



Islamic blue economy: A strategic approach to tackling marine debris issues

^{a,1}Quraini Tiara Romadhoni*, ^{a,2}Hilma Fanniar Rohman

^a Faculty of Islamic Studies, Universitas Ahmad Dahlan, Indonesia

¹ 2200032074@webmail.uad.ac.id; ² hilma@pbs.uad.ac.id

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ABSTRACT

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Garbage has become a major societal problem, especially environmental problems that threaten marine ecosystems. Trash on the beach disturbs the view and poses a danger to aquatic life and human health. According to the view of Islam, we as Muslims are obliged to preserve the environment and avoid damage. This study aims to analyze the impact of excessive waste on beaches and coasts and evaluate methods that can be applied. The research method used is a descriptive qualitative approach by describing how things are on the beach through non-numerical data collection and analysis. The results of this study show that the creative industry and the blue economy can go hand in hand according to Islamic principles and can contribute to a sustainable blue economy.

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Introduction

The Blue Economy concept emphasizes the sustainable management of marine resources to support economic development and the preservation of the marine environment. The concept was first introduced at the 2012 UN Conference on Sustainable Development and has been adopted by many countries, including Indonesia, as part of national development strategies that focus on the balance between economic growth and marine ecosystem preservation. (Picken, 2023)

The Blue Economy adapts the principles of the green economy, which focuses on the management of water areas by considering the sustainability of marine resources to support the Sustainable Development Goals (SDGs). Indonesia, as the world's largest archipelago, has great potential in the maritime and tourism sectors with 70% of its territory being ocean. However, although the maritime sector contributes around 20% of the Gross Domestic Product (GDP), challenges such as overfishing, marine pollution, and habitat destruction due to human activities

still hinder the development of this sector. (Martínez-Vázquez et al., 2021)

The importance of sustainable management of marine resources is also emphasized by the natural resource-based theory, which states that investments in marine resources can reduce pollution and support sustainability. Efforts to preserve marine ecosystems through the protection of coral reefs and mangroves, the development of environmentally friendly aquaculture, and the reduction of marine pollution are crucial in this context. However, major challenges in implementing the Blue Economy include limited capacity, fragmented governance, and local resistance to policy change.

Indonesia has developed a blue economy framework with an integrated management approach aimed at reducing economic conflicts and protecting marine ecosystems, although effective implementation still requires attention to the understanding and participation of local communities. By focusing on the integration of local knowledge and institutional change, it is hoped that marine resource management can become more coherent and balanced between conservation goals and socio-economic needs. Thus, the Blue Economy in Indonesia is expected to become not only an important pillar in sustainable economic development, but also a model of natural resource management that can be emulated by other countries in facing global challenges related to climate change and marine environmental degradation. (Germond-Duret et al., 2023)

The use of plastic waste in the manufacture of paving blocks, as researched by Rakha Arkanata Rangkuti, offers an innovative approach to address the problem of plastic waste while supporting the concept of a blue economy. In this study, variations in the ratio of plastic and sand, such as 60/40 and 70/30, were used to evaluate the quality of the paving blocks produced. The types of plastic waste used included LDPE plastic bags, PET beverage bottles, bottle caps, plastic cups, as well as PP (Polypropylene) plastic shreds. (Voyer et al., 2021)

The relationship between this research and the blue economy lies in the principle of sustainable resource management. The blue economy focuses on the wise utilization of marine and freshwater resources, with special attention to environmental conservation. In this context, the use of plastic waste that often pollutes the oceans as a construction material for paving blocks is a concrete example of the application of blue economy principles. It not only reduces plastic waste that could potentially pollute the aquatic environment but also creates a more sustainable product. Research shows that paving blocks made from plastic waste have better compressive strength compared to conventional paving blocks. For example, at 0.4% plastic composition, there was a 27.1% increase in compressive strength. This increase shows that this innovation is not only environmentally friendly but also improves product quality. (Rifqa et al., 2024)

By integrating this approach into our blue economy strategy, we can support sustainable economic development through effective plastic waste management. In addition, these solutions

can contribute to the reduction of marine pollution, improve the quality of infrastructure, and ultimately support the well-being of coastal communities that depend on healthy marine ecosystems.

Method

The research method I use uses a qualitative descriptive approach, which is based on the analysis of data collected through document studies, including laws and regulations, books, and journals. The approaches used include a normative juridical approach with an emphasis on analyzing the applicable law and a conceptual approach to understanding and explaining concepts relevant to the research topic. The analytical technique used is qualitative, with the deductive syllogism method drawing general conclusions from the specific premises analyzed.

Result and Discussion

This research identifies that ecological conditions in Indonesia are still heavily influenced by the demands of economic growth, often at the expense of environmental sustainability. Although efforts to achieve sustainable development have begun with the implementation of Law No. 32/2009 on Environmental Protection and Management, the dominance of corporations and oligarchs in the control of natural resources makes the implementation of this law often ineffective. (RA. Nur Laili Maisya Rachman 103200007 Constitutional Law, n.d.) As a result, the exploitation of natural resources continues, which results in widespread environmental damage and the emergence of various natural disasters, especially hydrometeorological disasters, which now dominate disasters in Indonesia.

In this context, the concept of the Blue Economy was introduced as a new paradigm in economic development that aims to decouple economic growth from environmental degradation. Blue Economy emphasizes the importance of seeing nature, especially the ocean, as the main capital in economic activities. The implementation of the Blue Economy in Indonesia is focused on the sustainable utilization of marine resources, which not only aims to preserve the environment but also to support economic growth through the marine and fisheries sector, as well as marine tourism. (Fahrurrozi, 2020)

Some important issues in the implementation of the Blue Economy in Indonesia include the sustainable utilization of biodiversity, food security through sustainable fisheries, and the development of marine tourism that does not damage the ecosystem. The concept also underlines the importance of governance and international cooperation to ensure that every country, including Indonesia, is responsible for managing its resources in a sustainable way. In addition, this research highlights the need for innovation and technology to support the optimal utilization of marine resources without damaging the environment. (Fahrurrozi, 2020)

Within the Blue Economy framework, Indonesia has great potential to develop various sectors, such as fisheries, aquaculture, shipping and port facilities, and marine tourism, all of which can contribute significantly to the national economy. However, to ensure the sustainability of all these activities, a science-based approach, careful planning, and adaptive management are required.

In conclusion, the implementation of the Blue Economy in Indonesia not only offers great opportunities for more environmentally friendly economic growth, but it is also a strategic step in addressing the challenges of an increasingly real ecological crisis. By integrating Blue Economy principles, Indonesia can sustainably utilize its rich natural resources while ensuring the socio-economic welfare of the people, especially in coastal areas and the marine sector. (Narendra Sudjudiman & Subekti, n.d.)

Marine pollution is a very serious problem because it can damage the environment, ecosystems, and water quality. It can result from the introduction of waste, chemicals, oil spills, and other harmful substances into the ocean. Marine pollution hurts marine ecosystems, including coral reefs, and marine life, and can cause abrasion on the sea surface. In their book, Churchill & Lowe (1999) explain that the causes of marine pollution include pollution from ships, pollution from dumping, pollution from seabed exploration and exploitation activities, and pollution from land and air (Mauna, 2015; Pound, 1989).

Regulations governing marine pollution in Indonesia are contained in Government Regulation No. 19/1999 Article 1 Paragraph 2 which defines marine pollution as the entry or inclusion of living things, energy substances, and/or other components into the marine environment by human activities so that its quality decreases to a certain level which causes the marine environment to no longer comply with quality standards and/or its function (Government Regulation No. 19/1999 concerning Control of Marine Pollution and/or Destruction, 1999).

One example of an oil spill case in Indonesia is the Montara oil leak that occurred on August 21, 2009, due to an explosion at an oil refinery owned by "PIT Exploration and Production Australasia," a Thai company. This company is the owner of Sea Drill Norway Pty Ltd, which operates Sea Drill Norway in the waters of the northwestern Timor Sea.

Each day, an estimated 500,000 barrels of oil spilled for 74 consecutive days. The oil spill contaminated waters under Indonesian jurisdiction, causing harm to coastal communities in the Timor Sea that depend on marine products. This impact is particularly detrimental to Indonesia, especially the people of East Nusa Tenggara (NTT). Most of the NTT population living in the north of Timor Island and along the South Coast, Alor, Flores, and Sumba can no longer carry out economic activities. Many of them are fishermen and cultivators of seaweed, called "Green Gold," but the Montara oil pollution has destroyed their livelihoods. (Steybi et al., 2024)

In addition, about 65,000 hectares of coral reefs have been destroyed, resulting in a loss of

marine life and other adverse impacts. When the dispute between Australia and Indonesia arose, the people of NTT, along with Yayasan Peduli Timor Barat, fought hard to seek justice and hold the incident accountable (Steybi et al., 2024)

On March 31, 2018, the public and government were shocked by an oil spill incident in the waters of Balikpapan Bay that polluted the surrounding coastal areas (Huda et al. 2022). According to Amelia Sri (2022), this incident was triggered by an oil pipeline leak that occurred due to a broken crude oil pipeline. The pipe was damaged by a ship anchor lowered by a ship anchored in the bay. The leak caused serious environmental impacts and hurt residents. Every day, the oil spill expanded eastward until it began to affect the waters of the Makassar Strait. Factors that influence the spread of oil spills in Balikpapan Bay include wind and ocean currents. (Yasmin Nurghea & Salsabila dan Hilda Hidayatunnisa, 2024)

Wind speed in the waters of Balikpapan Bay moves from southwest to northeast. Based on the ArcGIS World Geocoding service, from March 31 to April 20, 2018, the wind speed in the waters of Balikpapan Bay reached a peak of 3.88 m/s, which is quite high compared to the average wind speed in the region of around 2.5 m/s. High wind speeds, such as those that occurred during this period, have a significant impact on the spread of oil spills. According to Puspitasari et al. (2020), strong winds can push spilled oil to spread more widely, increasing the impact of pollution and complicating efforts to treat and restore the affected marine environment.

Ocean currents are also oceanographic factors that play a role in the spread of oil spills on the ocean surface, accelerating their spread to larger areas within just a few hours of the oil spill. This is consistent with the concept that wind and tidal currents influence the movement of the oil layer and accelerate its dispersal (Siagian et al. 2016).

According to Soeyanto et al. (2018), it is estimated that more than 40,000 barrels of crude oil polluted the waters of Balikpapan Bay and its surroundings. Wind and current factors cause this oil pollution to spread more widely in these waters. Using Google Earth Engine and Sentinel 1A radar imagery, it was found that the oil from Balikpapan Bay moved northeastward by the wind and current directions.

The oil spill in Balikpapan Bay has adversely affected the marine ecosystem. Soeyanto et al. (2018) reported that 34 hectares of mangrove plants were damaged, one pet died, crab farming failed, four coral reef areas were damaged, seaweed cultivation was damaged, and five seagrass areas were endangered. (Yasmin Nurghea & Salsabila dan Hilda Hidayatunnisa, 2024)

The blue economy is a new paradigm that focuses on implementing a low-carbon economy to reduce the negative impacts of economic activity on ecosystems and the economy, including global warming and climate change (Rendi Prayuda, 2019). The concept is designed to support the principles of the Green Economy, which is oriented towards reducing emissions and improving

the environment through the development and enhancement of the marine environment. The term “blue economy” was first used by the US Senate Commerce, Science and Transportation Committee in 2009. (Adin Nugroho et al., 2024)

The ocean plays a crucial role in the blue economy as a healthy ocean can improve the well-being of coastal communities, provide food and jobs, spur economic growth, and influence the climate. Blue economy activities include activities in waters, oceans, or coastal areas that aim to create jobs, drive economic development, and improve the environment while maintaining ecosystems. According to Alen Alempijević (2019), examples of commercial activities in the blue economy include shipbuilding, transportation, shipping, fisheries, aquaculture, marine biotechnology, marine energy, and mineral extraction. (Adin Nugroho et al., 2024)

The World Bank report “The Lost Billion” Revisited estimates that global asset values could increase by 40% and costs could decrease by more than 40%. Further studies suggest that a 44% reduction in global fishing activity is needed to achieve a sustainable balance in marine fisheries and maximize net benefits (World Bank, 2022).

Research shows that habitat degradation and low biodiversity in the study area impact the social and economic well-being of local coastal communities (Yudi Wahyudin, 2018). Indonesia has the potential to adopt a blue economy given its vast coastline and relatively low daily income, although there is skepticism about utilizing fish as a source of income. According to the OECD, sea levels are rising at a rate of 1.5 trillion plus the value of global economic growth each year, with this amount expected to reach \$3 trillion by 2030 (World Bank, 2022).

Conclusion

In conclusion, the Blue Economy concept is an important approach to sustainable development that integrates economic growth with the preservation of the marine environment. Indonesia, with its vast maritime potential, faces significant challenges such as overfishing, pollution, and habitat destruction. However, with the implementation of an integrated management framework, investment in marine resources, and utilization of innovative finance, Indonesia has a great opportunity to increase the contribution of the maritime sector to the national economy. The successful implementation of the Blue Economy in Indonesia will largely depend on the integration of local knowledge, community participation, and effective governance, all of which are necessary to strike a balance between the needs of the economy and the conservation of the marine environment.

Contradictions and ambiguities in the blue economy concept have raised concerns about its fair and sustainable implementation. The risk of further exploitation without consideration of social and environmental interests is very real. Blue deprivation and injustice; the need for inclusion, transdisciplinarity and awareness, and the importance of territorial perspectives and

geographical scales are key themes that emerge from this collection. We hope that it will stimulate debate on the importance of equity and socio-cultural approaches in the blue economy and encourage further exploration of these issues. (Germond-Duret et al., 2023)

This text concludes that the concept of the Blue Economy emphasizes sustainable management of marine resources to balance economic development with environmental preservation. While Indonesia has significant potential in the maritime and tourism sectors, the country faces challenges such as overfishing, marine pollution, and habitat destruction. These issues hinder the full realization of the Blue Economy. Furthermore, the text highlights specific cases of marine pollution in Indonesia, such as the Montara oil spill and the Balikpapan Bay oil spill, which caused extensive environmental damage and negatively impacted coastal communities. The text underscores the need for better governance, innovative solutions, and the integration of local knowledge to implement the Blue Economy effectively.

By addressing these challenges and leveraging its marine resources sustainably, Indonesia can enhance its economic growth while protecting its marine ecosystems, ultimately serving as a model for other countries facing similar environmental challenges.

Our suggestions for implementing the Blue Economy concept encompass several crucial aspects, particularly in addressing the issue of excessive waste:

1. Sustainable Approach: we recommend that waste management be done sustainably, including by reducing waste production at source and increasing recycling. This includes the use of environmentally friendly technologies for waste management.
2. Integrated Waste Management: emphasizes the importance of an integrated waste management system, especially in coastal and marine areas. This system should include comprehensive waste prevention, handling, and management strategies.
3. International Cooperation: Given the scale of the waste problem, the authors encourage international cooperation to share knowledge, technology, and resources to manage waste, especially those that threaten marine ecosystems.
4. Awareness and Education: The author also emphasizes the importance of raising public awareness about the impact of waste on the environment as well as educating the public on good and sustainable waste management practices.
5. Strong Policies and Regulations: The author advises the government to strengthen policies and regulations that support the Blue Economy, including strict rules on waste and waste management in coastal and marine areas. (Rahman et al., 2024)

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