

Eco-Maqāṣid and Cross-Border Governance: A Policy Analysis of the Indonesia–Singapore Sustainable Industrial Zone

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Abstract

The acceleration of industrialization and energy transition in Southeast Asia demands green governance that is not only technocratically efficient but also ethically and religiously legitimate. This study aims to evaluate the policy framework of the Indonesia–Singapore Sustainable Industrial Zone (SIZ) in its early implementation phase through the operationalization of *eco-maqāṣid* (*hiḏ al-bī'ah*, *hiḏ al-naḑs*, and *hiḏ al-māl*) integrated with the United Nations Sustainable Development Goals (SDGs 7, 8, 13, and 15). Employing a qualitative library and policy research design with a comparative-normative approach, data were collected through a systematic review of official government policy documents, bilateral agreements, and religious institutional publications (MUI and MUIS). The findings reveal that the SIZ systematically integrates ecological, public health, and economic justice dimensions into a cross-border green industrial governance architecture. Comparative analysis identifies a dual-track response pattern: a *protective-distributive* paradigm in majority-Muslim Indonesia to mitigate green grabbing risks, and a *contributive-integrative* paradigm in minority-Muslim Singapore to assert Islamic ethical relevance within a secular green economy. This study yields a replicable three-stage normative-evaluative model for cross-border policies. Its significance lies in shifting *eco-maqāṣid* from domestic jurisprudence to transnational policy evaluation, reinforcing environmental justice and ontological security.

Keywords: *Eco-Maqāṣid, Cross-Border Cooperation, Sustainable Industrial Zone (SIZ), Muslim Communities, Indonesia–Singapore Partnership.*

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INTRODUCTION

Over the past two decades, the global community has faced an increasingly complex tension between accelerating economic expansion and the demands of environmental sustainability.¹ Southeast Asia, characterized by rapid industrialization alongside high ecological vulnerability, has emerged as one of the primary regions where this tension is particularly evident. Within this regional landscape, Indonesia and Singapore occupy complementary yet strategically interdependent positions. Indonesia provides substantial natural resources and industrial zones that support regional manufacturing, while Singapore functions as a global hub for finance, technology, and green innovation, contributing technical and financial capabilities to the regional energy transition.² This convergence of bilateral interests has culminated in the development of the Sustainable Industrial Zone (SIZ) in the Riau Islands. The initiative forms part of broader Indonesia–Singapore cooperation in sustainable industrial development, renewable energy, low-carbon manufacturing, and Carbon Capture and Storage (CCS).³

Although the SIZ is primarily framed through economic and technocratic approaches, this cross-border initiative also carries significant socio-religious implications, particularly regarding the ethical governance of natural resources, environmental risks, and the distribution of development benefits. For the majority Muslim population in Indonesia, particularly along the Batam, Bintan, and Karimun corridor, industrial expansion intersects directly with ecological justice, land rights, community livelihoods, and environmental protection. Meanwhile, for Singapore's minority Muslim community, environmental sustainability constitutes a space in which Islamic ethical values can contribute to national sustainability agendas within a highly institutionalized and technocratic policy environment. These different socio-political contexts illustrate the growing significance of faith-based environmentalism in Southeast Asia, in which religious traditions increasingly contribute to environmental stewardship and sustainability discourse.⁴

¹ Mark G. Edwards, “The Growth Paradox, Sustainable Development, and Business Strategy,” *Business Strategy and the Environment* 30, no. 7 (2021): 3079–94, <https://doi.org/10.1002/bse.2790>.

² Abdullah A. Affi et al., “Re-Viewing Sumitro’s Policy and Industrial Maturity: Powering Downstream and Manufacturing Industries for Economic Growth and Sustainable Society,” *Journal of Regional Development and Technology Initiatives* 2 (October 2024): 79–102, <https://doi.org/10.58764/j.rdti.2024.2.79>; Zhe Fu, “Singapore: Designing Win-Win Cooperation With China,” in *Cases on China’s Partnerships and International Development in Asia* (IGI Global Scientific Publishing, 2026); Sazib Hossain, “Singapore Role in Advancing Global Low-Carbon Economy: A Joint Effort for Sustainability and Climate Commitments,” *American Journal of Business Science Philosophy (AJBSP)* 2, no. 1 (2025): 36–47, <https://doi.org/10.70122/ajbsp.v2i1.25>; Veerapandian Veerasamy et al., “Grid Infrastructure and Renewables Integration for Singapore Energy Transition,” *Scientific Reports* 15, no. 1 (2025): 34405, <https://doi.org/10.1038/s41598-025-17376-5>.

³ Sunindyo Suryo Herdadi, “Siaran Pers Kementerian Energi Dan Sumber Daya Mineral Republik Indonesia No: 056.Pers/KM.01.03/SJI/2025 Tentang Indonesia-Singapura Sepakat Bangun Kawasan Industri Berkelanjutan,” 2025, <https://www.esdm.go.id/en/media-center/news-archives/indonesia-singapura-sepakat-bangun-kawasan-industri-berkelanjutan>.

⁴ Moch. Tohiri Habib and Asep Rahmatullah, “Islamic-Hindu Ecotheology in Maintaining the Sustainability of Nature in Taman Nasional Bromo Tengger-Semeru (TNBTS),” *Al-Jadwa: Jurnal Studi Islam* 4, no. 2 (2025): 146–64, <https://doi.org/10.38073/aljadwa.v4i2.2200>.

Within Islamic thought, environmental responsibility is rooted in normative principles such as *tawhīd* (divine unity), *khilāfah* (stewardship), *amānah* (trust), *mīzān* (balance), and *i‘mār al-arḍ* (responsible development of the earth), alongside prohibitions against *fasād fī al-arḍ* (corruption on earth), *ḍarar* (harm), *isrāf* (wastefulness), and *tabdhīr* (extravagance). These principles conceptualize humans not as absolute owners of nature but as trustees responsible for maintaining ecological balance and preventing harm.⁵ Accordingly, economic development and industrialization cannot be regarded as producing *maṣlahah* merely because they increase investment, productivity, or economic growth. Their ethical legitimacy also depends on whether they preserve ecological integrity, protect human well-being, and prevent environmental burdens from being disproportionately transferred to vulnerable communities.

This ethical orientation can be further understood through the classical framework of *maqāṣid al-sharī‘ah*, which traditionally emphasizes the protection of five essential objectives: religion (*ḥifẓ al-dīn*), life (*ḥifẓ al-naḥs*), intellect (*ḥifẓ al-‘aql*), lineage (*ḥifẓ al-nasl*), and wealth (*ḥifẓ al-māl*). Contemporary ecological crises, however, have encouraged scholars to extend maqāṣid discourse beyond individual jurisprudence toward systemic social and environmental concerns. Within this development, environmental preservation (*ḥifẓ al-bī‘ah*) has increasingly been conceptualized as a substantive and cross-cutting objective because ecological degradation simultaneously threatens human life, health, livelihoods, economic assets, food security, and the well-being of future generations.⁶ This development has contributed to the emergence of an eco-maqāṣid perspective, in which environmental protection is understood not as an isolated concern but as a foundational condition for realizing other maqāṣid objectives.

The relevance of this perspective becomes clearer when maqāṣid is approached systemically. Auda’s (2008)⁷ systems approach shifts maqāṣid analysis from an atomistic and predominantly protection-oriented model toward one emphasizing purposefulness, wholeness, openness, multidimensionality, and the interrelatedness of objectives. Such an approach is particularly relevant to the Indonesia–Singapore SIZ because the policy does not concern a single environmental or economic issue. Rather, it represents a complex cross-border governance system connecting energy, investment, industrial development, technology, environmental protection, labor, community interests, and

⁵ Akrum Helfaya et al., “Qur’anic Ethics for Environmental Responsibility: Implications for Business Practice,” *Journal of Business Ethics* 150, no. 4 (2018): 1105–28, <https://doi.org/10.1007/s10551-016-3195-6>; Mohammad Hashim Kamali, “Maqasid and Protection of the Environment (Hifz al-Bi’ah),” in *Goals and Purposes of Shariah* (Oxford University Press New York, NY, 2025), <https://doi.org/10.1093/9780197786390.003.0028>; Aulia Rakhmat, “Islamic Ecotheology: Understanding the Concept of Khalifah and the Ethical Responsibility of the Environment,” *Academic Journal of Islamic Principles and Philosophy* 3, no. 1 (2022): 1–24; Lisa Wersal, “Islam And Environmental Ethics: Tradition Responds To Contemporary Challenges,” *Zygon: Journal of Religion and Science* 30, no. 3 (1995).

⁶ Kamali, “Maqasid and Protection of the Environment (Hifz al-Bi’ah)”; M. Khusnul Khuluq and Asmuni Asmuni, “Hifz Al-Bi’ah as Part of Maqashid Al-Shari’ah and Its Relevance in the Context of Global Climate Change,” *Indonesian Journal of Interdisciplinary Islamic Studies* 7, no. 2 (2025), <https://doi.org/10.20885/ijis.vol7.iss2.art3>.

⁷ Jasser Auda, *Maqasid Al-Shari’ah as Philosophy of Islamic Law A Systems Approach* (The International Institute of Islamic Thought, 2008).

public policy. Consequently, ecological protection, human well-being, and economic sustainability cannot be evaluated independently but must be examined through their systemic relationships and potential trade-offs.

Building on this perspective, the present study focuses on three interconnected dimensions of eco-maqāṣid: *ḥifẓ al-bī'ah* (environmental preservation), *ḥifẓ al-naḥs* (protection of life and human well-being), and *ḥifẓ al-māl* (protection of wealth, assets, and sustainable livelihoods). These dimensions form an analytical triad rather than isolated variables. Environmental integrity provides the material conditions necessary for human life and economic activity; the protection of life ensures that industrial development does not generate unacceptable health and safety risks; while the protection of wealth extends beyond capital accumulation to include livelihood sustainability, equitable benefit distribution, and the protection of public and community assets. The three dimensions are therefore evaluated through the relationship between *maṣlahah* and *mafsadah*, particularly by examining whether the benefits of green industrialization are equitably distributed or whether ecological, health, and livelihood risks are transferred to communities with lower bargaining power. This orientation is also consistent with recent maqāṣid-based environmental scholarship emphasizing ecological justice and intergenerational equity.⁸

The contemporary application of eco-maqāṣid is increasingly visible in Islamic economic and environmental governance. The concept of *ḥifẓ al-bī'ah*, for instance, has been associated with circular economy practices, green finance, Sharia-compliant Environmental, Social, and Governance (ESG) principles, and other mechanisms aimed at integrating environmental sustainability with economic justice.⁹ At the public policy level, Indonesia has developed carbon-pricing mechanisms to support its net-zero transition, while Singapore has progressively strengthened its green finance and sustainability architecture.¹⁰ These developments demonstrate that environmental governance increasingly operates across ethical, economic, legal, technological, and financial domains, making the SIZ an appropriate case through which to examine the interaction between Islamic environmental ethics and cross-border green industrial policy.

Nevertheless, despite the rapid expansion of literature on eco-maqāṣid, sustainability, and Islamic environmental ethics, important research gaps remain. Existing

⁸ Achmad Alfian Kurniawan and Istiqomah Fadlillah, "From Anthropocentric to Ecocentric Jurisprudence: A Maqasid-Based Reconstruction of Islamic Environmental Ethics toward Intergenerational Equity," *Al'Adalah* 28, no. 2 (2025): 143–62, <https://doi.org/10.35719/aladalah.v28i2.666>.

⁹ Prima Dwi Priyatno et al., "Circular Economy Philosophy Based on Hifz Al-Bi'ah for Economic Justice," *Journal of Islamic Economics and Finance Studies* 6, no. 2 (2026): 480–97, <https://doi.org/10.47700/jiefes.v6i2.12741>.

¹⁰ Joseph Chun, "Green Finance in Singapore: Baby Steps to Environmental Protection?," preprint, 2023, <https://doi.org/10.2139/ssrn.4590670>; Yati Nurhayati et al., "Carbon Pricing Policy to Support Net Zero Emission: A Comparative Study of Indonesia, Finland and Sweden," *Environmental Policy and Law* 54, no. 1 (2024): 53–63, <https://doi.org/10.3233/EPL-230047>; Wahri Sunanda et al., "Advancing the Carbon Pricing Framework in Indonesia: A Systematic Review of Policies, Challenges, and Global Lessons," *Results in Engineering* 28 (December 2025): 107155, <https://doi.org/10.1016/j.rineng.2025.107155>.

studies have examined eco-maqāṣid in climate-change campaigns,¹¹ Islamic legal critiques of environmental governance and natural-resource policies,¹² Eco-Sharia Governance in relation to CSR and radioactive waste management,¹³ and the role of religious fatwas in responding to climate change.¹⁴ However, three issues remain insufficiently addressed.

First, the application of eco-maqāṣid to cross-border policy remains limited. Most existing studies focus on domestic regulations, sector-specific environmental issues, local cases, or national religious narratives, leaving its application as an evaluative framework for bilateral and transnational industrial governance largely unexplored. Second, studies of regional green transition frequently prioritize technological efficiency, investment, energy security, and macroeconomic indicators while giving comparatively limited attention to the ethical and socio-religious dimensions that may shape public legitimacy and community responses. Third, comparative analysis of Muslim-majority and Muslim-minority contexts remains underdeveloped. Existing literature tends to examine Muslim communities within single national settings and has rarely analyzed how different socio-political positions of Muslims influence the articulation of Islamic environmental ethics within the same cross-border sustainability initiative.

To address these gaps, this study examines and evaluates the Indonesia–Singapore Sustainable Industrial Zone policy framework through the operationalization of eco-maqāṣid, particularly *ḥifẓ al-bī'ah*, *ḥifẓ al-nafs*, and *ḥifẓ al-māl*, in relation to selected United Nations Sustainable Development Goals, especially SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 13 (Climate Action), and SDG 15 (Life on Land). Rather than treating the SDGs and eco-maqāṣid as equivalent frameworks, this study employs them complementarily: the SDGs provide internationally recognized policy indicators, while eco-maqāṣid provides an Islamic ethical framework for assessing whether the achievement of sustainability targets produces substantive *maṣlaḥah*, prevents *mafsadah*, and supports ecological and intergenerational justice.

The novelty of this study lies in extending eco-maqāṣid from predominantly domestic environmental jurisprudence toward the analysis of transnational green industrial governance. It combines a systemic maqāṣid perspective with cross-border policy analysis and a comparative examination of socio-religious responses in Muslim-majority Indonesia and Muslim-minority Singapore. In doing so, the study seeks to

¹¹ Arkin Haris et al., “Eco-Maqāṣid in Climate Change Campaigns: From an Ecolinguistics Study to the Philosophy of Islamic Law,” *Al-Manahij: Jurnal Kajian Hukum Islam* 18, no. 2 (2024): 219–36, <https://doi.org/10.24090/mnh.v18i2.10652>.

¹² Lina Marlina Susana et al., “Reconstructing Islamic Legal Norms in Environmental Governance: A Maqasid-Based Legal Critique of Indonesia’s Resource Policies,” *Al-Istinbath: Jurnal Hukum Islam* 10, no. 2 (2025): 650–70, <https://doi.org/10.29240/jhi.v10i2.13038>.

¹³ Titik Triwulan Tutik et al., “Reconstructing Eco-Maqāṣid al-Sharī‘ah for CSR Policy and Radioactive Waste Management: An SDGs-Based Study in Banten and West Java,” *Al-Manahij: Jurnal Kajian Hukum Islam* 20, no. 1 (2026): 115–32, <https://doi.org/10.24090/mnh.v20i1.15916>.

¹⁴ Fakhriy Ahmad et al., “Eco-Maqāṣid as an Integrative Islamic Response to Climate Change through a Conceptual Synthesis of Indonesian Ulama Council Fatwas,” *Hikmatuna: Journal for Integrative Islamic Studies* 12, no. 1 (2026): 110–30, <https://doi.org/10.28918/hikmatuna.v12i1.15100>.

develop a replicable normative-conceptual framework for evaluating whether cross-border industrial policies simultaneously protect environmental integrity, human well-being, and equitable economic sustainability while contributing to the broader development of Islamic environmental jurisprudence and global sustainability studies.

METHOD

This study employed a qualitative library and policy research design with a comparative-normative approach.¹⁵ The primary data consisted of official policy and institutional documents related to the Indonesia–Singapore Sustainable Industrial Zone (SIZ), including bilateral agreements, policy documents and government statements from Indonesia and Singapore, the Singapore Green Plan 2030, green finance documents issued by the Monetary Authority of Singapore (MAS), MUI Fatwa No. 86 of 2023, and relevant sustainability and religious guidance issued by the Islamic Religious Council of Singapore (MUIS). Secondary data were drawn from peer-reviewed literature on eco-maqāsid, Islamic environmental ethics, green finance, ESG-Sharia integration, and environmental governance.

Data were collected through qualitative document analysis and systematic document review.¹⁶ A thematic coding matrix was used to connect policy content with three interconnected eco-maqāsid dimensions: *ḥifẓ al-bī'ah* (environmental preservation), *ḥifẓ al-nafs* (protection of life and human well-being), and *ḥifẓ al-māl* (protection of wealth, assets, and sustainable livelihoods).¹⁷ These dimensions were cross-referenced with selected Sustainable Development Goals, particularly SDG 7, SDG 8, SDG 13, and SDG 15. The analysis examined environmental commitments such as renewable energy, emissions reduction, pollution control, and ecological protection; human safety and health implications; as well as investment benefits, livelihood protection, employment, and distributive economic justice. The relationship between eco-maqāsid and the SDGs was treated as an analytical crosswalk rather than as conceptual equivalence, with the SDGs providing policy indicators and eco-maqāsid providing an Islamic normative framework for assessing *maṣlahah* and *mafsadah*.¹⁸

Data analysis combined qualitative content analysis and policy interpretation through three stages: descriptive analysis of policy objectives, instruments, actors, and implementation mechanisms; normative-conceptual coding based on the three eco-maqāsid dimensions; and comparative analysis of socio-religious responses in Muslim-majority Indonesia and Muslim-minority Singapore. The comparison was used to identify protective-distributive and contributive-integrative patterns as interpretive typologies

¹⁵ Jennifer Browne et al., “A Guide to Policy Analysis as a Research Method,” *Health Promotion International* 34, no. 5 (2019): 1032–44, <https://doi.org/10.1093/heapro/day052>.

¹⁶ Hani Morgan, “Conducting a Qualitative Document Analysis,” *The Qualitative Report*, ahead of print, 2022, <https://doi.org/10.46743/2160-3715/2022.5044>.

¹⁷ Ingo R. Titze, “The Human Instrument,” *Scientific American* 298, no. 1 (2008): 94–101.

¹⁸ Haley Nolan-Cody et al., “Thematic Analysis and Thematic Co-Occurrence Analysis: Teaching Students to Conduct Qualitative Research with Depth,” *Communication Teacher* 38, no. 4 (2024): 299–307, <https://doi.org/10.1080/17404622.2024.2370452>.

emerging from the documentary analysis.¹⁹ Source and theoretical triangulation were employed by cross-checking government policy documents, religious institutional documents, and relevant academic literature, while an analytical audit trail was maintained to ensure that major interpretations remained traceable to the documentary evidence.

RESULTS AND DISCUSSION

The Indonesia–Singapore Sustainable Industrial Zone Policy

The Indonesia–Singapore Sustainable Industrial Zone (SIZ) policy represents an evolution of economic cooperation between the two nations, which previously focused on economic zone development, particularly in Batam, Bintan, and Karimun (BBK), as well as industrial parks tied to Singaporean investment. In 2023, bilateral cooperation through the Six Bilateral Economic Working Groups highlighted BBK as a key priority in their economic relationship. At that time, both governments actively promoted joint investment initiatives centered on the manufacturing sector, while developments such as the Kendal Industrial Park served as a concrete model of Indonesia–Singapore collaboration. As of July 2023, the Kendal Industrial Park had attracted 90 investors with an estimated investment value of US\$ 3.37 billion and the potential to create nearly 30,000 jobs. Thus, the 2023 period can be understood as a foundational phase for strengthening the industrial and investment ecosystem, which subsequently evolved into a decarbonization and sustainable industrial zone agenda in 2025.²⁰

The SIZ Memorandum of Understanding (MoU), officially signed on June 13, 2025, by Indonesia’s Minister of Energy and Mineral Resources (ESDM) and Singapore’s Minister for manpower and second minister for trade and industry, positioned the development of sustainable industrial zones as one of three primary pillars of bilateral green energy cooperation, alongside Cross-Border Electricity Trade (CBET) and Carbon Capture and Storage (CCS). The SIZ is designated for development in the Batam, Bintan, and Karimun (BBK) region of the Riau Islands, due to its close geographical proximity to Singapore. The policy’s objective extends beyond establishing industrial zones that meet baseline environmental standards; it aims to integrate industrial areas with low-carbon energy, green investment, energy infrastructure, and emerging industrial value chains. The Indonesian government stated that this partnership is directed at building green industrial hubs capable of attracting new and renewable energy investments while

¹⁹ Philipp A. E. Mayring, “Qualitative Content Analysis,” in *International Encyclopedia of Education*, 4th ed. (ScienceDirect, 2022), <https://doi.org/https://doi.org/10.1016/B978-0-12-818630-5.11031-0>.

²⁰ Haryo Limanseto, “Siaran Pers Kementerian Koordinator Bidang Perekonomian Republik Indonesia Siaran HM.4.6/299/SET.M.EKON.3/08/2023 Perkuat Kerja Sama Indonesia-Singapura Melalui Economic Bilateral Working Group, Menko Airlangga Tekankan Pentingnya Inovasi Dan Terobosan Da,” *Www.Ekon.Go.Id*, 2023, <https://www.ekon.go.id/publikasi/detail/5314/perkuat-kerja-sama-indonesia-singapura-melalui-economic-bilateral-working-group-menko-airlangga-tekanan-pentingnya-inovasi-dan-terobosan-dalam-mencapai-target-kerja-sama>.

supporting cross-border clean electricity trade.²¹

Institutionally, SIZ implementation commenced with the formation of a joint SIZ Taskforce tasked with evaluating and developing sustainable industrial zones in BBK. The Singaporean government clarified that this joint taskforce would identify potential growth industries for the zone. From Indonesia's perspective, the scope of targeted industries includes low-carbon energy and storage/batteries, sustainable manufacturing with supporting supply chains, logistics, and other related sectors. This framework demonstrates that the SIZ is conceived as a comprehensive industrial ecosystem rather than a conventional manufacturing enclave. Consequently, energy, industrial operations, logistics, investment, and infrastructure must be designed in an integrated manner, enabling industrialization to generate economic value addition while simultaneously reducing carbon intensity.²²

Another vital dimension is the linkage between the SIZ and cross-border clean energy trade. The Indonesian government affirmed that green industrial zone development in BBK will be linked to renewable energy expansion and cross-border power transmission. Within this structural design, Indonesia functions as the production base and development hub for renewable energy-based industries, while Singapore's geographic proximity provides a market for clean electricity and low-carbon industrial goods. Thus, the SIZ operates as a mechanism connecting Indonesia's comparative advantages, namely land availability, renewable energy potential, and industrial base, with Singapore's capabilities in financing, technology, trade, and sustainable services. The Indonesian government estimates that the broader suite of Indonesia-Singapore green energy initiatives will require over US\$ 10 billion in investment, though this figure spans multiple interconnected projects rather than the SIZ initiative alone.²³

From an investment standpoint, the SIZ gains strong momentum from Singapore's position as a major foreign direct investor in Indonesia. Data from the Investment Coordinating Board (BKPM) show that Singapore consistently ranks among Indonesia's largest sources of Foreign Direct Investment (FDI); between 2020 and 2024, Singaporean investment commitments grew from US\$ 9.8 billion in 2020 to US\$ 20.1 billion in 2024. In 2025, Singapore remained the top FDI contributor, accounting for US\$ 17.4 billion or 30.9% of total FDI, amid total realized investment in Indonesia reaching IDR 1,931.2 trillion. Concurrently, downstream industrial investment reached IDR 584.1 trillion (30.2% of total investment), marking a 43.3% year-on-year growth. These metrics underscore that green industrial zone policies do not exist outside Indonesia's broader industrial strategy; rather, the SIZ sits directly at the intersection of resource

²¹ Herdadi, "Siaran Pers Kementerian Energi Dan Sumber Daya Mineral Republik Indonesia No: 056.Pers/KM.01.03/SJI/2025 Tentang Indonesia-Singapura Sepakat Bangun Kawasan Industri Berkelanjutan."

²² Admin MTI, "Speech by Min(EST) Tan See Leng at the MOU Signing Ceremony in Jakarta, Indonesia," [Www.Mti.Gov.Sg](https://www.mti.gov.sg/newsroom/speech-by-min-est--tan-see-leng-at-the-mou-signing-ceremony-in-jakarta--indonesia), 2025, <https://www.mti.gov.sg/newsroom/speech-by-min-est--tan-see-leng-at-the-mou-signing-ceremony-in-jakarta--indonesia>.

²³ Admin Web ESDM, "Garap Proyek Energi Hijau, Indonesia-Singapura Gelontorkan Lebih Dari USD10 Miliar," [Www.Esdm.Go.Id](https://www.esdm.go.id/en/media-center/news-archives/garap-proyek-energi-hijau-indonesia-singapura-gelontorkan-lebih-dari-usd10-miliar), 2025, <https://www.esdm.go.id/en/media-center/news-archives/garap-proyek-energi-hijau-indonesia-singapura-gelontorkan-lebih-dari-usd10-miliar>.

downstreaming, foreign investment, industrial park expansion, and energy transition.²⁴

In the context of Singaporean policy, the BBK SIZ aligns closely with the *Singapore Green Plan 2030*. Launched in 2021 as a whole-of-government initiative, the Green Plan encompasses five core pillars: City in Nature, Energy Reset, Sustainable Living, Green Economy, and Resilient Future. Under the Green Economy pillar, Singapore explicitly targets industrial transformation toward higher energy and carbon efficiency, positioning sustainability as a key driver of economic growth and job creation. The Green Plan also sets targets for Jurong Island to become a sustainable energy and chemicals park, while positioning Singapore as a regional hub for green finance, carbon services, and trading. This framework explains the strategic value of the SIZ for Singapore: developing low-carbon industrial capacity in BBK enables the expansion of a regional green-economy ecosystem beyond Singapore's land constraints.²⁵

More specifically, Green Plan targets demonstrate Singapore's reliance on a regional ecosystem to fulfill its energy transition goals. Singapore aims to achieve at least 2 GWp of solar capacity by 2030, enhance building energy efficiency, accelerate transport electrification, and expand the green economy sector. It also seeks to consolidate its standing as an Asian center for green finance, sustainability services, and carbon markets. Given Singapore's spatial limitations, connecting portion of its clean energy requirements and low-carbon industrial supply chains with neighboring states is a practical necessity. In this setting, BBK occupies a key geographical position, facilitating connections between clean energy generation, industrial processing, logistics, and Singaporean markets.²⁶

The financial underpinning of the SIZ can be evaluated through the *Green Finance Action Plan* of the Monetary Authority of Singapore (MAS). First launched in 2019 to establish Singapore as a regional green finance hub, MAS expanded this framework through the *Finance for Net Zero Action Plan*, integrating transition finance as a key component. MAS's relevance to the SIZ lies in providing financial architecture for green projects: low-carbon industrial zones require not only regulatory frameworks and physical assets, but also green bonds, sustainability-linked loans, transition financing, and standardized environmental risk assessment frameworks.²⁷

This link between industrial policy and green finance is crucial because the SIZ demands long-term capital and infrastructure commitment. Beyond factory construction,

²⁴ Anak Agung Sagung Dwivandari, "Regulation Of The Minister Of Investment And Downstream Industry/Head Of The Investment Coordinating Board Of The Republic Of Indonesia Number 6 Of 2025 On Strategic Plan Of The Ministry Of Investment And Downstream Industry/Investment Coordinating Board," Jdih-Storage.Bkpm.Go.Id, 2025.

²⁵ Government of Singapore, "Green Economy-How the Singapore Green Plan 2030 Will Make Sustainability a Key Competitive Advantage for Us, and Present New Opportunities for Growth and Job Creation.," WwW.Greenplan.Gov.Sg, 2026, <https://www.greenplan.gov.sg/key-focus-areas/green-economy>.

²⁶ Government of Singapore, "Our Singapore Green Plan 2030 Targets," WwW.Greenplan.Gov.Sg, 2026, <https://www.greenplan.gov.sg/targets>.

²⁷ Government of Singapore, "Greening the Financial System," WwW.Mas.Gov.Sg, 2020, <https://www.mas.gov.sg/publications/annual-report/2020/annual-report-2019-2020/greening-the-financial-system>.

the SIZ requires renewable power grids, energy storage systems, transmission lines, waste management infrastructure, logistics facilities, digital infrastructure, and potential carbon management systems. Consequently, MAS's approach to green and transition finance serves as an instrument to narrow funding gaps for SIZ infrastructure. Conceptually, Singapore provides the financing ecosystem and green financial services, while BBK offers spatial capacity and the production base for low-carbon industrial operations. This creates a functional cross-border division of economic roles that defines the SIZ partnership.

From Indonesia's perspective, the SIZ policy must also be contextualized within its sustainable downstreaming agenda. BKPM data indicate that in 2025, basic metals, metal products, and non-machinery manufacturing contributed IDR 262.0 trillion (13.6% of national investment), while real estate, industrial estate, and office developments accounted for IDR 140.4 trillion. Thus, the core policy challenge for the SIZ is not choosing between industrial expansion and environmental protection, but ensuring that investment growth and downstreaming align with resource efficiency, low-carbon energy, emissions control, and environmental governance. The SIZ serves as a test case for an Indonesian industrialization model that seeks to combine economic value creation with decarbonization.²⁸

The religious dimension introduces a distinct normative layer. In Indonesia, MUI Fatwa No. 86 of 2023 concerning the *Law on Global Climate Change Control* provides religious legitimacy for climate mitigation and adaptation measures. The fatwa deems actions causing environmental destruction, including deforestation and land burning contributing to climate change, as religiously prohibited (*ḥarām*); simultaneously, it mandates mitigation, adaptation, non-essential carbon footprint reduction, and a fair energy transition. Within the SIZ framework, sustainability is thus framed not merely as regulatory compliance or an investment strategy, but as a moral-religious obligation to prevent ecological harm (*mafsadah*) and preserve the well-being (*maṣlaḥah*) of future generations.²⁹

The implications of MUI Fatwa No. 86 of 2023 for the SIZ are significant when analyzed through an *eco-maqāsid* lens. Industrial activity is fundamentally permissible provided it yields public benefit and does not cause greater harm. Because Fatwa No. 86/2023 positions mitigation, adaptation, emission reductions, and energy transition as religious responsibilities, sustainable industrial zones can be conceptualized as concrete expressions of securing benefits (*jalb al-maṣāliḥ*) and averting harm (*dar' al-mafāsīd*). From this perspective, the success of the SIZ cannot be measured solely by investment volume or employment figures, but also by its capacity to safeguard life (*ḥifẓ al-nafs*), wealth (*ḥifẓ al-māl*), future generations (*ḥifẓ al-nasl*), and the environment as part of an

²⁸ Biro Protokol dan Hubungan Masyarakat Kementerian Investasi dan Hilirisasi (BKPM), "Realisasi Investasi 2025 Lampau Target, Hilirisasi Melompat 43,3 Persen," Bkpm.Go.Id, 2026, <https://bkpm.go.id/id/info/siaran-pers/realisasi-investasi-2025-lampau-target-hilirisasi-melompat-43-3-persen>.

²⁹ Fatwa MUI Nomor 86 Tahun 2023 Tentang Hukum Pengendalian Perubahan Iklim Global. (2023).

expanded contemporary *maqāṣid* framework.³⁰

In Singapore, institutional religious approaches are represented by the Islamic Religious Council of Singapore (MUIS). While MUIS does not issue climate fatwas identical to MUI Fatwa No. 86/2023, its institutional documents demonstrate an evolving environmental stewardship agenda within Singapore's Muslim community. MUIS publishes dedicated Sustainability Reports, with the 2023 report themed “*Fulfilling our roles as stewards*” and the 2024 edition titled “*Stewardship for tomorrow*”. These reports indicate that stewardship concepts have been integrated into MUIS's institutional practices, framing environmental sustainability as part of the Muslim community's responsibility toward broader society.³¹

This institutional orientation is also reflected in mosque management. MUIS highlights that the Al-Mawaddah Mosque incorporates energy-saving features and holds a Green Mark Certification from the Building and Construction Authority. Historically, MUIS's Religious Life initiatives have promoted the greening of mosque environments. This demonstrates how religious values can be translated into operational practices, such as energy efficiency and green building standards. In the SIZ context, this experience offers a model of faith-based environmental stewardship, where religious institutions act not only as moral advocates but as institutional adopters of sustainability practices.³²

Accordingly, the Indonesia–Singapore SIZ policy can be understood as a cross-border architecture intersecting four distinct policy regimes: first, Indonesia's industrialization and resource downstreaming regime; second, Singapore's energy transition and green economy regime; third, the green financing regime channeled through Singapore's financial ecosystem; and fourth, the Islamic ecological ethics regime represented by MUI and MUIS. At the material level, the SIZ links BBK with renewable energy, investment, low-carbon manufacturing, logistics, and trade. Financially, it draws on Singapore's green finance hub capabilities. Normatively, MUI fatwas and MUIS stewardship practices offer socio-religious legitimacy for the principle that economic growth must avoid ecological damage.³³

Analytically, the SIZ is thus best understood not merely as a local “green industrial park,” but as an instrument of *cross-border green industrial governance*. Indonesia provides the production base, spatial capacity in BBK, renewable energy resources, and downstream industrial goals; Singapore provides market access, technology, capital, industrial expertise, and a green finance ecosystem. Meanwhile, the *Green Plan 2030* provides policy direction from Singapore, matched by Indonesia's downstreaming and

³⁰ Faisal Rojihisawal et al., “Peran Fatwa MUI No. 86/2023 Dalam Mewujudkan Kemakmuran Ekologis: Analisis Prinsip Maqāṣid al-Syarī'ah,” *Jurnal Pemuliaan Lingkungan Hidup Dan Sumber Daya Alam* 02, no. 02 (2025): 1.

³¹ Government of Singapore, “MUIS Annual Reports, Highlighting Key Achievements, Financial Performance, and Initiatives Undertaken to Serve the Muslim Community,” [Www.Muis.Gov.Sg](https://www.muis.gov.sg/resources/annual-reports/), 2026, <https://www.muis.gov.sg/resources/annual-reports/>.

³² Government of Singapore, “Contact and Information about Al-Mawaddah Mosque,” [Www.Muis.Gov.Sg](https://www.muis.gov.sg/community/mosque/mosque-directory/al-mawaddah), 2025, <https://www.muis.gov.sg/community/mosque/mosque-directory/al-mawaddah>.

³³ Singapore, “Green Economy-How the Singapore Green Plan 2030 Will Make Sustainability a Key Competitive Advantage for Us, and Present New Opportunities for Growth and Job Creation.”

decarbonization strategy. Incorporating an *eco-maqāsid* perspective shifts the ultimate objective beyond economic growth toward cultivating public interest (*maṣlahah*) that safeguards life, wealth, future generations, and ecosystem sustainability. In this sense, the BBK SIZ serves as an empirical case study examining how the green economy, cross-border cooperation, sustainable finance, and Islamic ethics intersect within a single regional policy framework.³⁴

Summary of Main Scientific Findings

Document analysis of the Indonesia–Singapore Sustainable Industrial Zone (SIZ) policy demonstrates that this transnational initiative constitutes a form of cross-border green industrial governance architecture that is normatively and conceptually integrated with the *eco-maqāsid al-sharī'ah* framework and the United Nations Sustainable Development Goals (SDGs).³⁵ The SIZ policy cannot be understood atomistically or reductionistically as merely a local manufacturing park project, physical expansion, or commercial investment instrument. Instead, the SIZ operates as a complex system that intersects and connects four policy regimes simultaneously: first, Indonesia's industrialization and downstreaming regime; second, Singapore's energy transition and green economy regime; third, the green financing regime channeled through Singapore's financial ecosystem; and fourth, the Islamic ecological ethics regime articulated by the MUI Fatwa Commission and the Islamic Religious Council of Singapore (MUIS).

Applying Jasser Auda's systems approach, the scientific findings of this study confirm that the pillars of *ḥifẓ al-bī'ah* (environmental preservation), *ḥifẓ al-nafs* (protection of life and health), and *ḥifẓ al-māl* (economic justice and asset sustainability) do not function as isolated or mutually exclusive variables.³⁶ Instead, they form an analytical triad characterized by an interrelated hierarchy: *ḥifẓ al-bī'ah* serves as the primary ecological prerequisite providing the material conditions for the continuation of life and economic activity; *ḥifẓ al-nafs* ensures that industrial acceleration is counterbalanced by the mitigation of negative externalities on human health; while *ḥifẓ al-māl* guarantees that the green transition yields not merely green growth, but green justice through the equitable distribution of benefits and livelihood protection.³⁷

This normative integration intersects complementarily through an analytical crosswalk with UN indicators, specifically SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 13 (Climate Action), and SDG 15 (Life on Land). Within this complementary relationship, the SDGs offer measurable international policy indicators and development targets, whereas *eco-maqāsid* provides profound ethical-religious norms to evaluate whether achieving these technocratic metrics delivers substantive public interest (*maṣlahah*), averts harm (*mafsadah*), and ensures

³⁴ MTI, "Speech by Min(EST) Tan See Leng at the MOU Signing Ceremony in Jakarta, Indonesia."

³⁵ MTI, "Speech by Min(EST) Tan See Leng at the MOU Signing Ceremony in Jakarta, Indonesia."

³⁶ Auda, *Maqasid Al-Shari'ah as Philosophy of Islamic Law A Systems Approach*.

³⁷ Kamali, "Maqasid and Protection of the Environment (Hifz al-Bi'ah)"; Khuluq and Asmuni, "Hifz Al-Bi'ah as Part of Maqashid Al-Shari'ah and Its Relevance in the Context of Global Climate Change."

intergenerational equity.³⁸

Normative Integration of Eco-Maqāṣid and SDGs within the SIZ Policy Framework

1. Analysis of *Hifẓ al-Bī'ah* (SDGs 13 & 15): Energy Transition, CCS, and Carbon Pricing as Fulfillment of *Amānah* and Ecological Restoration

Within the *eco-maqāṣid* framework, *hifẓ al-bī'ah* holds the status of a primary ecological objective (*maqṣad*) that is both substantive and cross-cutting (*cross-cutting principle*).³⁹ The SIZ Memorandum of Understanding (MoU), officially signed on June 13, 2025, positions the development of sustainable industrial zones in Batam, Bintan, and Karimun (BBK) as one of three primary pillars of bilateral green energy cooperation, alongside Cross-Border Electricity Trade (CBET) and Carbon Capture and Storage (CCS). From the perspective of *hifẓ al-bī'ah*, commitments to renewable energy integration, energy efficiency, CCS technology, pollution control, and waste management cannot be evaluated merely by the formal or elective presence of “green clauses.” The more substantive inquiry is whether the entire industrial lifecycle, from land acquisition and resource extraction to manufacturing, emission processing, and post-operational impacts, preserves or disrupts ecological balance (*mīzān*) and engenders corruption (*fasād fī al-arḍ*).⁴⁰

The implementation of the SIZ in BBK, linked with the *Energy Reset*, *Green Economy*, and *Resilient Future* pillars of the *Singapore Green Plan 2030*, demonstrates regional efforts to curb carbon intensity and internalize ecological costs historically ignored by conventional fossil-fuel-based industries. BBK’s geographical proximity to Singapore fosters an integrated industrial ecosystem where Indonesia’s spatial capacity and renewable energy resources are connected to Singapore’s capital markets, advanced technology, and sustainability services. Evaluating this through *hifẓ al-bī'ah* confirms that the SIZ’s commitment to transforming industrial parks into low-carbon ecosystems operationalizes the Islamic legal maxim “*Harm must be eliminated*” (*al-dararu yuzāl*), while representing an act of ecological restoration that prioritizes resource efficiency and the prevention of permanent damage.

The alignment of *hifẓ al-bī'ah* with SDG 13 (Climate Action) and SDG 15 (Life on Land) receives a robust normative foundation and theological justification through MUI Fatwa No. 86 of 2023 concerning the *Law on Global Climate Change Control*. The fatwa explicitly prohibits actions causing environmental degradation and deforestation, while imposing a moral-religious obligation to engage in climate mitigation, adaptation, carbon footprint reduction, and a just energy transition. From

³⁸ Rois et al., “Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi’ah Perspective”; Kurniawan and Fadlillah, “From Anthropocentric to Ecocentric Jurisprudence: A Maqasid-Based Reconstruction of Islamic Environmental Ethics toward Intergenerational Equity.”

³⁹ Kamali, “Maqasid and Protection of the Environment (Hifz al-Bi’ah)”; Khuluq and Asmuni, “Hifz Al-Bi’ah as Part of Maqashid Al-Shari’ah and Its Relevance in the Context of Global Climate Change.”

⁴⁰ Kamali, “Maqasid and Protection of the Environment (Hifz al-Bi’ah)”; Rois et al., “Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi’ah Perspective”; Hisan et al., “Integrating Hifz Al-Bi’ah from Abdul Majid An-Najjar into Fatwas and Plastic Waste Management Policies in Indonesia.”

an *eco-maqāsid* perspective, the SIZ policy, incorporating carbon pricing mechanisms in Indonesia and carbon trading and services regulations in Singapore, represents the operationalization of the principle *dar' al-mafāsīd* (averting harm) and the fulfillment of *amānah* in earth stewardship (*i 'mār al-arḍ*).⁴¹

This alignment of secular policy with religious values transforms emissions reduction targets from routine regulatory compliance into the fulfillment of a spiritual obligation. Meanwhile, in Singapore, institutional sustainability reporting by MUIS (*Stewardship for Tomorrow*) and Green Mark certifications awarded by the Building and Construction Authority to religious facilities such as the Al-Mawaddah Mosque demonstrate that *ḥifẓ al-bī'ah* and faith-based environmental stewardship are translated concretely into operational practices, energy efficiency, and green building ecosystems. Consequently, this integration provides deep socio-religious legitimacy for the cross-border low-carbon industrial architecture.

2. Analysis of *Ḥifẓ al-Nafs* (SDG 3): Mitigation of Industrial Externalities and Public Health Protection as Primary Necessities (*Darūriyyāt*)

The principle of *ḥifẓ al-nafs* within the SIZ policy framework serves to evaluate human safety, health, and quality of life threatened by industrial externalities and the climate crisis. From an *eco-maqāsid* perspective, the environment is not an isolated conservation object, but a vital ecological medium that determines human safety and health outcomes. In large-scale industrial projects along the BBK corridor, expanding manufacturing output, export volumes, or investment metrics while ignoring air pollution, chemical waste, and water quality degradation represents a clear form of harm (*mafsadah*) threatening public safety and health (*ḥifẓ al-nafs*). Therefore, adopting low-emission technologies, integrated waste management systems, stringent occupational safety standards, and ecological disaster risk mitigation within the SIZ policy elevates these measures from technocratic preferences to primary legal necessities (*darūriyyāt*) required to safeguard human dignity and the right to life.⁴²

Through *ḥifẓ al-nafs*, targets under SDG 13 (Climate Action) and SDG 15 (Life on Land) connect systemically to SDG 3 (Good Health and Well-Being), even though SDG 3 is not formally designated as a primary indicator in the international policy framework. Mitigating greenhouse gas emissions and capturing carbon via CCS technology within the SIZ functions as a preventive mechanism (*sadd al-dhari'ah*) against chronic health hazards stemming from air pollution, water insecurity, and ecological disaster risks looming over coastal communities in the Riau Islands. Industrial policies that strictly integrate emissions control with environmental protection directly embody the principle of equitable public interest (*maṣlahah*). This approach ensures that accelerated regional economic growth is not achieved by

⁴¹ Kamali, "Maqasid and Protection of the Environment (Ḥifẓ al-Bi'ah)."

⁴² Rois et al., "Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi'ah Perspective"; Hisan et al., "Integrating Hifz Al-Bi'ah from Abdul Majid An-Najjar into Fatwas and Plastic Waste Management Policies in Indonesia."

transferring ecological costs and health burdens onto local populations possessing lower socio-political bargaining power.

Table 1. Integration of Eco-Maqāṣid and SDGs within the SIZ Policy Framework

Eco-Maqāṣid Pillar	SDGs Alignment	SIZ Policy Operationalization	Islamic Legal Rationale	Strategic Impact
Ḥifẓ al-Bī'ah (Environmen)	SDG 13 & 15	Renewable energy transition, CCS, carbon pricing, and alignment with <i>Singapore Green Plan 2030</i> .	Legal maxim “ <i>Harm must be eliminated</i> ” (<i>al-ḍararu yuzāl</i>), <i>amānah</i> , and MUI Fatwa No. 86/2023.	Converts emission targets into a religious duty, providing socio-religious legitimacy for green infrastructure.
Ḥifẓ al-Nafs (Life & Health)	SDG 3 (<i>via</i> 13 & 15)	Zero-emission tech, industrial waste management, and pollution mitigation in coastal BBK.	Treating environmental health as a primary necessity (<i>ḍarūriyyāt</i>) and applying <i>sadd al-dhari'ah</i> .	Prevents health risks and protects vulnerable local communities from industrial pollution burdens.
Ḥifẓ al-Māl (Wealth)	SDG 8	Green Sukuk, ESG-Sharia financing, and MAS <i>Finance for Net Zero</i> framework.	Equitable circulation of wealth (<i>rawāj al-māl</i>), <i>maṣlaḥah</i> , and intergenerational equity.	Bridges the green financing gap, avoids fossil-fuel asset impairment, and protects local livelihoods.

3. Analysis of *Ḥifẓ al-Māl* (SDG 8): Green Sukuk Schemes, ESG-Sharia Integration, and Asset Sustainability

The pillar of *ḥifẓ al-māl* in SIZ policy analysis extends beyond protecting individual asset ownership or corporate capital accumulation. In industrial policy and societal contexts, *ḥifẓ al-māl* is operationalized as the preservation of public assets, livelihood sustainability, decent job creation, equitable distribution of investment benefits, fair compensation, and the prevention of wealth concentration among elite groups. The SIZ framework operates atop a dynamic economic landscape wherein Singapore consistently serves as Indonesia’s largest foreign direct investment (FDI) source, reaching US\$ 17.4 billion or 30.9% of total FDI in 2025, amid a national surge in downstream industrial investment totaling IDR 584.1 trillion. However, under *ḥifẓ al-māl*, high commercial investment volumes and industrial park expansions do not automatically indicate the realization of *maṣlaḥah* if the transition induces economic displacement, degrades coastal ecosystems, or disrupts traditional livelihoods without offering viable, dignified alternative employment.⁴³

To ensure the fulfillment of SDG 8 (Decent Work and Economic Growth), the SIZ policy requires a sustainable financing architecture capable of closing funding gaps for large-scale green infrastructure projects. Here, the strategic frameworks of the Monetary Authority of Singapore (MAS)—specifically its *Green Finance Action Plan* and *Finance for Net Zero Action Plan*—intersect with Green Sukuk instruments

⁴³ Syukri et al., “Green Sukuk as a Manifestation of Islamic Ecotheology: The Integration of Maqasid al-Shariah and Environmental Sustainability in Indonesia”; Bela, “Green Economy and The Reconstruction of Maslahah in Indonesian Islamic Economic Law.”

and the reconstruction of green economic *maṣlahah* in Indonesia. Utilizing Sharia-compliant green bonds, transition finance, and sustainability-linked financing facilitates the circulation of capital (*rawāj al-māl*) to fund renewable power grids, battery storage systems, and waste treatment infrastructure. This approach effectively prevents asset impairment resulting from the obsolescence of fossil-fuel-based industries, while ensuring that economic restructuring in BBK and supporting industrial areas, such as the Kendal Industrial Park, promotes equitable economic benefits, strengthens local community resilience, and upholds intergenerational equity in asset distribution.⁴⁴

Comparative Analysis of Socio-Religious Responses: Majority (Indonesia) vs. Minority (Singapore)

The distinct socio-political positioning of Muslims in Indonesia and Singapore produces divergent patterns of religious articulation regarding the green industrial agenda. In this study, these differences are categorized as a *protective-distributive paradigm* in Indonesia and a *contributive-integrative paradigm* in Singapore. Both represent analytical typologies developed for research rather than explicit operational categories used by religious institutions in either country. The former positions religion primarily as a source of protection for communities and the environment, alongside a mechanism for equitable development distribution. Conversely, the latter emphasizes the institutional contribution of Muslims toward integrating religious ethics into national sustainability frameworks.

In Indonesia, Islam's status as a majority religion enables religious values to function robustly as instruments of social protection and policy correction against developmental impacts. This is exemplified by MUI Fatwa No. 86 of 2023 concerning the *Law on Global Climate Change Control*, which establishes a normative foundation for climate mitigation and prohibits activities causing environmental degradation.⁴⁵ From an *eco-maqāsid* perspective, this response primarily reflects *ḥifẓ al-bī'ah*, while simultaneously linking to *ḥifẓ al-naḥs* and *ḥifẓ al-māl*, as ecological damage directly threatens public health, safety, land rights, and local livelihoods.

This protective orientation becomes critical within the Riau Islands, where industrial expansion induces friction between investment inflow, land-use changes, and community livelihood sustainability. Contestation surrounding Rempang illustrates how industrial development and investment priorities can clash with local community interests and land tenure rights.⁴⁶ Under the *eco-maqāsid* framework, this dynamic is evaluated through the principles of justice (*ʿadl*) and *maṣlahah*–*maḥsadah* tradeoffs: a project generating economic growth and emissions reduction is not inherently *maṣlahat* if benefits remain concentrated among elite actors while ecological and social burdens fall

⁴⁴ Kurniawan and Fadlillah, "From Anthropocentric to Ecocentric Jurisprudence: A Maqasid-Based Reconstruction of Islamic Environmental Ethics toward Intergenerational Equity."

⁴⁵ Fatwa MUI Nomor 86 Tahun 2023 Tentang Hukum Pengendalian Perubahan Iklim Global.

⁴⁶ Nikita Sud, "A Green Energy Frontier Long in the Making: From Tin to Solar Power in the Riau Islands, Indonesia," *Antipode* 57, no. 6 (2025): 2508–32, <https://doi.org/10.1111/anti.70058>.

on vulnerable groups. Consequently, preventing “green grabbing” and safeguarding affected populations constitute vital elements in operationalizing *ḥifẓ al-māl* and *ḥifẓ al-nafs*.

The distributive dimension can be fortified through Islamic social finance instruments, such as productive zakat and waqf. In this framework, these instruments are conceptualized not as formal components of the SIZ, but as normative mechanisms with strong potential to mitigate inequality resulting from the green transition. Productive zakat can be targeted toward capacity building and livelihood restoration for vulnerable populations, while productive waqf can support long-term social and ecological assets. The *green waqf* initiative introduced by the Indonesian Waqf Board (BWI), for instance, links waqf assets with reforestation, conservation, renewable energy, and sustainable development.⁴⁷ Thus, the protective-distributive paradigm connects *ḥifẓ al-bī'ah* to *ḥifẓ al-māl* by combining social protection with economic empowerment.

In Singapore, the minority context shapes a different trajectory. The Muslim response occurs largely through institutionalization and the integration of Islamic ethics into the national development framework. MUIS explicitly articulates *khalīfah* (stewardship) and human environmental responsibility through its religious advisories on sustainability.⁴⁸ This orientation aligns seamlessly with the *Singapore Green Plan 2030*, which embeds sustainability across five core pillars: City in Nature, Energy Reset, Sustainable Living, Green Economy, and Resilient Future. Consequently, Islamic values need not function as an external critique of state policy; rather, they serve as a source of ethical motivation encouraging Muslim civic participation in national sustainability targets.

This contributive-integrative paradigm is also reflected in the Green Plan's orientation, which connects environmental sustainability with economic expansion, employment, resource efficiency, and societal resilience. The *Green Economy* pillar, for example, aims to generate new employment opportunities while driving industrial transformation toward higher carbon efficiency.⁴⁹ This allows *ḥifẓ al-bī'ah* and *ḥifẓ al-māl* to intersect in an integrative manner: environmental protection is not pitted against economic growth, but is positioned as a core strategy for creating new economic opportunities. At the grassroots level, this approach is reinforced through mosque networks, religious education, waqf asset management, and sustainable consumption practices.

This comparative analysis demonstrates that majority–minority dynamics primarily influence the articulation format of religious values rather than the core substance of ecological concern. Indonesia tends to leverage religious authority and

⁴⁷ Ade Nurhidayah, “Green Wakaf Solusi Pembangunan Ekonomi Indonesia,” [Www.Bwi.Go.Id](https://www.bwi.go.id/9166/2023/11/28/green-wakaf-solusi-pembangunan-ekonomi-indonesia), 2023, <https://www.bwi.go.id/9166/2023/11/28/green-wakaf-solusi-pembangunan-ekonomi-indonesia>.

⁴⁸ Government of Singapore, “Towards Environmental Sustainability,” [Www.Muis.Gov.Sg](https://www.muis.gov.sg/resources/khutbah-and-religious-advice/khutbah/towards-environmental-sustainability), 2022, <https://www.muis.gov.sg/resources/khutbah-and-religious-advice/khutbah/towards-environmental-sustainability>.

⁴⁹ Singapore, “Green Economy-How the Singapore Green Plan 2030 Will Make Sustainability a Key Competitive Advantage for Us, and Present New Opportunities for Growth and Job Creation.”

normative instruments to protect communities from developmental harm (*mafsadah*) and ensure equitable benefit distribution. Singapore tends to utilize Muslim institutional channels to contribute toward public interest (*maṣlahah*) framed within national policy. From an *eco-maqāsid* perspective, these two paradigms operate complementarily: the protective-distributive paradigm acts as an *ethical safeguard*, while the contributive-integrative paradigm serves as an *institutional enabler*.

Consequently, the SIZ can serve as a collaborative space synthesizing both functions. Indonesia can reinforce ecological justice, community protection, and benefit distribution, while Singapore can enhance institutional capacity, green finance channels, and sustainability integration. Within the *eco-maqāsid* framework, the success of cross-border industrial partnerships ultimately cannot be judged solely by emissions reduction metrics or investment figures, but by their capacity to simultaneously realize *ḥifẓ al-bī'ah*, *ḥifẓ al-nafs*, and *ḥifẓ al-māl*. Thus, the green industrial transition achieves true *maṣlahah* when ecological, social, and economic benefits are realized without transferring *mafsadah* onto vulnerable communities or future generations.

Table 2. Comparative Analysis of Socio-Religious Responses in Indonesia and Singapore

Analytical Dimension	Indonesia (Muslim Majority)	Singapore (Muslim Minority)
Socio-Religious Paradigm	Protective-Distributive	Contributive-Integrative
Orientation & Role of Religion	Serves as an ethical safeguard and policy corrector to prevent developmental harm (<i>mafsadah</i>).	Serves as a moral driver and institutional enabler to advance public interest (<i>maṣlahah</i>).
Institutional Articulation	MUI Fatwa No. 86/2023 on Global Climate Change Control.	MUIS religious advisories, sermons, and <i>Stewardship for Tomorrow</i> reports.
Response to Industrial & Land Issues	Prevents green grabbing, protects land tenure rights, and ensures ecological justice (e.g., Rempang).	Aligns Islamic ethics with national targets under the <i>Singapore Green Plan 2030</i> .
Eco-Maqāsid Focus	Links <i>ḥifẓ al-bī'ah</i> to public health (<i>ḥifẓ al-nafs</i>) and livelihood protection (<i>ḥifẓ al-māl</i>).	Integrates <i>ḥifẓ al-bī'ah</i> and <i>ḥifẓ al-māl</i> via green economy, energy efficiency, and eco-mosques.
Empowerment Mechanisms	Leverages Islamic social finance like Productive Zakat and BWI's Green Waqf.	Utilizes mosque networks, Green Mark certifications, and sustainable community practices.
Strategic Role in SIZ	Acts as an Ethical Safeguard to protect local communities and ensure fair benefit distribution.	Acts as an Institutional Enabler to enhance green finance capacity and policy integration.

Replicable Normative-Conceptual Evaluation Model for Ethics-Based Cross-Border Industrial Policy Formulation

Based on the preceding discussion, this study proposes a “normative-conceptual evaluation model”. This model formulates a systemic, *eco-maqāsid*-based framework that can be replicated to design, evaluate, and mitigate the impacts of cross-border green industrial partnerships across various regions. By translating theoretical theological values into measurable operational indicators, this model bridges the gap between technocratic-economic regulations and socio-ethical legitimacy.

Table 3. Normative-Conceptual Evaluation Model Based on Eco-Maqāṣid

Ethical Dimension (Eco-Maqāṣid)	Policy Target (SDGs Crosswalk)	Techno-Ecological Evaluation Indicators	Criteria for Substantive Benefit (Maṣlaḥah)
ḥifẓ al-bī'ah (Ecological Integrity)	SDG 13 & 15	Decarbonization, energy efficiency, Carbon Capture and Storage (CCS) technology, biodiversity protection, and integrated waste monitoring.	Ensures the entire industrial lifecycle preserves cosmic balance (<i>mīzān</i>) and prevents permanent corruption/degradation (<i>fasād</i>).
ḥifẓ al-naḥs (Protection of Life & Health)	SDG 3 & 13	Emission quality standards, air and water quality monitoring in local residential areas, and occupational health and safety management.	Treats the health and safety of local and coastal communities as a primary legal necessity (<i>ḍarūriyyāt</i>).
ḥifẓ al-māl (Wealth & Livelihood Equity)	SDG 8 & ESG	Local labor absorption, MSME incentives, compensation schemes, productive waqf, and Green Sukuk instruments.	Guarantees equitable benefit distribution (<i>ʿadl</i>), prevents green grabbing, and upholds intergenerational equity.
Governance Synergy (Socio-Religious Legitimacy)	SDG 17 & ESG	Engagement of religious authorities (fatwas/institutional advisories), public transparency, and cross-border accountability.	Fosters public participation rooted in moral-spiritual commitments (<i>amānah</i> & stewardship) to enhance ontological security.

The operationalization of this evaluation model functions through three sequential logical stages: (1) Ecological-normative gatekeeping (*ecological gatekeeping*): every investment clause or technology offered is evaluated for feasibility based on its capacity to preserve ecosystem integrity (*ḥifẓ al-bī'ah*). A project cannot be categorized as “green” solely based on partial emission reduction outputs if it simultaneously degrades communal living spaces. (2) Distributional implication analysis (*human & wealth trade-off analysis*): assessing industrial impacts on public health (*ḥifẓ al-naḥs*) and the sustainability of local livelihoods (*ḥifẓ al-māl*). This model rejects compromises where investment growth (*green growth*) is achieved at the expense of shifting ecological and health risks onto vulnerable communities. (3) Institutional legitimacy alignment (*institutional cross-legitimation*): integrating religious institutions and local communities into policy oversight to build public trust and social acceptance.

The replication of this model has broad applicability for cross-border industrial or energy transition projects in other regions—particularly in Muslim-majority or Muslim-pluralistic corridors across the ASEAN region, the Middle East, and North Africa. By positioning religious ethics not as a regulatory obstacle but as an *ethical multiplier*, this evaluation model offers a new benchmark for transnational green industrial governance that is just, sustainable, and rooted in universal human values.

Critical Dialogue and Literature Dialectics (*State of the Art & Discrepancies*)

This study aims to examine and evaluate the policy framework of the Indonesia–Singapore Sustainable Industrial Zone (SIZ) through the operationalization of eco-maqāṣid and the Sustainable Development Goals (SDGs) (what). The findings of this study prove that transnational green industrial policies like the SIZ do not merely fulfill technical efficiency metrics and macroeconomic growth targets; rather, they substantively

transform emissions reduction goals into the fulfillment of ethical-religious duties (*hifẓ al-bī'ah*), public health risk mitigation (*hifẓ al-nafs*), and economic justice safeguards (*hifẓ al-māl*).

Scientifically, this finding is explained by the fact that integrating religious ethical values into public policy and green finance instruments provides deep “ontological security” and social legitimacy (why). Without an ethical-religious pillar, the green industrial transition risks being perceived as a forced technocratic agenda, potentially triggering social resistance or local-level “green grabbing” practices.

Table 4. Literature Dialectics Matrix and Study Novelty Positioning

Analytical Focus	Previous Literature	Findings of This Study	Discrepancies/Novelty
Policy Scope	Focused on single domestic regulations, local sectoral cases, or national fatwa narratives (Susana et al., 2025; Tutik et al., 2026; Ahmad et al., 2026).	Operationalizes <i>eco-maqāsid</i> within transnational bilateral industrial policy (Indonesia–Singapore SIZ).	Shifts <i>eco-maqāsid</i> from single domestic legal analysis to an evaluative framework for cross-border governance.
Green Economy Dimension	Regional green transition research predominantly emphasizes macroeconomic indicators and technocratic technical efficiency.	Highlights ethical-religious dynamics as primary drivers of grassroots social legitimacy and environmental justice.	Corrects purely technocratic approaches by demonstrating that faith-based environmentalism is a core prerequisite for successful green transitions.
Muslim Community Perspective	Treats Muslim communities monolithically within single national borders (Haris et al., 2024; Ahmad et al., 2026).	Maps a dual-track response pattern shaped by socio-political positioning (majority vs. minority).	Confirms that socio-political positioning shapes distinct paradigms: protective-distributive in Indonesia (majority) vs. contributive-integrative in Singapore (minority).

The results of this study are consistent with prior academic literature regarding the vital role of Islamic ethics in environmental governance (*what else*). This research aligns with Haris et al. (2024) on the potential of *eco-maqāsid* to foster climate awareness, Susana et al. (2025) regarding legal critiques of extractive resource policies that neglect ecological justice, Tutik et al. (2026) on the Eco-Sharia Governance framework for industrial waste management, and Ahmad et al. (2026) regarding religious fatwas as adaptive instruments within socio-ecological systems.

Nevertheless, fundamental discrepancies and conceptual leaps exist between this study and prior literature. Previous scholarly works remained confined to social media discourse analyses (Haris et al., 2024), single domestic regulatory reviews (Susana et al., 2025; Tutik et al., 2026), or national fatwa syntheses (Ahmad et al., 2026), while treating Muslim societies monolithically. This study fills these critical literature gaps by demonstrating that *eco-maqāsid* can be effectively operationalized within cross-border policy frameworks. Furthermore, it demonstrates that socio-political differences between majority (Indonesia) and minority (Singapore) Muslim contexts generate contrasting yet complementary strategic responses in safeguarding sustainable industrial development.

CONCLUSION

This study concludes that evaluating the policy framework of the Indonesia–Singapore Sustainable Industrial Zone (SIZ) during its early implementation phase effectively demonstrates the operationalization of *eco-maqāṣid* as an ethical evaluation instrument complementary to the United Nations Sustainable Development Goals (SDGs). The triadic integration of environmental preservation (*ḥifẓ al-bī'ah*/SDGs 13 and 15), protection of life and health (*ḥifẓ al-nafs*/SDG 3 via 13 and 15), and wealth and livelihood equity (*ḥifẓ al-māl*/SDG 8) transforms decarbonization targets and clean energy transition priorities (SDG 7) from routine technocratic regulatory compliance into a moral-religious obligation (*amānah*). Comparative analysis confirms a dual-track response pattern, wherein Indonesian Muslims adopt a *protective-distributive paradigm* to mitigate risks of green grabbing, while Singaporean Muslims employ a *contributive-integrative paradigm* to assert the relevance of Islamic ethics within a secular green economy ecosystem.

The *eco-maqāṣid*-based normative-conceptual evaluation model developed in this research presents three systemic stages, ecological-normative gatekeeping, distributional implication analysis, and institutional legitimacy alignment, that can be replicated when formulating ethics-based cross-border industrial policies in other regional contexts. Theoretically, this study makes a significant contribution to Islamic environmental jurisprudence and global sustainability studies by shifting the *eco-maqāṣid* paradigm from single domestic legal analyses and abstract fatwa texts toward a transnational policy evaluation instrument (*cross-border governance*). This research demonstrates that faith-based environmentalism functions as an *ethical multiplier* in achieving environmental justice and ontological security.

Practically, sustaining the SIZ requires concrete mechanisms, including the involvement of *ulama* and local faith leaders in policymaking, full transparency in Environmental Impact Assessments (EIA/AMDAL), and the use of Islamic social finance instruments, such as *green waqf* and *green zakat*, for compensation and local economic empowerment. Green infrastructure financing should also be strengthened through cross-border *green sukuk* and an Indonesia–Singapore cross-community forum for sustained dialogue among governments, industry, religious institutions, and coastal communities. This study is limited by its reliance on library research and official policy documents during the SIZ's early implementation. Future research should undertake longitudinal qualitative and quantitative field studies to assess ecological impacts, economic benefit distribution, and evolving socio-religious dynamics in border communities.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

In the preparation of this manuscript, the author(s) utilized Gemini 3 Flash to assist with the structural refinement of the narrative, linguistic polishing of the English text to meet academic standards, and the organizational formatting of tables and sections.

All outputs were subsequently reviewed and revised by the author(s), who assume full responsibility for the final content and the scientific integrity of the publication.

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REFERENCES

- Afifi, Abdullah A., Hanief Adrian, Evan Azami, and Muhammad Farid. "Re-Viewing Sumitro's Policy and Industrial Maturity: Powering Downstream and Manufacturing Industries for Economic Growth and Sustainable Society." *Journal of Regional Development and Technology Initiatives* 2 (October 2024): 79–102. <https://doi.org/10.58764/j.jrdti.2024.2.79>.
- Ahmad, Fakhriy, Ahmad Sudirman Abbas, and Roma Wijaya. "Eco-Maqāsid as an Integrative Islamic Response to Climate Change through a Conceptual Synthesis of Indonesian Ulama Council Fatwas." *Hikmatuna: Journal for Integrative Islamic Studies* 12, no. 1 (2026): 110–30. <https://doi.org/10.28918/hikmatuna.v12i1.15100>.
- Auda, Jasser. *Maqasid Al-Shari'ah as Philosophy of Islamic Law A Systems Approach*. The International Institute of Islamic Thought, 2008.
- Bela, Sinta. "Green Economy and The Reconstruction of Maslahah in Indonesian Islamic Economic Law." *GreenSharia: Journal of Islamic Economics and Business for Sustainability* 2, no. 1 (2026): 1–14.
- (BKPM), Biro Protokol dan Hubungan Masyarakat Kementerian Investasi dan Hilirisasi. "Realisasi Investasi 2025 Lampau Target, Hilirisasi Melompat 43,3 Persen." Bkpm.Go.Id, 2026. <https://bkpm.go.id/id/info/siaran-pers/realisasi-investasi-2025-lampau-target-hilirisasi-melompat-43-3-persen>.
- Browne, Jennifer, Brian Coffey, Kay Cook, Sarah Meiklejohn, and Claire Palermo. "A Guide to Policy Analysis as a Research Method." *Health Promotion International* 34, no. 5 (2019): 1032–44. <https://doi.org/10.1093/heapro/day052>.
- Chun, Joseph. "Green Finance in Singapore: Baby Steps to Environmental Protection?" Preprint, 2023. <https://doi.org/10.2139/ssrn.4590670>.
- Dwivandari, Anak Agung Sagung. "Regulation Of The Minister Of Investment And Downstream Industry/Head Of The Investment Coordinating Board Of The Republic Of Indonesia Number 6 Of 2025 On Strategic Plan Of The Ministry Of Investment And Downstream Industry/Investment Coordinating Board." Jdih-Storage.Bkpm.Go.Id, 2025.

- Edwards, Mark G. “The Growth Paradox, Sustainable Development, and Business Strategy.” *Business Strategy and the Environment* 30, no. 7 (2021): 3079–94. <https://doi.org/10.1002/bse.2790>.
- ESDM, Admin Web. “Garap Proyek Energi Hijau, Indonesia–Singapura Gelontorkan Lebih Dari USD10 Miliar.” [Www.Esdm.Go.Id](http://www.esdm.go.id), 2025. <https://www.esdm.go.id/en/media-center/news-archives/garap-proyek-energi-hijau-indonesia-singapura-gelontorkan-lebih-dari-usd10-miliar>.
- Fatwa MUI Nomor 86 Tahun 2023 Tentang Hukum Pengendalian Perubahan Iklim Global. (2023).
- Fu, Zhe. “Singapore: Designing Win-Win Cooperation With China.” In *Cases on China’s Partnerships and International Development in Asia*. IGI Global Scientific Publishing, 2026.
- Habib, Moch. Tohiri, and Asep Rahmatullah. “Islamic-Hindu Ecotheology in Maintaining the Sustainability of Nature in Taman Nasional Bromo Tengger-Semeru (TNBTS).” *Al-Jadwa: Jurnal Studi Islam* 4, no. 2 (2025): 146–64. <https://doi.org/10.38073/aljadwa.v4i2.2200>.
- Haris, Arkin, Aris Widodo, Irma Dwi Tantri, and Siti Sarah. “Eco-Maqāṣid in Climate Change Campaigns: From an Ecolinguistics Study to the Philosophy of Islamic Law.” *Al-Manahij: Jurnal Kajian Hukum Islam* 18, no. 2 (2024): 219–36. <https://doi.org/10.24090/mnh.v18i2.10652>.
- Helfaya, Akrum, Amr Kotb, and Rasha Hanafi. “Qur’anic Ethics for Environmental Responsibility: Implications for Business Practice.” *Journal of Business Ethics* 150, no. 4 (2018): 1105–28. <https://doi.org/10.1007/s10551-016-3195-6>.
- Herdadi, Sunindyo Suryo. “Siaran Pers Kementerian Energi Dan Sumber Daya Mineral Republik Indonesia No: 056.Pers/KM.01.03/SJI/2025 Tentang Indonesia-Singapura Sepakat Bangun Kawasan Industri Berkelanjutan.” 2025. <https://www.esdm.go.id/en/media-center/news-archives/indonesia-singapura-sepakat-bangun-kawasan-industri-berkelanjutan>.
- Hisan, Khairatun, Anisah Budiwati, and Hannafa Haqqiya. “Integrating Hifz Al-Bi’ah from Abdul Majid An-Najjar into Fatwas and Plastic Waste Management Policies in Indonesia.” *YUDISIA: Jurnal Pemikiran Hukum Dan Hukum Islam* 17, no. 1 (2026): 75–94.
- Hossain, Sazib. “Singapore Role in Advancing Global Low-Carbon Economy: A Joint Effort for Sustainability and Climate Commitments.” *American Journal of Business Science Philosophy (AJBSP)* 2, no. 1 (2025): 36–47. <https://doi.org/10.70122/ajbsp.v2i1.25>.
- Kamali, Mohammad Hashim. “Maqasid and Protection of the Environment (Hifz al-Bi’ah).” In *Goals and Purposes of Shariah*. Oxford University Press New York, NY, 2025. <https://doi.org/10.1093/9780197786390.003.0028>.
- Khuluq, M. Khusnul, and Asmuni Asmuni. “Hifz Al-Bi’ah as Part of Maqashid Al-Shari’ah and Its Relevance in the Context of Global Climate Change.” *Indonesian*

- Journal of Interdisciplinary Islamic Studies* 7, no. 2 (2025). <https://doi.org/10.20885/ijiis.vol7.iss2.art3>.
- Kurniawan, Achmad Alfian, and Istiqomah Fadlillah. "From Anthropocentric to Ecocentric Jurisprudence: A Maqasid-Based Reconstruction of Islamic Environmental Ethics toward Intergenerational Equity." *Al'Adalah* 28, no. 2 (2025): 143–62. <https://doi.org/10.35719/aladalah.v28i2.666>.
- Limanseto, Haryo. "Siaran Pers Kementerian Koordinator Bidang Perekonomian Republik Indonesia Siaran HM.4.6/299/SET.M.EKON.3/08/2023 Perkuat Kerja Sama Indonesia-Singapura Melalui Economic Bilateral Working Group, Menko Airlangga Tekankan Pentingnya Inovasi Dan Terobosan Da." *Www.Ekon.Go.Id*, 2023. <https://www.ekon.go.id/publikasi/detail/5314/perkuat-kerja-sama-indonesia-singapura-melalui-economic-bilateral-working-group-menko-airlangga-tekanan-pentingnya-inovasi-dan-terobosan-dalam-mencapai-target-kerja-sama>.
- Mayring, Philipp A. E. "Qualitative Content Analysis." In *International Encyclopedia of Education*, 4th ed. ScienceDirect, 2022. <https://doi.org/https://doi.org/10.1016/B978-0-12-818630-5.11031-0>.
- Morgan, Hani. "Conducting a Qualitative Document Analysis." *The Qualitative Report*, ahead of print, 2022. <https://doi.org/10.46743/2160-3715/2022.5044>.
- MTI, Admin. "Speech by Min(EST) Tan See Leng at the MOU Signing Ceremony in Jakarta, Indonesia." *Www.Mti.Gov.Sg*, 2025. <https://www.mti.gov.sg/newsroom/speech-by-min-est--tan-see-leng-at-the-mou-signing-ceremony-in-jakarta--indonesia>.
- Nolan-Cody, Haley, Kaitlin E. Phillips, and Kristina M. Scharp. "Thematic Analysis and Thematic Co-Occurrence Analysis: Teaching Students to Conduct Qualitative Research with Depth." *Communication Teacher* 38, no. 4 (2024): 299–307. <https://doi.org/10.1080/17404622.2024.2370452>.
- Nurhayati, Yati, Ifrani, M. Yasir Said, and Muhammad Hendri Yanova. "Carbon Pricing Policy to Support Net Zero Emission: A Comparative Study of Indonesia, Finland and Sweden." *Environmental Policy and Law* 54, no. 1 (2024): 53–63. <https://doi.org/10.3233/EPL-230047>.
- Nurhidayah, Ade. "Green Wakaf Solusi Pembangunan Ekonomi Indonesia." *Www.Bwi.Go.Id*, 2023. <https://www.bwi.go.id/9166/2023/11/28/green-wakaf-solusi-pembangunan-ekonomi-indonesia>.
- Priyatno, Prima Dwi, Ahmad Hasan Ridwan, and Nurrohman Syarif. "Circular Economy Philosophy Based on Hifz Al-Bi'ah for Economic Justice." *Journal of Islamic Economics and Finance Studies* 6, no. 2 (2026): 480–97. <https://doi.org/10.47700/jiefes.v6i2.12741>.
- Rakhmat, Aulia. "Islamic Ecotheology: Understanding the Concept of Khalifah and the Ethical Responsibility of the Environment." *Academic Journal of Islamic Principles and Philosophy* 3, no. 1 (2022): 1–24.

- Rois, Choirur, Nur Jannani, and Moh. Hoirul Mufid. "Islamic Law Paradigm Responding Conflicts of Interest of Economic Development and Ecological Conservation Hifdz Al-Bi'ah Perspective." *Al-Istinbath: Jurnal Hukum Islam* 9, no. 1 (2024): 193. <https://doi.org/10.29240/jhi.v9i1.8660>.
- Rojihisawal, Faisal, Azmy Subhan Robbani, and Hilmy Firdausy. "Peran Fatwa MUI No. 86/2023 Dalam Mewujudkan Kemakmuran Ekologis: Analisis Prinsip Maqāṣid al-Syarī'ah." *Jurnal Pemuliaan Lingkungan Hidup Dan Sumber Daya Alam* 02, no. 02 (2025): 1.
- Singapore, Government of. "Contact and Information about Al-Mawaddah Mosque." [Www.Muis.Gov.Sg](http://www.muis.gov.sg), 2025. <https://www.muis.gov.sg/community/mosque/mosque-directory/al-mawaddah>.
- Singapore, Government of. "Green Economy-How the Singapore Green Plan 2030 Will Make Sustainability a Key Competitive Advantage for Us, and Present New Opportunities for Growth and Job Creation." [Www.Greenplan.Gov.Sg](http://www.greenplan.gov.sg), 2026. <https://www.greenplan.gov.sg/key-focus-areas/green-economy>.
- Singapore, Government of. "Greening the Financial System." [Www.Mas.Gov.Sg](http://www.mas.gov.sg), 2020. <https://www.mas.gov.sg/publications/annual-report/2020/annual-report-2019-2020/greening-the-financial-system>.
- Singapore, Government of. "MUIS Annual Reports, Highlighting Key Achievements, Financial Performance, and Initiatives Undertaken to Serve the Muslim Community." [Www.Muis.Gov.Sg](http://www.muis.gov.sg), 2026. <https://www.muis.gov.sg/resources/annual-reports/>.
- Singapore, Government of. "Our Singapore Green Plan 2030 Targets." [Www.Greenplan.Gov.Sg](http://www.greenplan.gov.sg), 2026. <https://www.greenplan.gov.sg/targets>.
- Singapore, Government of. "Towards Environmental Sustainability." [Www.Muis.Gov.Sg](http://www.muis.gov.sg), 2022. <https://www.muis.gov.sg/resources/khutbah-and-religious-advice/khutbah/towards-environmental-sustainability>.
- Sud, Nikita. "A Green Energy Frontier Long in the Making: From Tin to Solar Power in the Riau Islands, Indonesia." *Antipode* 57, no. 6 (2025): 2508–32. <https://doi.org/10.1111/anti.70058>.
- Sunanda, Wahri, M. Isnaeni Bambang Setyonegoro, Sasongko Pramono Hadi, and Sarjiya. "Advancing the Carbon Pricing Framework in Indonesia: A Systematic Review of Policies, Challenges, and Global Lessons." *Results in Engineering* 28 (December 2025): 107155. <https://doi.org/10.1016/j.rineng.2025.107155>.
- Susana, Lina Marlina, Ramadhani Irma Tripalupi, Suparman Kholil, Nur Efendi, and Gina Sakinah. "Reconstructing Islamic Legal Norms in Environmental Governance: A Maqasid-Based Legal Critique of Indonesia's Resource Policies." *Al-Istinbath: Jurnal Hukum Islam* 10, no. 2 (2025): 650–70. <https://doi.org/10.29240/jhi.v10i2.13038>.
- Syukri, Muhammad, Ade Sofyan Mulazid, and Ahmad Rodoni. "Green Sukuk as a Manifestation of Islamic Ecotheology: The Integration of Maqasid al-Shariah and Environmental Sustainability in Indonesia." *International Journal of Islamic*

- Economics and Finance (IJIEF)* 9, no. 1 (2026): 1–20.
<https://doi.org/10.18196/ijief.v9i1.29161>.
- Titze, Ingo R. “The Human Instrument.” *Scientific American* 298, no. 1 (2008): 94–101.
- Tutik, Titik Triwulan, Kunawi Basyir, Mahtumridho Ghufon Bin Simun, Jauharoti Alfin, and M. Suyudi. “Reconstructing Eco-Maqāṣid al-Sharī‘ah for CSR Policy and Radioactive Waste Management: An SDGs-Based Study in Banten and West Java.” *Al-Manahij: Jurnal Kajian Hukum Islam* 20, no. 1 (2026): 115–32.
<https://doi.org/10.24090/mnh.v20i1.15916>.
- Veerasamy, Veerapandiyan, L. P. Mohasha Isuru Sampath, Haifeng Qiu, et al. “Grid Infrastructure and Renewables Integration for Singapore Energy Transition.” *Scientific Reports* 15, no. 1 (2025): 34405. <https://doi.org/10.1038/s41598-025-17376-5>.
- Wersal, Lisa. “Islam And Environmental Ethics: Tradition Responds To Contemporary Challenges.” *Zygon: Journal of Religion and Science* 30, no. 3 (1995).