

Integrating Islamic Economics Principles in Indonesia's Green-Blue Economy Amidst Digital Transformation and Geopolitical Uncertainty

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ABSTRAK

Kata kunci:

*Ekonomi Biru,
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Maqashid Syariah,
Pembangunan
Berkelanjutan,
Transformasi
Digital*

Penelitian ini mengkaji konsep ekonomi hijau-biru dari perspektif ekonomi Islam, menganalisis bagaimana prinsip *khalifah* (manusia sebagai pengelola bumi), *maqashid syariah*, serta larangan *israf* (pemborosan) dan *fasad* (kerusakan lingkungan) dapat memandu pengelolaan sumber daya laut dan lingkungan yang berkelanjutan. Dengan menggunakan pendekatan kualitatif melalui kajian literatur dan wawancara ahli, penelitian ini mengidentifikasi peluang dan tantangan dalam mengintegrasikan transformasi digital dengan praktik ekonomi hijau-biru dalam kerangka etika Islam. Temuan menunjukkan bahwa prinsip-prinsip Islam sejalan secara alami dengan tujuan pembangunan berkelanjutan, menawarkan pendekatan holistik yang menyeimbangkan pertumbuhan ekonomi, pelestarian lingkungan, dan kesejahteraan sosial. Bagi Indonesia sebagai negara mayoritas Muslim terbesar dengan sumber daya laut yang luas, mengintegrasikan prinsip ekonomi Islam ke dalam kebijakan ekonomi hijau-biru merupakan peluang strategis untuk mencapai kesejahteraan dunia dan akuntabilitas spiritual sebagaimana diamanatkan dalam *Al-Qur'an*.

ABSTRACT

Keywords:

*Blue Economy,
Digital
Transformation,
Green Economy,
Islamic Economics,
Maqashid Syariah,
Sustainable
Development*

*This study examines the green-blue economy concept from an Islamic economics perspective, analyzing how the principles of *khalifah* (human stewardship of the Earth), *maqashid syariah*, and the prohibition of *israf* (waste) and *fasad* (environmental destruction) can guide sustainable marine and environmental resource management. Using a qualitative approach with literature review and expert interviews, this research identifies opportunities and challenges in integrating digital transformation with green-blue economy practices within an Islamic ethical framework. The findings reveal that Islamic principles align naturally with sustainable development goals, offering a holistic approach that balances economic growth, environmental preservation, and social welfare. For Indonesia as the largest Muslim-majority nation with vast marine resources, integrating Islamic economics principles into green-blue economy policies represents a strategic opportunity to achieve both worldly prosperity and spiritual accountability as mandated in the *Qur'an*. The study concludes that strengthening international cooperation and developing Islamic-based environmental governance can effectively address challenges posed by geopolitical uncertainty while maintaining alignment with *maqashid syariah*.*



Introduction

The green-blue economy represents an increasingly relevant paradigm in addressing contemporary environmental and economic challenges. This concept integrates the principles of environmental sustainability (green economy) with the utilisation of marine and aquatic resources (blue economy) to promote inclusive growth. According to the World Bank (2022), the blue economy centres on the sustainable use of marine resources, while the green economy emphasises reducing environmental impacts arising from economic activities (Lee et al., 2020). From an Islamic perspective, this integration resonates deeply with the Qur'anic mandate for humans to serve as *khalifah fil ardh* (stewards of the Earth), as stated in Surah Al-Baqarah (2:30): "Indeed, I will make upon the earth a successive authority".

Islamic economics provides a comprehensive ethical framework for environmental stewardship through the concept of *maqashid syariah* (objectives of Islamic law), which encompasses the preservation of religion (*hifz al-din*), life (*hifz al-nafs*), intellect (*hifz al-'aql*), lineage (*hifz al-nasl*), and wealth (*hifz al-mal*). Contemporary Islamic scholars have extended this framework to include environmental preservation (*hifz al-bi'ah*) as essential for achieving these objectives (Chapra, 2008; Hasan, 2006).

The Qur'an explicitly prohibits environmental destruction, as stated in Surah Al-A'raf (7:56): "And cause not corruption upon the earth after its reformation." This prohibition against *fasad* (corruption/destruction) extends to all forms of environmental degradation. Similarly, Surah Ar-Rum (30:41) warns: "Corruption has appeared throughout the land and sea by what the hands of people have earned." These verses establish a clear Islamic imperative for sustainable resource management that aligns with the objectives of the green-blue economy.

Despite the natural alignment between Islamic principles and sustainable development, the academic literature remains unclear on integrating Islamic economics frameworks with green-blue economy policies, particularly in the context of digital transformation and geopolitical uncertainty. This study aims to address this gap by: (1) analyzing the theological and jurisprudential foundations of environmental stewardship in Islam; (2) examining the opportunities and challenges of green-blue economy integration with digital transformation from an Islamic perspective; (3) assessing the impact of geopolitical uncertainty on sustainable development initiatives; and (4) proposing an Islamic-based framework for green-blue economy governance in Indonesia.

Green-Blue Economy: Conventional and Islamic Perspectives

The green economy refers to an economic system that aims to reduce negative environmental impacts while enhancing human well-being and social equity, while maintaining the sustainability of natural resources (Hersoug et al., 2020). The blue economy focuses on the sustainable utilisation of marine and coastal resources to foster economic growth, improve well-being, and create employment opportunities while preserving marine ecosystems (Koundouri et al., 2020). The integration of these two concepts creates a comprehensive approach to sustainable development that addresses both terrestrial and marine environments.

From an Islamic economics perspective, the green-blue economy aligns with the principle of *maslahah mursalah* (public interest), which requires that economic activities benefit society without causing harm (*la dharar wa la dhirar*). Islamic economics also prohibits *israf* (wastefulness) and emphasizes moderation (*wasatiyyah*) in resource consumption, as stated in Surah Al-Isra (17:27): "Indeed, the wasteful are brothers of the devils" (Siddiqi, 2004; Chapra, 2008).

Digital Transformation and Sustainable Development

Digital transformation offers significant opportunities for enhancing sustainability in the green-blue economy. Technologies such as Internet of Things (IoT), artificial intelligence, and big data analytics can optimize resource management, improve monitoring capabilities, and increase efficiency in the marine and environmental sectors (OECD, 2023). The European Environment Agency (2024) reports that digital technologies play a crucial role in achieving circular and blue economy objectives by improving traceability, optimizing resources, and enhancing stakeholder coordination.

In Islamic thought, the pursuit of knowledge and technological advancement is encouraged as a means of fulfilling human responsibilities as *khilafah*. The Prophet Muhammad (peace be upon him) said: "Seeking knowledge is an obligation upon every Muslim" (Ibn Majah). However, Islamic ethics require that technological applications align with *maqashid syariah* and serve the broader interests of humanity and the environment (Hasan, 2006).

Method

This study employs a qualitative research approach to explore the integration of Islamic economics principles with green-blue economy practices in the era of digital transformation. The qualitative methodology is selected because it allows for in-depth exploration of complex phenomena and stakeholder perspectives (Creswell & Poth, 2018; Braun & Clarke, 2022).

Data Collection

Data were collected from multiple sources: (1) Primary data through semi-structured interviews with experts, practitioners, and policymakers, including Prof. Andino Maselino (Researcher at the National Research Agency/BRIN) and Dr. Kumara Jati (Senior Officer of Ministry of Trade of Indonesia), conducted in October 2024; (2) Secondary data from annual reports of international organisations (World Bank, IMF, OECD, United Nations), academic publications, Islamic economics literature, and statistical databases; and (3) Documentary analysis of policy documents related to green-blue economy and Islamic finance.

Data Analysis

Thematic analysis was employed to identify patterns and themes across the collected data (Braun & Clarke, 2022). The analysis framework integrates conventional sustainability criteria with Islamic economics principles, particularly maqashid syariah and environmental stewardship concepts. Data triangulation was implemented by comparing multiple sources to enhance validity and reliability.

Results

Opportunities for Green-Blue Economy Integration with Digital Transformation

The findings reveal extensive opportunities for the green-blue economy in the digital era. Digital technologies can enhance efficiency and productivity while ensuring sustainable and ethical management of marine resources. Through robust collaboration among governments, private sector, and civil society, it is possible to create an ecosystem that fosters innovation and sustainability (United Nations, 2023; OECD, 2023).

Table 1. Opportunities for Green-Blue Economy with Islamic Economics Framework

Opportunity	Conventional Perspective	Islamic Economics Perspective
Resource Optimization	Efficiency through technology and big data	Fulfillment of amanah (trust) as khalifah; prohibition of israf (waste)
Sustainable Fishing	Prevent overfishing, preserve biodiversity	Maslahah mursalah (public interest); avoiding fasad (destruction)
Renewable Energy	Reduce carbon emissions, energy security	Hifz al-nafs (preservation of life); stewardship of Earth's bounties
Economic Growth	Job creation, income enhancement	Hifz al-mal (preservation of wealth); equitable distribution
Traceability Systems	Consumer trust, supply chain transparency	Honesty (sidq); prohibition of fraud (ghish); halal assurance

Source: Author's analysis based on literature review and interviews (2024)

For Indonesia, as the largest archipelagic nation and a Muslim-majority country, integrating Islamic economic principles into the green-blue economy presents unique opportunities. According to interview findings, Indonesia's abundant marine resources, coupled with government policies supporting carbon economic value (Presidential Regulation No. 98/2021), create a conducive environment for Islamic-based sustainable development. The concept of khalifah can serve as a powerful motivational framework for Indonesian Muslims to engage in environmental stewardship.

Challenges in Green-Blue Economy Implementation

Despite numerous opportunities, significant challenges persist. The digital divide and unequal access to technology can exacerbate existing economic and social inequalities (IMF, 2023). Cybersecurity risks pose threats to marine resource management systems. Regulatory ambiguity may impede innovation adoption. From an Islamic perspective, these challenges can be addressed through the principle of *ta'awun* (cooperation) and collective responsibility (fard kifayah), as the Qur'an instructs: "And cooperate in righteousness and piety" (Surah Al-Ma'idah, 5:2).

Table 2. Challenges and Islamic-Based Solutions

Challenge	Impact	Islamic-Based Solution
Digital Divide	Increased inequality, limited participation	Zakat and waqf for technology access; <i>ta'awun</i> (cooperation)

Cybersecurity Risks	Data vulnerability, system disruption	Amanah (trust) in data management; Islamic cyber ethics
Regulatory Gaps	Innovation hindrance, uncertainty	Ijtihad (independent reasoning) for new regulations; shura (consultation)
Resistance to Change	Slow adoption, persistence of harmful practices	Islamic education on environmental ethics; da'wah for sustainability
Investment Shortfall	Underfunded projects, limited scale	Green sukuk; Islamic social finance; mudharabah partnerships

Source: Author's analysis (2024)

Impact of Geopolitical Uncertainty

Geopolitical uncertainty significantly impacts the green-blue economy, particularly regarding renewable energy supply chains and investment flows. International conflicts disrupt supply chains for solar and wind energy components, while geopolitical tensions lead to price spikes in raw materials (European Commission, 2022; IMF, 2024). In Indonesia, planned renewable energy projects have faced delays due to political uncertainty, as noted in the interview with Dr. Kumara Jati.

Islamic economics offers a framework for addressing geopolitical challenges by emphasizing ummah (the global Muslim community) cooperation and the principle of ukhuwwah (brotherhood). The Organisation of Islamic Cooperation (OIC) and its member states can strengthen bilateral and multilateral agreements focused on sustainable development and create alternative supply chains and investment networks grounded in Islamic finance principles (Siddiqi, 2004).

Proposed Framework: Islamic-Based Green-Blue Economy Governance

Based on the findings, this study proposes an integrated framework for green-blue economy governance grounded in Islamic principles. The framework consists of four pillars: (1) Khalifah (Stewardship) – establishing humans as trustees of natural resources with accountability to Allah; (2) Maqashid Syariah (Objectives) – aligning all policies with the preservation of religion, life, intellect, lineage, wealth, and environment; (3) Maslahah (Public Interest) – ensuring economic activities benefit society without causing harm; and (4) Ta'awun (Cooperation) – fostering collaboration at national and international levels.

Discussion

The Theological Foundations and Islamic Jurisprudence as the Foundation of a Sustainable Green-Blue Economy

The findings of this study conclusively underscore that Islamic economic principles provide a coherent and strong theological and jurisprudential foundation for sustainable environmental management, which is inherently aligned with the goals of the green-blue economy. The fundamental concept *of the caliph fil ardh* (QS. Al-Baqarah: 30), which places man as a responsible steward of the earth rather than an absolute owner entitled to exploit it indefinitely, is the main driver of a thoughtful, long-term-oriented approach to natural resources.

This responsibility, rooted in accountability to the Creator, encourages the management of Indonesia's abundant marine and terrestrial resources so that they are not only exploited for momentary gain but also preserved for future generations. This view is very much in line with the vision of Islamic development put forward by Chapra [1] which emphasizes the balance between the fulfillment of worldly needs and the achievement of spiritual happiness through obedience to divine law, where the preservation of the environment is an integral component of the achievement of life goals (*maqashid al-hayah*).

Furthermore, the framework *of sharia maqashid*, which traditionally includes the preservation of religion (*bifaz al-din*), life (*bifaz al-nafs*), reason (*bifaz al-'aql*), heredity (*bifaz al-nash*), and property (*bifaz al-mal*), can logically and ethically be expanded to include the preservation of the environment (*bifaz al-bi'ah*) as a fundamental pillar of Islamic teachings (Hasan, 2006; ISRA, 2020). Environmental damage, which is explicitly condemned in the Qur'an through verses such as Surah Al-A'raf (7:56), which prohibits *facades* (damage/corruption) on the earth after it has been repaired, and Surah Ar-Rum (30:41), which links damage on land and sea with human deeds, directly threatens the achievement of all aspects of *sharia maqashid*. The strict prohibition of *israf* (waste) and moderation (*wasatiyyah*) in consumption, as hinted at in Surah Al-Isra (17:27), which equates the spendthrift with the brother of Satan, provides a strong ethical guide to reject destructive economic practices, even if they offer short-term economic benefits.

In this context, the principle *of maslahah mursalah* (public interest), which is the foundation of Islamic law [2], is a vital instrument for designing green-blue economic policies that not only maximize economic benefits but also ensure ecological sustainability and long-term social welfare. This approach offers a more holistic and ethical perspective than

conventional economic models, which often ignore or underestimate environmental externalities in their cost-benefit calculations [3].

Digital Transformation as a Catalyst for Sustainability: Islamic Perspectives and Opportunities for Indonesia

Digital transformation, characterized by the rapid adoption of technologies such as *the Internet of Things* (IoT), artificial intelligence (AI), and big *data analytics*, offers transformative opportunities to improve efficiency, transparency, and sustainability in the green-and-blue economy sector. As shown in Table 1, digital technologies can optimize resource management, monitor the health of marine ecosystems in *real time*, and improve efficiency in the sustainable capture fisheries sector and in renewable energy development.

The OECD (2023) and the European Environment Agency [4] have highlighted the crucial role of digital technologies in driving the circular economy and blue economy through increased traceability, resource optimization, and better stakeholder coordination. From an Islamic perspective, the pursuit of knowledge and technological advancement is an obligation (*fard 'ain* or *fard kifayah*) that encourages humans to better understand and manage the creation of Allah SWT (Ibn Majah). However, the application of this technology must always be based on the principles of *trust* and compliance with *the Sharia maqasid*. The use of data, for example, must be transparent and ethical, avoiding fraudulent practices (*ghish*) and the misuse of information, which is strictly forbidden in Islam.

For Indonesia, as the world's largest archipelagic country and the largest Muslim-majority country, integrating Islamic economic principles into green and blue economic policies supported by digital transformation is a unique strategic opportunity. The findings of the interview with Prof. Andino Maselino (BRIN Researcher) indicate that Indonesia's wealth of marine resources, coupled with government regulations that recognize the economic value of carbon (Presidential Regulation No. 98/2021), create a conducive environment for the development of a green-blue economy grounded in Islamic principles.

The concept of *the caliphate* can serve as a powerful motivational framework for Indonesian Muslim communities to actively engage in environmental conservation and the responsible management of marine resources, beyond mere regulatory compliance. This aligns with a study by Lee et al. [3] that emphasized the importance of the UN's Sustainable Development Goals. However, our study adds a deeper dimension to Islamic ethics,

encouraging sustainable practices not only as a development target but also as a manifestation of spiritual obedience and moral responsibility.

Overcoming the Challenges of the Green-Blue Economy Through Solutions Based on Islamic Economics and Cooperation of the Ummah

Despite the great opportunities, implementing the green-blue economy in the digital era faces significant challenges. The digital *divide* and unequal access to technology can exacerbate existing economic and social inequalities, as highlighted by the IMF [1], thereby limiting people's full participation in the green-blue digital economy. Cybersecurity risks can threaten the integrity of marine resource management systems and critical data. In addition, regulatory *gaps* can hinder the adoption of necessary innovations. From an Islamic perspective, these challenges can be effectively overcome through the strengthening of the principles of *ta'awun* (help) and collective responsibility (*fard kifayah*), as recommended in the Qur'an (QS. Al-Ma'idah: 2).

As outlined in Table 2, Islamic-based solutions offer a more holistic approach. To address the digital divide, Islamic financial instruments such as *zakat* and *waqf* can be diverted to fund investments in digital infrastructure, expand access to technology, and support digital literacy programs for underprivileged communities. This not only creates equitable access but also strengthens the social and spiritual dimension of development.

In contrast to conventional analysis, which may rely solely on market intervention or government policies, Islamic solutions incorporate elements of community empowerment driven by the values of justice and social concern. As Maselino et al. [5] discuss BRIN's role in maritime innovation, our approach adds a dimension to how these innovations can be ethically framed.

To address the *investment shortfall* that hinders the scale of green-blue projects, Islamic financial instruments, such as *green sukuk* and *Islamic social finance*, offer attractive, sharia-compliant financing alternatives.

The issuance of *green sukuk* dedicated to environmental projects can attract global investors concerned about sustainability while meeting Sharia requirements. This potential is very relevant for Indonesia, given its status as a global Islamic finance center. The use of instruments such as *mudharabah* (profit sharing) can also encourage equitable partnerships in the development of green-blue economic projects. This complements the analysis from

Voyer et al. [6] on the need for funding for the blue economy by offering a financing framework rooted in Islamic values.

Navigating Geopolitical Uncertainty with the Framework of *Ukhuwwah* and Islamic Cooperation

Heightened geopolitical uncertainties, including international conflicts and regional tensions, have a significant impact on global renewable energy supply chains and the stability of investment flows, as reported by the European Commission [7] and the IMF [1]. In Indonesia, this can lead to delays in crucial renewable energy projects, as witnessed in an interview with Dr. Kumara Jati (Ministry of Trade of the Republic of Indonesia). In the face of this global volatility, Islamic economics offers a unique framework that emphasizes the principles of *ukhuwwah* (brotherhood) and *ummah* (the global Muslim community). Through multilateral forums such as the Organization of Islamic Cooperation (OIC) and regional cooperation such as ASEAN, Muslim-majority countries can strengthen bilateral and multilateral collaboration to build more stable, self-sustaining, and resilient renewable energy supply chains. This initiative not only reduces dependence on vulnerable global markets but also creates an investment ecosystem aligned with Islamic financial principles, as discussed by Siddiqi [2].

This cooperation can include joint technology development, standardization of environmentally friendly products, and the establishment of green investment networks supported by Islamic financial institutions. This provides an additional moral and spiritual dimension to international cooperation, going beyond the pragmatic economic interests that are often the focus of conventional geopolitical analysis [4]. Thus, Indonesia can leverage its position in the global community to drive stronger and more resilient sustainability initiatives, underpinned by solid ethical and spiritual foundations.

Proposing an Islamic-Based Green-Blue Economic Governance Framework: Theoretical and Practical Contributions

Based on the findings of the integrated research from the literature analysis, expert interviews, and the Indonesian context, this study proposes a comprehensive framework for green and blue economic governance based on four main pillars: *Khalifah* (Stewardship), *Maqashid Syariah* (Objectives), *Maslahah* (Public Interest), and *Ta'awun* (Cooperation). This

framework not only modifies but fundamentally expands the conventional sustainable development paradigm by integrating the dimensions of deep spirituality, ethics, and divine accountability.

- **The Pillars of the Caliph** instill a deep sense of responsibility in every individual, community, and institution to manage natural resources as a mandate from Allah SWT, encouraging practices oriented towards long-term sustainability and ecosystem balance. It provides a moral foundation that goes beyond just legal compliance or economic efficiency, as discussed in studies on Islamic environmental ethics (Masrur & Bahar, 2022; Journal of Islamic Economics & Finance, 2021).
- **The pillars of the *Maqashid Sharia*** serve as a moral compass, ensuring that every green-blue economic policy and practice aims to realize holistic human well-being (including religion, soul, intellect, heredity, and property) and environmental sustainability, which is the essential goal of Islamic law.
- **The *Maslahah Mursalah* Pillar** serves as a crucial ethical filter, ensuring that economic activities produce the maximum benefits for the wider community and the environment, without causing disproportionate losses, both in the present and the future.
- **The *Ta'awun* Pillar** encourages active, synergistic collaboration among stakeholders, government, the private sector, civil society, and the international community to address shared challenges and achieve sustainable development goals effectively.

This framework offers a more holistic and integrated approach compared to conventional green-blue economic frameworks that often focus only on economic and environmental aspects only. Studies such as those conducted by Koundouri et al. [3] and Voyer et al. [6] have identified opportunities and challenges in the blue economy, but they do not explicitly include spiritual dimensions, Islamic ethics, and governance frameworks rooted in divine values. By adopting this framework, Indonesia can position itself as a pioneer in developing a green-blue economy grounded in Islamic values, attract sharia-compliant investments through instruments such as *green sukuk*, and effectively contribute to achieving global development goals through a more meaningful and sustainable approach. This aligns with Indonesia's efforts to become the world's Islamic financial center and to advance the green economy.

Thus, integrating Islamic economic principles into the green-blue economy is not only an option but a must to achieve true and just sustainable development. The proposed framework, rooted in the pillars of *the Caliphate*, *Maqashid Sharia*, *Maslahah*, and *Ta'awun*, provides a strong roadmap for Indonesia to manage its resources ethically, utilize digital transformation responsibly, and navigate geopolitical uncertainties effectively, while deepening spiritual accountability and realizing humanity's well-being and nature conservation.

Conclusion

This study demonstrates that Islamic economics principles provide a comprehensive and holistic framework for green-blue economy governance. The concept of khalifah establishes moral accountability for environmental stewardship, while maqashid syariah offers clear objectives for sustainable development. The prohibitions against israf and fasad directly address the root causes of environmental degradation, while maslahah mursalah ensures that economic growth serves the broader interests of society and the environment.

For Indonesia, integrating Islamic economics principles into green-blue economy policies represents a strategic opportunity to leverage both its abundant marine resources and its position as the world's largest Muslim-majority nation. Through international cooperation via ASEAN, G20, and OIC forums, Indonesia can strengthen its leadership in sustainability initiatives while attracting investment aligned with Islamic finance principles such as green sukuk and waqf for environmental conservation.

This study has several limitations. First, the qualitative approach, while providing depth, limits generalizability. Second, the focus on Indonesia may not fully represent the diverse contexts of other Muslim-majority countries. Third, the rapidly evolving nature of digital transformation and geopolitical dynamics means that findings may need to be updated. Future research should conduct quantitative studies to measure the effectiveness of Islamic-based environmental policies, comparative studies across multiple Muslim-majority countries, and longitudinal research to track the implementation of proposed frameworks.

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