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Blue Economy Literature Review

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Abstract

This article overviews the blue economy, its origins, dimensions, and its impact on the global economy. The blue economy is a concept that promotes the sustainable use of ocean resources for economic growth while also preserving the health of marine ecosystems. The chapter discusses the different dimensions of the blue economy, including marine transportation, fisheries, energy, tourism, and biotechnology. It highlights the significant contribution of the blue economy to the world economy, creating jobs, generating wealth, and supporting livelihoods.

However, the chapter also highlights the challenges facing the blue economy, such as overfishing, pollution, and climate change, which threaten the health and sustainability of the marine environment. The chapter concludes by calling for greater cooperation and investment in research, innovation, and technology to address these challenges and ensure the long-term sustainability of the blue economy.

Keywords: blue economy, origins, world economy, challenges

1. Introduction

The blue economy, or the ocean or maritime economy, refers to the sustainable use of ocean resources for economic growth, improved livelihoods, and ocean health. The blue economy encompasses a range of sectors, such as fisheries, aquaculture, shipping, energy, tourism, and marine biotechnology. It's potential to contribute to sustainable development, and poverty reduction has gained attention from policymakers, scholars, and stakeholders (Smith-Godfrey, 2016).

However, the blue economy also faces modern challenges threatening its sustainability and potential benefits. Climate change, overfishing, pollution, and habitat destruction are significant threats to the health of oceans and their resources. These challenges affect the environment and have economic and social consequences, such as losing biodiversity, livelihoods, and cultural heritage (Bari, 2017).

From a scholarly point of view, the blue economy requires a multidisciplinary approach that combines natural, social, and economic sciences to understand the complex interactions between human activities and ocean ecosystems. Scholars have emphasised the importance of policy coherence, governance frameworks, and stakeholder engagement to ensure the sustainable use of ocean resources. The role of innovation, technology, and finance in supporting the transition to a blue economy has also been highlighted in recent literature (Abhinav et al., 2020).

Overall, the blue economy offers opportunities and challenges that require a holistic and integrated approach to balance economic growth with environmental sustainability and social equity.

1.1 Blue Economy Origins

The concept of the blue economy originated in the early 2000s when sustainable development was gaining traction globally. The term "blue economy" was coined by Gunter Pauli, a Belgian entrepreneur and sustainability advocate, in his book "The Blue Economy: 10 Years, 100 Innovations, 100 million Jobs", published in 2011 (Smith-Godfrey, 2016).

In his book, Pauli introduced the concept of a new kind of economy based on the efficient and sustainable use of ocean resources. He argued that the oceans are a source of untapped wealth and could solve many of the world's environmental and economic problems, such as climate change, energy scarcity, and poverty (Pauli, 2011).

Pauli proposed a new business model that imitates the functioning of natural systems and creates value from waste and by-products. He highlighted the potential of aquaculture, renewable energy, and biotechnology sectors to drive economic growth while promoting environmental sustainability and social inclusion (Pauli, 2011).

Since then, the blue economy concept has gained recognition from international organisations such as the United Nations and the World Bank, as well as from governments, academia, and the private sector. It has become a key driver of sustainable development and a pathway to achieving the United Nations' Sustainable Development Goals (SDGs), particularly SDG 14, which focuses on the conservation and sustainable use of oceans, seas, and marine resources (Rees et al., 2018).

In addition to Gunter Pauli's contribution to developing the blue economy concept, other influential thinkers and initiatives have contributed to its evolution. For instance, the 1992 United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, led to the adoption of Agenda 21, a comprehensive plan of action for sustainable development that recognised the importance of the oceans, seas, and coasts in promoting sustainable development. The conference highlighted the need for the integrated management and sustainable use of ocean resources and ecosystems (McCammon, 1992).

Furthermore, the 2002 World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa, emphasised the importance of the ocean economy as a driver of economic growth and poverty reduction. The WSSD led to the establishment of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, which aims to reduce the impacts of human activities on the marine environment (Nath,2005).

The blue economy has recently gained momentum as a critical strategy for sustainable development. The European Union, for instance, has developed a blue growth strategy that promotes the sustainable use of marine resources. In contrast, the African Union has launched the Blue Economy Strategy, which aims to promote sustainable economic growth, food security, and job creation by developing marine resources (Bond, 2019; Henderson, 2019).

Overall, the blue economy concept has its roots in the broader sustainable development agenda and has evolved to become a critical pathway to achieving environmental sustainability, economic growth, and social development.

1.2 Blue Economy Dimensions

In modern research, the blue economy is typically conceptualised as having six dimensions; Each dimension is characterised by principles and practices that aim to ensure the sustainable use of ocean resources for the benefit of present and future generations (Lee et al., 2021; Sarwat, 2022).

1.2.1 Economic Dimension

The economic dimension of the blue economy is concerned with creating economic growth and development while promoting sustainability. This dimension encompasses a range of activities such as fishing, aquaculture, marine biotechnology, tourism, shipping, and renewable energy. The principles of this dimension focus on creating value from ocean resources, promoting innovation, and developing sustainable business models that support local communities.

1.2.2 Social Dimension

The social dimension of the blue economy is concerned with ensuring that the benefits of ocean resources are shared equitably among all stakeholders. This dimension encompasses a range of social issues, such as human rights, labour standards, gender equality, and community development. The principles of this dimension focus on building partnerships, engaging with local communities, and ensuring that the social impacts of economic activities are considered.

1.2.3 Environmental Dimension

The environmental dimension of the blue economy is concerned with protecting the health and integrity of ocean ecosystems. This dimension encompasses a range of environmental issues such as biodiversity conservation, climate change mitigation and adaptation, pollution prevention, and ecosystem-based management. The principles of this dimension focus on ensuring that economic activities do not compromise the ecological sustainability of ocean resources.

1.2.4 Technological Dimension

The technological dimension of the blue economy is concerned with developing and applying new technologies

to support sustainable economic activities in the ocean. This dimension encompasses a range of technical areas, such as marine robotics, sensors, artificial intelligence, renewable energy technologies, and biotechnology. The principles of this dimension focus on promoting innovation, fostering technology transfer and diffusion, and promoting responsible and sustainable use of new technologies.

1.2.5 Cultural Dimension

The blue economy's cultural dimension concerns recognising and preserving cultural heritage and traditional knowledge of ocean resources. This dimension encompasses a range of artistic practices such as fishing, seafaring, storytelling, and cultural tourism. The principles of this dimension focus on respecting and valuing cultural diversity, recognising the cultural dimensions of ocean resources, and promoting cultural exchange and cooperation.

1.2.6 Governance Dimension

The governance dimension of the blue economy is concerned with creating effective governance mechanisms that support the sustainable management of ocean resources. This dimension encompasses a range of governance issues, such as institutional frameworks, policy coordination, and stakeholder engagement. The principles of this dimension focus on creating transparent, participatory, and accountable governance mechanisms that promote the sustainable use of ocean resources.

Research on the blue economy seeks to explore the interconnections between these three dimensions and to identify pathways for promoting sustainable development that balances economic growth with environmental and social sustainability. Key research areas include ocean governance, marine policy, ecosystem services, climate change adaptation, and sustainable business models. Modern blue economy research aims to create a comprehensive framework that supports the sustainable use of ocean resources for the benefit of both present and future generations.

2. The Effect of the Blue Economy on the World Economy

Several estimates and projections indicate the potential impact of the blue economy (Wenhai et al., 2019). According to a report by the OECD in 2016, the ocean economy contributed around USD 1.5 trillion to the global economy, equivalent to 2.5% of the worldwide GDP. The report also estimated that the ocean economy could double its contribution by 2030 if the right policies and investments are made. In particular, the report highlighted the potential of emerging sectors such as offshore wind energy, aquaculture, and marine biotechnology to drive economic growth and create jobs (Rigaud et al., 2018).

A more recent report by the World Wildlife Fund (WWF) in 2019 estimated that the blue economy could generate up to USD 3 trillion in value and create up to 40 million jobs by 2030. The report emphasised the need for a sustainable blue economy that balances economic growth with environmental and social sustainability and highlights the potential of sustainable fishing, coastal tourism, and marine renewable energy to create economic opportunities (Pendleton et al., 2020).

Another study by the European Commission in 2019 estimated that the blue economy generated around 5.4 million jobs and contributed around EUR 750 billion to the EU economy in 2018. The study also projected that the blue economy could contribute up to EUR 1.3 trillion to the EU economy by 2030 if the right policies and investments are made (Dalton et al., 2019).

These estimates and projections suggest that the blue economy can significantly contribute to the global economy, mainly if it is developed sustainably and responsibly. However, it is essential to note that the impact of the blue economy is not just measured in terms of economic output but also in terms of its social and environmental benefits, such as improving food security, reducing poverty, and preserving marine biodiversity.

The blue economy has the potential to significantly impact the economies of countries in the Middle East due to the region's extensive coastline, access to the Red Sea and the Arabian Gulf, and rich marine biodiversity. Here are some ways the blue economy is expected to affect the Middle East (Kabil et al., 2022):

1) Fishing and aquaculture are essential components of the blue economy, and the Middle East has a long tradition of fishing and seafood consumption. The region's access to the Red Sea and the Arabian Gulf provides diverse fish and other seafood. According to the Food and Agriculture Organization (FAO), the Middle East and North Africa (MENA) region's aquaculture production increased from 170,000 tons in 1990 to 1.4 million tons in 2018, which presents an opportunity for economic growth in this sector (Victorero et al., 2018).

2) Marine Tourism, The Middle East is home to some of the world's most famous and luxurious coastal resorts, attracting millions of tourists annually. In addition, the region's rich marine biodiversity and natural beauty offer

opportunities for recreational activities such as snorkelling, diving, and boat tours. According to a report by the World Travel and Tourism Council (WTTC), travel and tourism they contributed USD 196 billion to the MENA region's GDP in 2019. This figure is expected to grow further with the development of marine tourism (Michael et al., 2019).

3) Offshore Oil and Gas, The Middle East is a significant oil and gas producer, and offshore exploration and production are essential components of the region's economy. According to the U.S. Energy Information Administration (EIA), the Persian Gulf region accounted for about 28% of the world's crude oil production and 20% of its natural gas production in 2020. Developing new offshore oil and gas fields and expanding existing areas could benefit the region economically (Olanipekun & Alola, 2020).

4) Renewable Energy, The Middle East is well-positioned to develop renewable energy from marine sources such as wind, wave, and tidal power. The region's vast coastlines and exposure to strong winds and currents provide significant potential for renewable energy generation. According to a report by the International Renewable Energy Agency (IRENA), the potential for offshore wind energy in the region is estimated to be 3.6 GW by 2030, with the potential to create jobs and reduce carbon emissions (Barthelmie & Pryor, 2021).

In summary, the blue economy presents various economic growth and diversification opportunities in the Middle East, particularly in fisheries and aquaculture, marine tourism, offshore oil and gas, and renewable energy. However, to fully realise these opportunities, countries in the region will need to address challenges such as overfishing, pollution, and climate change and develop policies and strategies that promote sustainable and responsible use of marine resources.

The Blue Economy can have several positive effects on businesses, including:

1) Diversification of economic activities, The Blue Economy allows businesses to diversify their activities beyond traditional sectors. For example, companies can explore new markets in marine-based renewable energy, biotechnology, and marine tourism, leading to new revenue streams and job creation (Hussain et al., 2017).

2) Innovation and technological advancement, The Blue Economy encourage innovation and the adoption of new technologies to promote sustainable use of ocean resources. This can lead to the creation of new businesses and the emergence of new products and services that cater to the needs of ocean users (Spalding, 2016).

3) Increased market access, The Blue Economy provides businesses with access to a larger market for ocean-related products and services, both locally and globally. This can increase sales, revenue, and business growth (Kull & Andriamahefazafy, 2019).

4) Improved reputation, Businesses that adopt sustainable practices in the Blue Economy can improve their reputation and brand image. Customers are increasingly interested in supporting environmentally responsible businesses, which can lead to increased customer loyalty and market share (Bocken et al., 2014).

5) Collaboration and partnerships, The Blue Economy encourage partnerships among businesses, governments, and civil society organisations to promote sustainable ocean use. This can lead to sharing knowledge, expertise, and resources, benefitting businesses, and promoting sustainable development (Bennett, 2018).

In summary, the Blue Economy can positively impact businesses by providing opportunities for diversification, innovation, market access, improved reputation, and collaboration. However, companies must adopt sustainable practices in the Blue Economy to ensure ocean resources' long-term health and productivity.

3. Blue Economy Challenges

While the Blue Economy offers many opportunities, it also presents several challenges that must be addressed to ensure its sustainable development. Some of the main challenges include (Bari, 2017):

3.1 Environmental Degradation

The overexploitation of ocean resources, pollution, climate change, and other environmental factors can lead to the degradation of ocean ecosystems and biodiversity loss. This can have negative impacts on the long-term viability of the Blue Economy.

3.2 Lack of Regulation and Governance

The regulation and governance of ocean resources can be complex and fragmented, with overlapping jurisdictions and limited enforcement mechanisms. This can create uncertainty and risk for businesses operating in the Blue Economy.

3.3 Limited Access to Finance

Financing for Blue Economy projects can be limited, particularly for small and medium-sized enterprises. This can hinder the development of new businesses and innovative projects.

3.4 Limited Infrastructure

The development of infrastructure, such as ports, harbours, and coastal facilities, is often essential for the growth of the Blue Economy. However, the lack of adequate infrastructure can be a significant barrier to the development of some sectors.

3.5 Limited Human Capacity

The development of the Blue Economy requires a skilled and knowledgeable workforce, particularly in areas such as marine science, technology, and engineering. However, there can be a need for more trained professionals in these fields.

3.6 Limited Market Access

Market access can be limited, particularly for small and medium-sized businesses in developing countries. This can limit their ability to compete and grow in the global Blue Economy.

There is a need for international cooperation, effective governance, and investment in research and development, infrastructure, and human capacity building to overcome these challenges. Additionally, promoting sustainable practices and developing new technologies and business models that reduce the negative impacts of economic activities on the ocean can be essential to ensure the long-term viability of the Blue Economy.

4. Conclusion

The future of the Blue Economy looks promising as there is growing interest in sustainable ocean development, and more attention is being paid to the value of the ocean as an economic asset. Some trends that are shaping the future of the Blue Economy include:

4.1 Sustainable Practices

There is increasing recognition that sustainable practices are essential for the long-term viability of the Blue Economy. Adopting sustainable practices, such as ecosystem-based management and circular economy principles, is becoming more common.

4.2 Technological Innovation

New technologies like robotics, autonomous systems, and sensors are being developed to enable sustainable ocean development. These technologies can potentially increase efficiency and productivity while reducing the negative impacts of economic activities on the ocean.

4.3 Ocean-Based Renewable Energy

There is growing interest in ocean-based renewable energy, such as offshore wind and wave energy. This sector has the potential to create new jobs and provide a significant source of renewable energy to meet the growing demand for clean energy.

4.4 Circular Economy

The circular economy concept is gaining traction in the Blue Economy. This involves using resources more efficiently and reducing waste by designing products for reuse, recycling and remanufacturing.

4.5 Sustainable Tourism

Sustainable tourism is becoming increasingly popular, and there is growing interest in developing marine tourism promoting sustainable ocean resource use.

4.6 Blue Finance

There is increasing interest in blue finance, which involves using innovative financial instruments to support sustainable ocean development. This includes impact investing, green bonds, and other forms of sustainable finance.

In conclusion, the future of the Blue Economy looks bright, with growing interest in sustainable practices, technological innovation, renewable energy, circular economy principles, sustainable tourism, and blue finance. The development of these sectors presents significant opportunities for businesses, governments, and civil society to work together to promote sustainable development while preserving the ocean's health.

References

Abhinav, K. A., Collu, M., Benjamins, S., Cai, H., Hughes, A., Jiang, B., Jude, S., Leithead, W., Lin, C., Liu, H., Recalde-Camacho, L., Serpetti, N., Sun, K., Wilson, B., Yue, H., & Zhou, B. Z. (2020). Offshore multi-purpose platforms for a blue growth: A technological, environmental and socio-economic review. *Science of The Total Environment*, *734*, 138256. https://doi.org/10.1016/j.scitotenv.2020.138256

Bari, A. (2017). Our Oceans and the Blue Economy: Opportunities and challenges. *Procedia Engineering*, *194*, 5-11. https://doi.org/10.1016/j.proeng.2017.08.109

Barthelmie, R. J., & Pryor, S. C. (2021). Climate change mitigation potential of wind energy. *Climate*, *9*(9), 136. https://doi.org/10.3390/cli9090136

Bennett, N. J. (2018). Navigating a just and inclusive path towards Sustainable Oceans. *Marine Policy*, *97*, 139-146. https://doi.org/10.1016/j.marpol.2018.06.001

Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and Practice Review to develop sustainable business model archetypes. *Journal of Cleaner Production*, *65*, 42–56. https://doi.org/10.1016/j.jclepro.2013.11.039

Bond, P. (2019). Blue Economy Threats, contradictions and resistances seen from South Africa. *Journal of Political Ecology*, *26*(1). https://doi.org/10.2458/v26i1.23504

Dalton, G., Bardócz, T., Blanch, M., Campbell, D., Johnson, K., Lawrence, G., Lilas, T., Friis-Madsen, E., Neumann, F., Nikitas, N., Ortega, S. T., Pletsas, D., Simal, P. D., Sørensen, H. C., Stefanakou, A., & Masters, I. (2019). Feasibility of investment in blue growth multiple-use of space and multi-use platform projects; results of a Novel Assessment Approach and Case Studies. *Renewable and Sustainable Energy Reviews*, *107*, 338–359. https://doi.org/10.1016/j.rser.2019.01.060

Henderson, J. (2019). Oceans without history? Marine Cultural Heritage and the Sustainable Development Agenda. *Sustainability*, *11*(18), 5080. https://doi.org/10.3390/su11185080

Hussain, M. G., Failler, P., Karim, A. A., & Alam, M. K. (2017). Major opportunities of Blue Economy Development in Bangladesh. *Journal of the Indian Ocean Region*, *14*(1), 88-99. https://doi.org/10.1080/19480881.2017.1368250

Kabil, M., AbdAlmoity, E. A., Csobán, K., & Dávid, L. D. (2022). Tourism centres efficiency as spatial unites for applying Blue Economy Approach: A case study of the southern red sea region, Egypt. *PLOS ONE*, *17*(7). https://doi.org/10.1371/journal.pone.0268047

Kull, C., & Andriamahefazafy, M. (2019). Materializing the blue economy: Tuna fisheries and the theory of access in the western Indian Ocean. *Journal of Political Ecology*, *26*(1). https://doi.org/10.2458/v26i1.23040

Lee, K.-H., Noh, J., Lee, J., & Khim, J. S. (2021). Blue Economy and the total environment: Mapping the interface. *Environment International*, *157*, 106796. https://doi.org/10.1016/j.envint.2021.106796

McCammon, A. L. T. (1992). United Nations Conference on Environment and Development, held in Rio de Janeiro, Brazil, during 3–14 June 1992, and the '92 global forum, Rio de Janeiro, Brazil, 1–14 June 1992. *Environmental Conservation*, *19*(4), 372-373. https://doi.org/10.1017/s0376892900031647

Michael, N., Reisinger, Y., & Hayes, J. P. (2019). The UAE's tourism competitiveness: A business perspective. *Tourism Management Perspectives*, *30*, 53-64. https://doi.org/10.1016/j.tmp.2019.02.002

Nath, B. (2005). Education for Sustainable Development: The Johannesburg Summit and beyond. *The World Summit on Sustainable Development*, 275-298. https://doi.org/10.1007/1-4020-3653-1_12

Olanipekun, I. O., & Alola, A. A. (2020). Crude oil production in the Persian Gulf amidst geopolitical risk, cost of damage and resources rents: Is there asymmetric inference? *Resources Policy*, *69*, 101873. https://doi.org/10.1016/j.resourpol.2020.101873

Pauli, G. A. (2011). *The Blue Economy*. Paradigm Publications.

Pendleton, L., Evans, K., & Visbeck, M. (2020). We need a global movement to transform Ocean Science for a Better World. *Proceedings of the National Academy of Sciences*, *117*(18), 9652-9655. https://doi.org/10.1073/pnas.2005485117

Rees, S. E., Foster, N. L., Langmead, O., Pittman, S., & Johnson, D. E. (2018). Defining the qualitative elements of Aichi Biodiversity target 11 with regard to the Marine and coastal environment in order to strengthen global

efforts for marine biodiversity conservation outlined in the United Nations Sustainable Development goal 14. *Marine Policy*, *93*, 241-250. https://doi.org/10.1016/j.marpol.2017.05.016

Rigaud, K. K., de Sherbinin, A., Jones, B., Bergmann, J., Clement, V., Ober, K., Schewe, J., Adamo, S., McCusker, B., Heuser, S., & Midgley, A. (2018, March 19). *Toward a Blue Economy*. Open Knowledge Repository. Retrieved February 1, 2023, from https://openknowledge.worldbank.org/handle/10986/29461

Sarwat, S. (2022). Blue Economy, a key to achieve sustainable development: The Bangladesh Perspective. Bangladesh Journal of Law, 20(2). https://doi.org/10.58710/bjlv20n2y2022a01

Smith-Godfrey, S. (2016). Defining the blue economy. *Maritime Affairs: Journal of the National Maritime Foundation of India*, *12*(1), 58-64. https://doi.org/10.1080/09733159.2016.1175131

Spalding, M. J. (2016). The new Blue Economy: The Future of Sustainability. *Journal of Ocean and Coastal Economics*, *2*(2). https://doi.org/10.15351/2373-8456.1052

Victorero, L., Watling, L., Deng Palomares, M. L., & Nouvian, C. (2018). Out of sight, but within reach: A global history of bottom-trawled deep-sea fisheries from >400 m depth. *Frontiers in Marine Science*, *5*. https://doi.org/10.3389/fmars.2018.00098

Wenhai, L., Cusack, C., Baker, M., Tao, W., Mingbao, C., Paige, K., Xiaofan, Z., Levin, L., Escobar, E., Amon, D., Yue, Y., Reitz, A., Neves, A. A., O'Rourke, E., Mannarini, G., Pearlman, J., Tinker, J., Horsburgh, K. J., Lehodey, P., … Yufeng, Y. (2019). Successful blue economy examples with an emphasis on international perspectives. *Frontiers in Marine Science*, *6*. https://doi.org/10.3389/fmars.2019.00261