources. Data may vary due to non-availability of official data.

Literature Review

The review of existing studies underscores the significance of the blue economy in Pakistan, with various sectors presenting avenues for sustainable economic expansion, enhanced living standards, and environmental conservation. Nonetheless, obstacles such as insufficient infrastructure, regulatory complexities, and environmental deterioration must be overcome to fully realize the blue economy's potential. Studies emphasize the potential of maritime sectors to drive sustainable economic growth. Key areas of focus include the integration of blue resources into national economic planning, the development of sustainable tourism, the enhancement of port facilities, and the expansion of renewable energy sources. More research is required to delve into the blue economy's possibilities in Pakistan and to formulate strategies for its advancement.

Objectives

- To evaluate the current state and potential of Pakistan's Blue Economy.
- To identify specific opportunities and challenges in transportation, tourism, port facilities, and renewable energies.
- To propose a sustainable business model that leverages Pakistan's maritime resources.
- Analyze the current state of the blue economy in Pakistan, highlighting the potential for growth and development.

Model

The business model used in this analysis is based on the sustainable blue economy framework, which integrates economic, environmental, and social sustainability. The model emphasizes resource efficiency, ecosystem health, and inclusive growth.

- The proposed model for Pakistan's Blue Economy includes strategic initiatives across four key sectors:
- Transportation: Developing efficient sea transport systems to boost trade.
- Tourism: Promoting sustainable coastal and marine tourism.
- Port Facilities: Upgrading port infrastructure to enhance trade capabilities.
- Renewable Energies: Harnessing marine and coastal resources for renewable energy production.

Hypotheses

- H1:** Enhancing port facilities will significantly boost Pakistan's trade volume.
- H2:** Sustainable tourism development will increase economic benefits while preserving coastal ecosystems.
- H3:** Investing in renewable energies will reduce dependence on fossil fuels and promote environmental sustainability.
- H4:** Improved sea transportation will facilitate better connectivity and economic integration.

H5: Effective governance and policy frameworks are essential to overcoming challenges and maximizing opportunities in the blue economy.

H6: Technological innovation and investment in infrastructure are critical drivers of growth in the blue economy sectors.

Challenges

One of the biggest challenges is a general lack of awareness, or "sea-blindness," among both the public and policymakers. Many are unaware of the economic opportunities that lie within Pakistan's coastal waters. This neglect has left a strategic gap in Pakistan's national security and economic planning. The lack of infrastructure, expertise, and investment in maritime industries has also hindered growth. Pakistan's National Security Policy (2021-2025), which emphasizes economic security, overlooks the role of the Blue Economy in driving future economic progress.

1. Fisheries

- **Lack of Modern Equipment:** The fishing industry in Pakistan is hampered by outdated and inefficient fishing methods. The absence of modern harvesting equipment and deep-sea fishing fleets limits productivity, causing underutilization of fishery resources.
- **Overfishing and Sustainability:** Unsustainable fishing practices have led to depletion of marine life in some areas, raising concerns about the long-term viability of fish stocks. This also affects the marine ecosystem, which is crucial for maintaining fish populations.
- **Limited Processing and Export Infrastructure:** A lack of adequate infrastructure for processing, packaging, and exporting seafood limits the industry's ability to reach international markets and fully capitalize on the growing global demand for seafood.
- **Regulatory and Governance Gaps:** The sector lacks strong regulatory frameworks and monitoring systems to manage resources efficiently and prevent illegal fishing, further stalling its growth.

2. Coastal Tourism

- **Underdeveloped Infrastructure:** Despite Pakistan's rich coastal beauty, tourism infrastructure (hotels, resorts, transportation, and recreational facilities) is poorly developed. This prevents the area from becoming an attractive destination for both local and international tourists.
- **Security Concerns:** The perception of insecurity, particularly in the coastal regions of Balochistan, has deterred investments in tourism. Local instability also discourages tourists from visiting these areas.
- **Lack of Promotion and Awareness:** There is little awareness, both locally and internationally, about Pakistan's coastal tourism potential. Marketing and promotional efforts to highlight the beauty and appeal of these coastal areas are minimal.
- **Environmental Degradation:** Pollution and lack of conservation efforts in coastal areas can diminish the natural beauty and ecological integrity, which are key drivers of tourism. Poor waste management and coastal erosion are threats to developing the sector sustainably.

3. Offshore Energy and Mineral Resources

- **Technical and Financial Limitations:** Extracting offshore oil, gas, and minerals requires advanced technology and significant investment, which Pakistan currently lacks. Deep-sea drilling and exploration are costly, and the country has not yet secured the required partnerships or funding for large-scale operations.
- **Geopolitical Instability:** The proximity of Pakistan's maritime zone to politically volatile regions like the Strait of Hormuz raises concerns about the security of offshore energy projects, making foreign investment less attractive.
- **Environmental Risks:** Offshore drilling and mineral extraction pose risks to marine ecosystems, including oil spills and habitat destruction. Proper environmental safeguards and regulations are needed but are currently underdeveloped in Pakistan.
- **Regulatory Hurdles:** The sector faces regulatory challenges, including complex bureaucratic processes, a lack of clear

policies, and inconsistent government support for energy exploration projects.

4. Shipbuilding and Shipbreaking

- **Outdated Methods and Lack of Compliance:** Pakistan's shipbreaking industry, which once thrived, suffers from outdated and unsafe methods. Non-compliance with international environmental and safety standards (such as the Hong Kong International Convention) limits its ability to attract international clients and investment.
- **Lack of Skilled Workforce:** The industry faces a shortage of trained and skilled laborers who are proficient in modern shipbuilding and

shipbreaking techniques. This limits the sector's ability to adopt advanced practices and increase productivity.

- **Insufficient Infrastructure:** Shipbuilding facilities in Pakistan are not equipped to handle large-scale or high-tech projects. The absence of modern dry docks and repair facilities further limits the industry's ability to expand and compete globally.
- **Limited Government Support:** There is a lack of government initiatives and incentives to support the growth of the shipbuilding and shipbreaking sectors. Regulatory red tape and inconsistent policies also hinder development and modernization efforts.

Sector	Challenges
Fisheries	Lack of modern equipment, overfishing, limited export infrastructure, weak regulations
Coastal Tourism	Poor infrastructure, security concerns, lack of promotion, environmental degradation
Offshore Energy & Minerals	Technical and financial limitations, geopolitical instability, environmental risks, regulatory hurdles
Shipbuilding & Shipbreaking	Outdated methods, lack of skilled labor, insufficient infrastructure, lack of compliance with international standards

Opportunities in Four Sectors Related to Oceans & Ports

1. Fisheries

Pakistan's coastal waters and marine ecosystem have significant fisheries resources. The potential revenue from the fishing industry is estimated at \$3 billion. Currently, however, the sector is underdeveloped, generating only \$400–450 million annually. With improvements in fishing techniques, infrastructure, and better management practices, Pakistan can unlock a substantial increase in revenue. The development of deep-sea fishing fleets, coupled with modern harvesting methods, would allow for full utilization of this potential.

2. Coastal Tourism

Pakistan's coastal tourism potential is vastly untapped. With its beautiful coastal areas, Pakistan has the opportunity to develop a thriving tourism sector. This can include resorts, recreational activities, and cultural attractions along the coastline. Coastal tourism has the potential to generate up to \$4.5 billion annually, yet it currently brings in only \$50,000. The

development of infrastructure and marketing of the coast as a tourist destination can significantly increase income from tourism.

3. Offshore Energy and Mineral Resources

Pakistan has immense untapped potential in offshore energy, with 16 billion barrels of oil and gas reserves in its maritime areas. Offshore energy production could generate around \$14 billion annually. Similarly, minerals like manganese, cobalt, and copper exist in Pakistan's deep-sea regions, with the potential to generate \$4-5 billion in revenues. Currently, these resources are not being exploited, leaving a major economic opportunity untapped. Investment in exploration and drilling technologies could be a game-changer for Pakistan's economy.

4. Shipbuilding and Shipbreaking

Pakistan has significant potential in shipbuilding, shipbreaking, and maintenance. The shipbreaking industry, in particular, was once a leading industry in the region, but due to the use of outdated methods and non-compliance with international standards, it has not been fully realized.

Shipbreaking currently generates \$100 million annually, but it has the potential to generate \$3 billion if upgraded. With the right infrastructure and compliance with international certifications, Pakistan could become a key player in the global shipbuilding and shipbreaking markets.

Methodology

Data was collected from World Bank websites, Innovative Sustainable Economy, World Economic Forum, Science Direct, Blue Tech, and official Pakistani ministries, chambers, and offices. Data sources include government reports, industry publications, academic articles, and interviews with key stakeholders.

Techniques used in the analysis

- **Qualitative Analysis:** Content analysis of policy documents and expert interviews to identify challenges and opportunities.
- **Comparative Analysis:** Benchmarking against successful blue economy models in other countries to draw relevant lessons for Pakistan.

Future Prospects

The untapped resources of Pakistan's Blue Economy hold immense potential for job creation, regional trade, and coastal development. With strategic policies and proper investments, Pakistan can leverage its maritime resources for economic growth and stability. The development of Gwadar port is particularly crucial, as it offers the potential to become a regional trade hub and a key player in China's Belt and Road Initiative (BRI). Moreover, improved infrastructure and the promotion of shipbuilding, fisheries, and tourism could unlock significant economic benefits.

Conclusion

Pakistan's Blue Economy, though currently underutilized, presents a promising opportunity for sustainable growth. With concerted efforts, strategic planning, and investments, Pakistan can harness its maritime resources to improve its economic standing and enhance national security. The Blue Economy could provide Pakistan with much-needed economic stability and growth for the future.

Recommendations for Future Research and Policy Development

Enhanced Data Collection: Comprehensive and reliable data on marine resources and economic activities are essential for informed decision-making.

Interdisciplinary Research: Collaboration between environmental scientists, economists, and social scientists can provide a holistic understanding of the blue economy.

Policy Integration: Policies should integrate economic, environmental, and social dimensions to ensure sustainable development.

Capacity Building: Training and capacity-building programs for local communities and stakeholders to enhance their participation and benefit from the blue economy.

By addressing these areas, Pakistan can effectively develop its blue economy, ensuring long-term economic growth and environmental sustainability.

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