

ENACTING BLUE ECONOMY IN INDONESIA: ADDRESSING CLIMATE CHANGE WITHIN GLOBAL LEGAL FRAMEWORK

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Abstract

The World Bank has launched a maritime economic-environmental strategy referred to as the blue economy. This strategic initiative places a strong emphasis on sustainability in marine economic endeavors, aiming to generate both economic and social benefits while protecting the lasting integrity of marine ecosystems amidst the challenges of climate change. The core objective of the blue economy is to notably improve human welfare and social equity while simultaneously reducing environmental risks and ecological scarcities. The relevance of the blue economy concept is especially pronounced in countries with extensive water bodies, such as Indonesia. As an archipelagic state, Indonesia holds significant promise for the development and utilization of marine resources. Leveraging this economic potential holds the potential to create new job opportunities, enhance food security, and support the sustainability of global marine ecosystems. In this regard, adopting a blue economy strategy emerges as a compelling approach to achieve these objectives, especially given that a significant portion of Indonesia's population relies on traditional fishing for their livelihoods. The upcoming research aims to explore two fundamental aspects: firstly, the regulatory framework of the blue economy in relation to climate change, adhering to international legal standards; and secondly, the practical implementation of the blue economy in addressing climate change challenges specific to Indonesia. This research employs a normative research methodology, characterized by a problem-solving approach structured across a series of defined stages.

Keywords: blue economy, climate change, Indonesia, international law

A. Background

Climate change represents a worldwide challenge with profound impacts on the global population, persistently under consideration in both international and national discussions. (1) Comprehending the significant consequences of climate change on both natural and human systems, along with the related risks and vulnerabilities, is a crucial initial step in grasping the ongoing climate emergency. Alterations in the average global sea level are the outcome of various individual geophysical and climatological processes, with substantial contributions arising from the reduction of ice mass and the thermal expansion of the oceans. Additionally, the greenhouse gas effect (GHG) plays a role in elevating global temperatures by trapping a portion of the Earth's heat that would otherwise be released into space. (2) Greenhouse gas (GHG) emissions resulting from human activities on a global scale have risen since the pre-industrial era, specifically by 70% between 1970 and 2008. Carbon dioxide (CO₂) emerged as the predominant anthropogenic GHG contributor by 2004. The escalation of global temperatures poses a threat of heightened drought occurrences, with the prevalence of drought on the rise in numerous regions, including Africa, the Mediterranean area, portions of North and South America, and Southeast Asia. (3) Preparation is essential as drought stands as one of the most harmful natural disasters, profoundly impacting ecosystems, agriculture, and human well-being. Without prompt and efficient mitigation measures, climate change

will progressively jeopardize the health and livelihoods of people globally, as well as the well-being of ecosystems and biodiversity.

In general, the negative effects of climate change on individuals in developing nations are attributed to both geographical factors and lower income levels. This presents a new challenge for developing countries in terms of adapting to climate change. Should global temperatures rise to 4°C, developing nations in Southeast Asia face the risk of losing up to 21% of their annual total gross domestic product (GDP). This constitutes a substantial impact, amounting to 26.6% of their GDP per year. (4) Apprehensions are particularly elevated for Africa, where the majority of nations grapple with underdeveloped economies. Compounding the challenge is the swift rise in population numbers, and these countries find themselves constrained in making substantial utilization of their existing resources.

In addition to affecting the economic dimension, climate change also exerts an influence on various other aspects of life, including water resources, agriculture, ecosystems and biodiversity, health, and coastal regions in developing nations, particularly in Africa and Asia. The anticipated impacts on Africa include ongoing drought in eastern and southern Africa, water scarcity, and an increased frequency of floods in the eastern region, posing a threat to coastal residential areas. Meanwhile, in Asia, the depletion of glaciers will diminish the flow of major rivers, upon which one billion people rely for their livelihoods. This scenario brings the risk of flooding due to glacier melting, heightened flood risks during Southeast Asia's monsoon seasons, and the vulnerability of major coastal cities in Asia to rising sea levels and coastal erosion (5).

Indonesia, situated in Southeast Asia, is inherently a maritime nation comprised of 16,766 islands. Due to its maritime and archipelagic nature, Indonesia faces heightened susceptibility to the impact of rising sea levels attributed to climate change. Conversely, Indonesia is categorized as a developing nation with an economy heavily dependent on natural resources. (6) Indonesia, boasting a coastline spanning 104,000 kilometers, holds substantial potential for the development and utilization of its marine resources. Realizing this economic potential has the capacity to generate employment opportunities, enhance food security, and contribute to the preservation of marine ecosystems. In response to these opportunities, adopting the blue economy strategy presents a viable path to achieve these desired outcomes.

The blue economy is a strategy for a sustainable ocean economy, which generates economic and social benefits while ensuring the sustainability of the marine environment is maintained. The blue economy concept originates from the green economy concept which was ratified at the United Nations Conference on Sustainable Development, which was held in Rio de Janeiro in 2012. The output of the blue economy is the same as the output of the green economy concept, namely to improve human welfare and social equality, along with significantly reducing environmental risk and ecological scarcity. The concept of the blue economy is very suitable for countries with large water areas, such as Indonesia. Approximately 75 percent of Indonesia's total sovereign territory is water territory consisting of the territorial sea, the Exclusive Economic Zone (EEZ), and 12 miles of sea (7).

Indonesia possesses an extensive marine expanse, constituting a significant asset that requires preservation and enhancement in terms of quality. Implementing suitable mitigation strategies not only boosts resilience against climate change impacts but also contributes to social equity, public health, and overall human well-being. Urban mitigation measures designed to alleviate economic disparities can positively affect local

employment and enhance economic competitiveness. Hence, the objective of this study is to examine the correlation between the blue economy and endeavors to address climate change, as well as the implementation of the blue economy in Indonesia in accordance with international law. The research findings will be presented in a structured narrative, organizing secondary data in a systematic manner that establishes connections based on the focal research question. This approach ensures a cohesive and unified presentation that aligns with the research objectives.

B. Research Findings and Discussions

1. Structuring the Blue Economy in Accordance with International Law to Confront Climate Change

As per the World Bank's definition, the blue economy involves the responsible utilization of marine resources to foster economic expansion, considering the maintenance of a high quality of life and the creation of employment opportunities. (8) On the other hand, as outlined by the European Commission, the blue economy encompasses all economic endeavors associated with oceans and coastlines, spanning diverse interconnected sectors. Despite the usual occurrence of climate change over extended periods of hundreds to thousands of years, the Industrial Revolution that commenced in 1760 marked the beginning of a notably accelerated phase of climate change. (9) The accelerated pace of climate change, in comparison to the pre-industrial era, leads to various repercussions that impact our quality of life. Observable effects of climate change include the diminishing sea ice and glaciers, heightened sea levels, intensified rainfall during the wet seasons, and prolonged and hotter summers. The Blue Economy is regarded as a means of separating socio-economic and developmental activities from environmental degradation, aiming to optimize the benefits derived from marine resources. All life on Earth traces its origins back to the oceans, constituting 95% of the biosphere. Regardless of our treatment, the oceans persist in sustaining all life on Earth by continuously generating oxygen, absorbing carbon dioxide, and regulating the global climate. (10) Additionally, the sea serves as a vital food source for a significant portion of the global population and serves as the infrastructure for global trade routes. Coastal regions play a crucial role in economic production, particularly through the tourism sector. Approximately 32% of hydrocarbon supply is derived from exploration activities on the seabed, extending into the deep sea. Technological advancements in the 21st century enable the marine environment to contribute energy in innovative, renewable forms. Examples of these renewable energy sources include wind, sunlight, powerful waves, and tidal energy, all of which can be harnessed by humans using cutting-edge technologies to substitute fossil energy sources as part of the blue economy.

Acquiring a comprehensive understanding of the relevant legal structures and instruments, both on the international and national fronts, is a crucial aspect of grasping the Blue Economy. In the maritime context, the United Nations Convention on the Law of the Sea (UNCLOS), established in 1982 and enforced since 1994, is widely acknowledged as the overarching legal framework that governs all activities conducted in the oceans. (11) The convention delineates the rights and responsibilities of nations engaging in various activities, encompassing navigation, exploitation of living and non-biological resources, marine conservation, marine scientific research, and the advancement of marine

technology. Subsequently, Indonesia formalized its adherence to the convention by ratifying it through Law Number 17 of 1985. Furthermore, Indonesia actively engages in international collaborations aimed at safeguarding the marine environment, thereby fulfilling its obligations outlined in UNCLOS.

The significance of sustainably developing marine resources holds great importance for Indonesia, given its extensive coastline and Economic Exclusive Zone (EEZ). The blue economy, initially introduced by Small Islands Developing States (SIDS) for developing nations, remains relevant for any country with substantial territorial waters and coastlines. The objectives of the blue economy framework aim to enhance human well-being while mitigating risks and impacts associated with the exploitation of the marine environment. **(12)** In the context of developing countries, the blue economy embodies principles such as social inclusivity, low-carbon industrial practices, and efficient utilization of resources. This approach is designed to cater to the specific needs of these nations and support their overall development. The blue economy, essentially, involves the sustainable utilization of ocean resources with the goals of fostering economic growth, enhancing livelihoods, and preserving the health of the oceans. It encompasses a broad spectrum of economic activities and sectors associated with the oceans, including fisheries, aquaculture, tourism, shipping, renewable energy, and marine biotechnology. The relationship between the blue economy and efforts to address climate change is substantial and intricate:

- a. **Climate Change Mitigation:** The blue economy can play a role in addressing climate change by promoting the use of renewable energy sources like offshore wind, tidal, and wave energy. These sources offer alternatives to fossil fuels, contributing to a reduction in greenhouse gas emissions.
- b. **Carbon Sequestration:** Oceans act as vital "blue carbon" sinks, absorbing carbon dioxide (CO₂) from the atmosphere. Components of the blue economy, such as mangroves, seagrasses, and coastal wetlands, are particularly effective at sequestering carbon. Preserving and restoring these ecosystems becomes crucial in the fight against climate change.
- c. **Sustainable Fisheries:** Effective management of fisheries is a fundamental element of the blue economy. Overfishing can disrupt marine ecosystems and diminish the ocean's ability to absorb CO₂. Well-regulated fisheries contribute to maintaining the equilibrium of marine ecosystems and their potential for carbon storage.
- d. **Climate-Resilient Infrastructure:** Rising sea levels and increased frequency of extreme weather events necessitate the development of climate-resilient infrastructure in coastal regions. Investments in infrastructure capable of withstanding these changes are essential for the sustainable development of the blue economy.
- e. **Climate Change Adaptation:** The blue economy can aid communities in adapting to climate change impacts such as rising sea levels and ocean acidification. Practices like sustainable aquaculture and mariculture offer alternative livelihoods and food sources, especially for communities facing disruptions in traditional fishing due to climate-related factors.
- f. **Biodiversity Conservation:** Safeguarding biodiversity in marine ecosystems is crucial for climate resilience. Healthy ecosystems are better equipped to withstand the impacts of climate change. The blue economy often involves

conservation initiatives aimed at protecting marine biodiversity, indirectly contributing to climate resilience.

- g. Technological Innovation: The blue economy drives technological advancements, including the development of more fuel-efficient ships, cleaner shipping fuels, and advanced monitoring systems to minimize the carbon footprint of maritime transport.
- h. International Cooperation: Addressing climate change and effectively managing the blue economy necessitate international collaboration. This involves agreements and initiatives to combat illegal fishing, safeguard marine biodiversity, and reduce greenhouse gas emissions from shipping. The blue economy and climate change are interconnected. A sustainable blue economy can contribute to climate change mitigation and adaptation efforts, while addressing climate change is essential to ensuring the long-term sustainability of the blue economy and the health of our oceans. These two aspects need to be considered together in policies and practices to achieve both economic prosperity and environmental sustainability.

2. Operationalizing the Blue Economy to Address Climate Change Challenges in Indonesia

Climate change, as commonly understood, refers to prolonged alterations in temperature and weather patterns. Initially driven by natural processes like solar cycle variations and shifts in the Earth's axial tilt, the primary catalyst for climate change shifted during the industrial revolution in the 1800s. Human activities, particularly the widespread use of fossil fuels such as coal, oil, and gas to meet industrial energy demands, emerged as the predominant contributor to climate change. The combustion of fossil fuels releases greenhouse gases, including carbon dioxide and methane, leading to an escalation in global temperatures. The more extensive the human dependence on energy, the higher the emissions of these greenhouse gases. As of 2020, the Earth's average temperature has risen by 1.1°C compared to pre-industrial times. The repercussions of this temperature increase are substantial and encompass phenomena such as drought, extreme temperatures, wildfires, elevated sea levels, and the endangerment of numerous biodiversity species (13).

As mentioned earlier, the escalating demand for energy stands as the primary catalyst for the rapid progression of global climate change, with 84% of our energy deriving from fossil fuels. However, this reliance on energy doesn't inherently have to result in detrimental environmental impacts. It is possible to obtain energy in an environmentally friendly manner through renewable sources. Renewable energy, characterized by its sustainability and ability to be replenished, constitutes an alternative. Various renewable energy generation systems can be implemented in regions emphasized by the blue economy system. For instance, in coastal areas, a wind farm¹ can harness energy from the sea breeze without depleting the energy source. (14) In bodies of water like reservoirs or lakes, it is possible to construct floating solar farms, consisting of solar panels positioned above the water surface to utilize previously unused open spaces. Regions adopting this approach are already experiencing positive outcomes, exemplified by projects like the Dogger

¹ Wind farm is a cluster of strategically positioned windmills.

Bank Project. Once finished, this initiative is expected to fulfill 5% of the UK's energy requirements **(15)**.

Indonesia has adopted the blue economy concept as a strategy to efficiently harness its extensive maritime resources while emphasizing sustainability and environmental conservation. A key aspect of this approach involves the formulation of a marine spatial planning framework, which addresses various uses of marine resources across its vast archipelagic waters. The country has placed a high priority on sustainable fisheries management, implementing measures to combat illegal fishing, promote responsible fishing practices, and ensure the health of fish stocks. Indonesia's commitment extends to marine conservation, including the establishment of marine protected areas to safeguard delicate ecosystems and promote responsible tourism. As part of its shift away from fossil fuels, Indonesia is actively exploring renewable energy sources like offshore wind, tidal, and wave energy.

Moreover, Indonesia's comprehensive implementation of the blue economy is evident through investments in marine research and innovation, participation in international initiatives, and active community involvement. This approach underscores Indonesia's commitment to balancing economic prosperity with environmental preservation. The nation advocates for the application of blue economy principles in shaping comprehensive policies for the marine and fisheries industry, fostering local and regional economic growth, and promoting sustainable development through prioritizing environmentally friendly sectors and encouraging creative and innovative investments. Key areas in the development of the blue economy in Indonesia encompass the enhancement of the sea fishing industry, marine transportation, tourism, and the production of energy and materials, all aligned with the principles of the blue economy. **(16)** The idea involves advancing and harmonizing national economic policies related to both maritime and land activities, broadening the scope of the blue economy, reinforcing the connection between trade and infrastructure, and fostering advancements in technology and human resources. Additionally, Indonesia aspires to set up pilot areas to implement the blue economy concept in locations such as Lombok, Anamabs islands, and Tomini Bay. This initiative aims to study various aspects of the blue economy, including the maritime industry, fisheries, aquaculture, coastal tourism sectors, small island communities, and the development of regional bays.

C. Conclusions

The connection between the blue economy and endeavors to address climate change is intricate and pivotal. The blue economy encompasses a diverse range of sustainable activities based on ocean resources, including renewable energy generation, fisheries management, and marine conservation. Its role in climate change mitigation is significant, promoting renewable energy sources like offshore wind and supporting carbon-sequestering ecosystems such as mangroves and seagrasses. Through sustainable fisheries management, the blue economy helps maintain marine ecosystem balance, reducing their susceptibility to the impacts of climate change. Furthermore, it contributes to climate adaptation by fostering alternative livelihoods and establishing resilient

infrastructure in coastal regions. Biodiversity conservation and technological innovation are integral aspects of this relationship, emphasizing the necessity for international cooperation to effectively address climate change and ensure the sustainability and resilience of the blue economy.

Indonesia has embraced the blue economy concept as a strategy to harness its abundant maritime resources while prioritizing sustainability and environmental protection. Central to this approach is the formulation of a marine spatial planning framework, considering diverse uses of its extensive archipelagic waters. Indonesia demonstrates a strong commitment to sustainable fisheries management, implementing measures to combat illegal fishing, advocating responsible fishing practices, and ensuring the well-being of fish stocks. The nation is equally dedicated to marine conservation, establishing marine protected areas to preserve delicate ecosystems and promote responsible tourism. In its transition to cleaner energy sources, Indonesia is exploring alternatives such as offshore wind, tidal, and wave energy. Moreover, the country is actively investing in marine research and innovation, participating in international collaborations, and engaging local communities in the comprehensive implementation of the blue economy, with the dual objectives of economic prosperity and environmental conservation.

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