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The Role of Environmental Law in Indonesia and Singapore in Achieving Environmental SDGs: A Comparative Study of SDGs 13, 14, and 15

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Abstract: Ten years into the 2030 Agenda, achieving environmental Sustainable Development Goals (SDGs 13, 14, and 15) remains hindered by governance and enforcement challenges. This study examines and compares the environmental legal frameworks of Indonesia and Singapore in supporting these goals to formulate strategic measures for enhancing Indonesia's environmental governance. Employing a normative juridical method with statutory and comparative approaches, secondary legal materials were analyzed qualitatively. The findings reveal that Indonesia relies on a constitutional rights-based framework anchored in Law No. 32 of 2009, yet faces legal fragmentation across sectoral statutes and operational delays in key instruments, such as the carbon economic value framework. In contrast, Singapore utilizes centralized, issue-specific statutes including the Environmental Protection and Management Act and Carbon Pricing Act 2018 within the non-statutory Singapore Green Plan 2030, ensuring high regulatory enforceability and predictable economic instruments. While Indonesia offers superior public access to environmental justice, Singapore excels in enforcement capacity and administrative certainty. Ultimately, Indonesia must selectively harmonize fragmented sectoral laws, reinforce multi-track enforcement, and establish a transparent carbon pricing roadmap tailored to its archipelagic structure, regional autonomy, and constitutional guarantees.

Keywords: Comparative Study, Environmental Law, Indonesia, SDGs 13 14 15, Singapore.

INTRODUCTION

Ten years after the adoption of the 2030 Agenda, progress toward achieving the three environmental goals of the Sustainable Development Goals (SDGs), namely climate action (SDG 13), life below water (SDG 14), and life on land (SDG 15), continues to face various challenges. These three goals are closely interconnected and mutually influence one another. For instance, the degradation of forests and mangroves can increase carbon emissions, thereby

exacerbating climate change. Conversely, global warming also threatens the sustainability of coral reefs and coastal areas. This interconnection demonstrates that efforts to achieve these three environmental goals cannot be undertaken independently. Therefore, climate change mitigation through SDG 13 has become an important aspect that is receiving increasing attention from various countries, including Indonesia (Wibowo & Sumardiana, 2025)

The SDGs are not legally binding international agreements. Their achievement depends on how each country translates these goals into national level policies and (Hanafi et al., 2024). In this regard, environmental law plays an important role as a foundation for achieving sustainable development. One of the foundations of international environmental law is the 1992 Rio Declaration, which contains several principles, including the principle of sustainable development, the principle of preventing transboundary harm, the precautionary principle, and the principle of common but differentiated responsibilities (Nations, 1992). These principles provide a basis for addressing various environmental issues related to SDGs 13, 14, and 15, ranging from emissions control and marine pollution to forest fires, the impacts of which may extend beyond national borders.

Indonesia has established international commitments and various legal instruments to support the achievement of these environmental goals. These commitments are reflected in the ratification of the Paris Agreement through *Undang-Undang Nomor 16 Tahun 2016 tentang Pengesahan* Paris Agreement to the United Nations Framework Convention on Climate Change (Law No. 16 of 2016 on the Ratification of the Paris Agreement to the United Nations Framework Convention on Climate Change) and the issuance of *Peraturan Presiden Nomor 98 Tahun 2021 tentang Penyelenggaraan Nilai Ekonomi Karbon untuk Pencapaian Target Kontribusi yang Ditetapkan Secara Nasional dan Pengendalian Emisi Gas Rumah Kaca dalam Pembangunan Nasional* (Presidential Regulation No. 98 of 2021 on the Implementation of Carbon Economic Value to Achieve the Nationally Determined Contribution Target and to Control Greenhouse Gas Emissions in National Development). Nevertheless, regulations concerning carbon trading are still evolving and are dispersed across various legal instruments. This situation raises concerns regarding legal certainty in their implementation (Lisdiyono & Said, 2025). Furthermore, research on Indonesia's readiness to implement a carbon tax indicates that the existing regulations are not yet fully comprehensive and that the level of preparedness among stakeholders remains uneven (Wibowo & Sumardiana, 2025).

Similar issues are also found in marine ecosystem management. Indonesia has enacted *Undang-Undang Nomor 1 Tahun 2014 tentang Perubahan atas Undang-Undang Nomor 27 Tahun 2007 tentang Pengelolaan Wilayah Pesisir dan Pulau-Pulau Kecil* (Law No. 1 of 2014 on the Amendment of Law No. 27 of 2007 on the Management of Coastal Areas and Small Islands), as well as *Undang-Undang Nomor 32 Tahun 2009 tentang Perlindungan dan Pengelolaan Lingkungan Hidup* (Law No. 32 of 2009 on Environmental Protection and Management). However, the existence of these various regulations has not fully resolved the ongoing problem of marine ecosystem pollution (Hadiyati & Cindo, 2021). Another study indicates that the regulation of criminal sanctions against illegal fishing practices is not yet fully harmonized across different regulations, potentially hindering the achievement of Target 14.4 concerning sustainable fisheries management (Arizal et al., 2026). In addition, the division of authority between central and regional governments is also considered one of the obstacles to coordinating marine area management (Adiyanto et al., 2025).

Challenges in achieving SDG 15 are also evident in the continued prevalence of illegal logging, illegal mining, and issues surrounding oil palm plantations that contribute to deforestation. A study evaluating Indonesia's commitment to achieving the SDGs over the past decade even gave a low assessment to the terrestrial ecosystem indicator, as its progress has tended to stagnate or has yet to reach half of the expected target (Putra et al., 2025). In fact, Indonesia has established several legal instruments in the fields of forestry and conservation, such as *Undang-Undang Nomor 41 Tahun 1999 tentang Kehutanan* (Law No. 41 of 1999 on

Forestry) and *Undang-Undang Nomor 32 Tahun 2024 tentang Perubahan atas Undang-Undang Nomor 5 Tahun 1990 tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya* (Law No. 32 of 2024 on the Amendment of Law No. 5 of 1990 on the Conservation of Living Natural Resources and Their Ecosystems). This situation indicates that environmental problems are not merely related to the availability of regulations but also to the effectiveness of their implementation and law enforcement.

In contrast to Indonesia, Singapore has adopted an integrated environmental policy approach through the Singapore Green Plan 2030, launched in February 2021. This policy places sustainability among the country's national priorities, encompassing a broad range of areas, from environmental impact assessments and green finance to carbon emissions control (Chng & Ong, 2021). One of the instruments employed is the Carbon Pricing Act 2018, which regulates the implementation of a carbon tax with rates that are progressively increased as part of efforts to achieve the net-zero emissions target by 2050 (Tseng, 2022). Furthermore, Singapore has the Transboundary Haze Pollution Act 2014, which allows enforcement actions to be taken against entities operating outside its territory if their activities cause haze pollution that affects Singapore (Transboundary Haze Pollution Act, 2014). Although Indonesia and Singapore have different territorial characteristics and geographical conditions, Singapore's experience remains worth examining. A comparison of the two countries may provide insights into legal instruments that could potentially be adopted in Indonesia, as well as policies that need to be adjusted to suit national conditions.

Differences in the environmental legal and policy approaches of the two countries are also worth examining in terms of their SDG achievements. According to the Sustainable Development Report 2025, Singapore ranked 59th with a score of 73.82, while Indonesia ranked 74th with a score of 70.81 (Report, 2026). Accordingly, there was a difference of 3.01 points between the two countries. This difference indicates that SDG achievement is not solely related to a country's economic capacity but is also influenced by the quality of policies, institutional capacity, and the effectiveness of environmental law implementation.

Previous studies have generally focused on specific environmental legal instruments, such as comparisons of carbon tax implementation between Indonesia and Singapore, or particular environmental issues in Indonesia (Wibowo & Sumardiana, 2025). Based on this background, this article focuses on a comparative analysis of environmental law regulations in Indonesia and Singapore in supporting the achievement of SDGs 13, 14, and 15, while also identifying legal measures that Indonesia can undertake to improve its performance in achieving these three goals.

Based on the foregoing discussion, this article addresses three main research questions: first, how are environmental laws and regulations in Indonesia and Singapore structured to support the achievement of SDGs 13, 14, and 15? Second, how do the two countries compare in terms of their achievements across these three goals? Third, what legal measures can Indonesia undertake to improve its achievement of SDGs 13, 14, and 15?

METHODS

This study employs a normative juridical legal research method, which focuses on examining applicable legal norms. This study adopts the statutory approach and the comparative approach. The statutory approach is used to examine various environmental laws and regulations in Indonesia and Singapore related to the achievement of SDGs 13, 14, and 15. Meanwhile, the comparative approach is used to analyze the similarities and differences in the environmental legal frameworks of the two countries and to identify regulatory aspects that may serve as a basis for evaluation in Indonesia. The data used in this study consist of secondary data comprising primary legal materials, secondary legal materials, and tertiary legal materials. All legal materials are collected through library research and analyzed qualitatively

using a descriptive-comparative method to draw conclusions and formulate legal measures that Indonesia can undertake to support the achievement of these three environmental goals.

RESULTS AND DISCUSSION

Environmental Law Regulations in Indonesia and Singapore in Supporting SDGs 13, 14, and 15

1. Environmental Law Regulations in Indonesia

The constitutional foundation of environmental regulation in Indonesia is Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which guarantees everyone's right to a good and healthy living environment. At the statutory level, Law Number 32 of 2009 concerning Environmental Protection and Management (UU PPLH) serves as the umbrella law regulating planning, pollution and damage control, supervision, law enforcement, as well as the rights, obligations, and role of society, along with its implementing provisions.

UU PPLH was amended through Law Number 6 of 2023 concerning the Enactment of Government Regulation in Lieu of Law Number 2 of 2022 on Job Creation into Law. These changes include replacing environmental permits with environmental approvals and altering the formulation of Article 88 regarding strict liability. Legal studies reviewing these changes assess that the deletion of the phrase "without the need to prove fault" shifts liability toward a fault-based regime, thereby burdening victims in environmental disputes, particularly ordinary communities (Kusuma, 2022). This is significant for the SDGs because the strength ofcivil avenues determines the legal capacity to restore environmental damage.

In connection with SDG 13 on climate action, Indonesia ratified the Paris Agreement through Law Number

16 of 2016. The legal basis for the carbon tax is contained in *Undang-undang Nomor 7 Tahun 2021 tentang Harmonisasi Peraturan Perpajakan (UU HPP)* (Law Number 7 of 2021 concerning the Harmonization of Tax Regulations), while the implementation of carbon economic value was initially regulated in *Peraturan Presiden Nomor 98 Tahun 2021 tentang Penyelenggaraan Nilai Ekonomi Karbon untuk Pencapaian Target Kontribusi yang Ditetapkan Secara Nasional dan Pengendalian Emisi Gas Rumah Kaca dalam Pembangunan Nasional* (Presidential Regulation Number 98 of 2021). Legal analysis of these regulations concludes that while they fulfill the principles of lawmaking, many technical matters were delegated to implementing regulations (Sulistiawati & Buana, 2023).

Presidential Regulation Number 98 of 2021 has now been revoked and replaced by *Peraturan Presiden Nomor 110 Tahun 2025 tentang Penyelenggaraan Instrumen Nilai Ekonomi Karbon dan Pengendalian Emisi Gas Rumah Kaca Nasional* (Presidential Regulation Number 110 of 2025). This new regulation introduces carbon allocation as the basis for planning national contribution targets, greenhouse gas emission quotas, carbon unit registries, recognition of international carbon trading, and a cross-ministerial steering committee. The regulation does not establish direct financial or criminal sanctions for exceeding quotas and does not independently establish a carbon tax, as further provisions await implementing regulations (Draps & Cunsolo, 2025). Consequently, Indonesia's legal support for SDG 13 possesses a more comprehensive framework, though its operational enforceability is not yet fully realized.

For SDG 14 on marine ecosystems, regulations are scattered across several sectoral laws, namely *Undang-undang Nomor 32 Tahun 2014 tentang Kelautan* (Law Number 32 of 2014 on Ocean Affairs); *Undang-undang Nomor 45 Tahun 2009 tentang Perubahan Atas Undang-Undang Nomor 31 Tahun 2004 Tentang Perikanan* (Law Number 45 of 2009); and *Undang-undang (UU) Nomor 1 Tahun 2014 tentang Perubahan atas Undang-Undang Nomor 27 Tahun 2007 Tentang Pengelolaan Wilayah Pesisir dan Pulau-Pulau Kecil* (Law Number 27 of 2007 on the Management of Coastal Zones and Small Islands as amended by Law Number 1 of

2014). Internationally, Indonesia is bound by the 1982 United Nations Convention on the Law ofthe Sea through Law Number 17 of 1985.

Despite the availability of norms, studies on maritime law enforcement demonstrate that crimes in Indonesian waters, including illegal fishing, remain high due to weak enforcement systems, overlapping institutional functions, and regulatory complexities. These studies propose an omnibus law in the maritime sector and the establishment of a single coast guard agency to improve enforcement performance (Dirhamsyah et al., 2022).

As for SDG 15 on terrestrial ecosystems, regulation relies on Law Number 41 of 1999 on Forestry and Law Number 5 of 1990 on Conservation of Biological Natural Resources and Their Ecosystems, the latest amendment of which was made through Law Number 32 of 2024. Prior to that amendment, recommendations were made to overhaul the conservation law to strengthen biodiversity protection (Samedi, 2021). Prevention of forest destruction is regulated under Law Number 18 of 2013, and UU PPLH prohibits land clearing by burning (Article 69 paragraph (1) letter h) as well as stipulates its criminal penalties (Article 108). Indonesia also ratified the ASEAN Agreement on Transboundary Haze Pollution through Law Number 26 of 2014.

2. Environmental Law Regulations in Singapore

The general foundation of Singapore's environmental law is the Environmental Protection and Management Act (EPMA) along with related regulations on environmental protection and management. Unlike Indonesia, Singapore does not incorporate environmental rights into its constitution; environmental protection is realized through statutes, planning, and national policy, with the Singapore Green Plan 2030 serving as a non-statutory policy framework.

Regarding SDG 13, Singapore's main instrument is the Carbon Pricing Act 2018, which levies a carbon tax on large emission-producing facilities. The Carbon Pricing (Amendment) Act 2022, effective from 1 January 2024, increased carbon tax rates, introduced a transition framework for emissions-intensive trade-exposed sectors, and allowed companies to use eligible international carbon credits to offset up to 5% of taxable emissions (Gledhill, 2023). The established rates are tiered: S$25 per tonne CO2e in 2024–2025 and S$45 in 2026–2027, with a target of S$50–80 by 2030. This price certainty renders Singapore's legal support for SDG 13 fully operational.

Regarding SDG 14, marine ecosystem regulation covers fisheries, prevention of marine pollution, and protection of the aquatic environment. The Fisheries Act 1966 regulates the protection and control of fisheries under the Singapore Food Agency, whereas the Prevention of Pollution of the Sea Act 1990 regulates the prevention of marine pollution by ships under the Maritime and Port Authority of Singapore. Land-based water pollution is controlled under the EPMA. Note: Singapore recently enacted the Food Safety and Security Act, which consolidates several food-related statutes, so the status of fisheries provisions should be verified on Singapore Statutes Online.

Regarding SDG 15, terrestrial ecosystem protection is regulated through the Parks and Trees Act 2005, the Wildlife Act 1965, and the Transboundary Haze Pollution Act 2014. The latter statute applies extraterritorially: it targets conduct outside Singapore that causes or contributes to transboundary haze pollution in Singapore (Transboundary Haze Pollution Act 2014 (2020 Rev. Ed.), 2014). This regulation was prompted by the measurable economic impact oftransboundary haze on Singapore, such as during the 2015 crisis (Quah et al., 2021).

3. Comparison of Regulations, Sanctions, and Institutional Frameworks

The comparison is conducted by examining the regulatory scope, legal obligations, preventive instruments, types of administrative, civil, and criminal sanctions, competent institutions, as well as supervisory and enforcement mechanisms. The results are presented in Table 1.

Table 1. Environmental Law Comparison of Indonesia and Singapore

Aspect	Indonesia	Singapore	Comparison	Notes/Implications
Legal Basis & Control Instruments	1945 Constitution (Article 28H paragraph (1)); Law 32/2009 as an umbrella law; sectoral laws on marine, fisheries, forestry, and conservation; UU HPP and Presidential Regulation 110/2025 for carbon. KLHS, RPPLH, environmental quality standards, AMDAL/UKL-UPL, environmental approval, economic instruments, carbon tax, carbon allocation, emission quotas, carbon trading.	Environmental Protection and Management Act; Carbon Pricing Act 2018; Parks and Trees Act; Wildlife Act, Transboundary Haze Pollution Act, Singapore Green Plan 2030 (policy). Licensing and standards (EPMA), tiered carbon tax with eligible international carbon credits up to 5% of taxable emissions, emissions reporting, nature reserves, extraterritorial haze jurisdiction.	Similarities: primary/umbrella and sectoral laws. Differences: Indonesia is constitutional rights-based and multi-layered; Singapore does not include environmental rights in its constitution and is more issue-specific. Similarities: blend of command-and-control and economic instruments. Differences: Singapore's carbon tax is already operational; Indonesia is still awaiting implementing regulations.	Rights foundation in Indonesia strengthens environmental justice, but sectoral fragmentation requires harmonization (Dirhamsyah et al., 2022). The effectiveness of Indonesian instruments depends on implementing regulations (Draps & Cunsolo, 2025); (Sulistiawati & Buana, 2023)
Sanctions	Administrative, civil (compensation, restoration, strict liability, class action, organizational legal standing), and criminal including corporate liability. Presidential Regulation 110/2025 has not yet established direct sanctions for quota overruns.	Criminal fines and/or imprisonment, composition ofoffences, obligation to pay carbon tax, and civil liability for transboundary haze pollution.	Similarities: multi-layered sanctions targeting corporations. Differences: Indonesia has broad civil avenues but disputed strict liability formulation; Singapore emphasizes enforcement certainty.	Enforcement power and consistency remain challenges for Indonesia; formulation of Article 88 affects victims' burden of proof (Kusuma, 2022).
Institutional Framework	Ministry of Environment/BPLH, Ministry of Forestry, KKP, Ministry of Finance, OJK, local governments, PPNS, Indonesian National Police (Polri), and carbon steering committee.	MSE, NEA, NParks, SFA, and MPA within a centralized city-state administration.	Similarities: authority divided by sector. Differences: Indonesia is decentralized and multi-layered; Singapore is centralized.	Coordination and overlapping authorities need improvement, especially at sea (Dirhamsyah et al., 2022).

Aspect	Indonesia	Singapore	Comparison	Notes/Implications
Supervision & Enforcement	Environmental enforcement officers, PPNS investigation, integrated enforcement, public participation, and environmental adjudication guidelines (PERMA 1/2023).	Inspections, audits, and mandatory reporting by NEA and relevant agencies; public litigation space is relatively limited.	Main difference: Indonesia opens access to justice for citizens and organizations; Singapore relies on state capacity	The combination of Singapore's enforcement capacity and Indonesia's open access to justice forms an ideal model.

Source: Author's analysis based on reviewed regulations and literature.

From the perspective of legal basis, both countries utilize primary umbrella laws alongside sectoral legislation. Indonesia possesses a strong constitutional rights foundation, but its regulations are fragmented and complex (Dirhamsyah et al., 2022), whereas Singapore employs issue-specific statutes that render them easier to operationalize. Regarding control instruments, both blend command-and-control with economic instruments. The difference lies in Singapore's carbon tax, which is already operational with tiered rates (Gledhill, 2023), where as Indonesia's carbon framework is still awaiting several implementing regulations (Draps & Cunsolo, 2025); (Sulistiawati & Buana, 2023).

Regarding sanctions, Indonesia recognizes administrative (UU PPLH Articles 76–83), civil (Articles 87–92), and criminal avenues (Articles 97–120); however, the efficacy of civil remedies is impacted by the revised formulation of strict liability (Kusuma, 2022). Singapore enforces criminal penalties and carbon tax obligations with an emphasis on enforcement certainty, alongside extraterritorial reach for transboundary haze.

In terms of institutional framework, authority in Indonesia is distributed across numerous ministries and local governments, with jurisdictional overlaps posing a major challenge in maritime areas (Dirhamsyah et al., 2022). Singapore is more centralized under MSE, NEA, NParks, SFA, and MPA. From the standpoint of supervision and enforcement, Indonesia excels in judicial access and public participation, whereas Singapore excels in operational effectiveness. The synthesis of both namely, open access to justice coupled with robust enforcement capacity serves as a core key learning for achieving SDGs 13, 14, and 15.

Comparison of Indonesia's and Singapore's Performance on SDGs 13, 14, and 15

1. SDG 13: Climate Action

For SDG 13, Singapore has applied a carbon tax since 2019. Indonesia prepared its legal basis through Law Number 7 of 2021 on the Harmonization of Tax Rules (Yeremy et al., 2022). At the time of the study, Singapore already had clearer rules for reporting emissions, monitoring, and emission limits. Indonesia was still preparing several technical rules to support this policy (Yeremy et al., 2022). This shows the different levels of readiness between the two countries in reducing emissions.

Emissions can also be controlled through carbon trading. These two methods need rules that support each other so that their use and monitoring do not overlap (Prihapsari & Chairunisa, 2023). Indonesia needs to prepare responsible institutions and a system for recording emissions. Meanwhile, Singapore can be used as an example because it has more experience in monitoring carbon emissions (Yeremy et al., 2022).

2. SDG 14: Life Below Water

For SDG 14, plastic waste management can be compared between the two countries. Singapore has experience in waste treatment and recycling technology, while Indonesia still has limited waste management facilities in some areas (Hotimah et al., 2024). Waste from land can also pollute coastal areas and the sea. The study explains the need for government support,

public participation, and cooperation between countries in managing plastic waste. However, the article does not provide data on the amount of waste entering the sea using the same measurement for both countries.

Marine protection can also be measured through the management of conservation areas. In Fakfak, the EVIKA score increased from 40.62% in 2021 to 50.26% in 2022 and 57.29% in 2023 (Randa et al., 2024). Although the score increased, the results related to ecosystem conditions and benefits for local people were still lower than the results of planning and monitoring activities. The size of a protected area does not always show the success of conservation. The EVIKA score in Fakfak also cannot be directly compared with the SDG 14 scores of Indonesia or Singapore.

3. SDG 15: Life on Land

For SDG 15, changes in land cover are related to city development and land-use planning. A review of 139 articles showed that the growth of built-up areas is often followed by a decrease in green spaces and farmland (Hikmah et al., 2026). Satellite images and land mapping can help monitor these changes over time. Differences in land size and development pressure between Indonesia and Singapore also need to be considered.

The differences in progress on these three SDGs are related to the quality of regulations, policy implementation, institutional capacity, and public participation. Singapore's carbon rules need proper monitoring (Yeremy et al., 2022). The conservation evaluation in Fakfak shows that there is still a gap between planned activities and actual results (Randa et al., 2024). Land-use policies also need to be evaluated based on their ability to protect green spaces during city development (Hikmah et al., 2026).

Strengthening Indonesia's Environmental Law: Lessons from Singapore

1. Regulatory Harmonization and Simplification

Indonesia's environmental legal framework rests on Law No. 32 of 2009 on Environmental Protection and Management (the Environmental Law), as amended by Law No. 6 of 2023, which enacted Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation. Forestry, mining, plantations, marine affairs, and spatial planning are governed by separate sectoral statutes. This fragmentation can create overlapping authority among ministries, regional governments, and sectoral agencies, as well as gaps between legal norms and their implementation on the ground.

Singapore addresses this problem through centralized regulation, chiefly the Environmental Protection and Management Act 1999 (EPMA) and the Environmental Public Health Act 1987, which are administered by the National Environment Agency (NEA) (Environmental Protection and Management Act 1999 (2020 Rev. Ed.), 1999). The relevant lesson for Indonesia is not full centralization, which would conflict with the principle of regional autonomy, but clearer allocation of authority, a single integrated environmental permit, and synchronization between sectoral laws and the Environmental Law. Practical steps include mapping and reviewing conflicting implementing regulations, applying the lex specialis and lex posterior principles consistently, and standardizing technical requirements across sectors so that businesses and law enforcers share the same reference point.

Simplification must not lower the level of environmental protection. Ease of doing business should not come at the cost of weakened control mechanisms, because sustainable development requires a balance among economic, social, and environmental aspects.

2. Strengthening Law Enforcement

Environmental enforcement in Indonesia operates through three tracks, namely administrative, civil, and criminal, supplemented by the principle of strict liability.

a) Administrative sanctions

The Environmental Law provides for written warnings, government coercion, suspension, and revocation of environmental permits (Law No. 32 of 2009, Articles 76–83). These

sanctions are the fastest and cheapest tool because they require no court proceedings. Optimizing them requires consistent supervision, measurable criteria for violations, and willingness on the part of permitting officials to impose graduated sanctions. Singapore uses a comparable approach, granting the NEA powers to issue warnings, stop-work orders, and to refuse or revoke licences (Environmental Protection and Management Act 1999 (2020 Rev. Ed.), 1999)

b) Civil lawsuits

Claims for compensation and environmental restoration are regulated in Article 87 of the Environmental Law, while standing for communities and environmental organizations is provided in Articles 91 and 92 (Law No. 32 of 2009). Civil enforcement can be strengthened by building the capacity of environmental judges, using independent experts to prove ecological loss, and adopting a uniform and verifiable method for calculating environmental damage.

c) Criminal provisions

The criminal provisions treat criminal law as an ultimum remedium for certain violations of environmental quality standards, but as a premium remedium for offenses causing serious harm (Law No. 32 of 2009, Articles 98–99). Strengthening them involves applying corporate criminal liability, integrating enforcement among environmental civil-servant investigators, the police, and prosecutors, and recovering assets derived from environmental crimes. In Singapore, offenses such as illegal waste disposal or air pollution carry firm fines and imprisonment, and the Transboundary Haze Pollution Act 2014 reaches parties that cause haze affecting Singapore even when they operate outside its territory (Transboundary Haze Pollution Act 2014 (2020 Rev. Ed.), 2014).

d) Strict liability

Strict liability is set out in Article 88 of the Environmental Law. It applies to actors who use hazardous and toxic substances (B3), produce or manage B3 waste, and/or pose a serious threat to the environment. In its original wording, liability attached without the need to prove fault (Law No. 32 of 2009). The Job Creation Law altered the wording of this article, so its interpretation must be monitored to ensure that the purpose of strict liability, which is to ease the burden of proof for victims, is not weakened (Law No. 6 of 2023). Its application should rest on clear elements: a high-risk activity or use of B3, the existence of loss, and a causal link between the activity and the loss. Technical guidelines for judges and law enforcers are needed to avoid inconsistent application.

3. Strengthening Environmental Economic Instruments

Singapore introduced a carbon tax through the Carbon Pricing Act 2018, levied on large greenhouse-gas-emitting facilities. The rate started at S$5 per tonne of CO2e in 2019, has been raised in stages, and is targeted to reach about S$50–80 per tonne by 2030. This gradual and predictable schedule gives businesses time to adjust.

Indonesia already has a legal basis for a carbon tax in Law No. 7 of 2021 on the Harmonization of Tax Regulations and a carbon economic value framework in Presidential Regulation No. 98 of 2021. A carbon exchange has also been opened under Financial Services Authority Regulation No. 14 of 2023. Strengthening these instruments should take into account the following.

a) Transparency: tax rates, sector coverage, and the use of revenue must be published and open to public scrutiny.
b) Measurement integrity: credible measurement, reporting, and verification of emissions are needed so that carbon credits do not lead to overclaiming or double counting.
c) Socio-economic impact: carbon costs may be passed on to consumers, so effects on vulnerable groups and industrial competitiveness should be assessed, including possible compensation or revenue-recycling mechanisms for a just energy transition.

d) Rights of indigenous and local communities: land based carbon projects must respect local land rights and livelihoods.

4. Strengthening Institutions, Oversight, Coordination, and Access to Information

Singapore's NEA acts as regulator, supervisor, and enforcer, with clearly defined powers and adequate resources. In Indonesia, environmental governance involves the Ministry of Environment, sectoral ministries, and regional environmental agencies, so the main challenges are coordination and capacity. Possible measures include increasing the number and competence of environmental supervisory officials, creating binding inter-agency coordination mechanisms, and using real-time monitoring technology such as air and water quality sensors.

Access to information is a precondition for public participation. The Environmental Law guarantees the public's right to environmental information (Law No. 32 of 2009, Articles 65 and 70), and Law No. 14 of 2008 on Public Information Disclosure reinforces that guarantee. Singapore publishes air quality data, such as the Pollutant Standards Index (PSI), openly and regularly through the NEA. Indonesia could adapt this practice through an integrated, easily accessible national environmental data portal covering permits, inspection results, and corporate compliance status.

5. Singaporean Practices That Can Be Adapted, and Their Limits

The table below summarizes Singaporean practices that may be adapted and the suitability issues to consider for Indonesia.

Table 2. Singaporean Environmental Practices with Potential for Adaptation in Indonesia and Their Implementation Considerations

Singaporean practice	Potential adaptation in Indonesia	Suitability considerations
Gradual, predictable carbon pricing	A carbon tax roadmap with a clear schedule	Purchasing power, a coal-dependent industrial structure, and effects on vulnerable groups
Firm enforcement with predictable sanctions	Standardized administrative and criminal sanctions	Enforcement capacity and the risk of criminalizing small-scale communities
Transboundary regulation (Transboundary Haze Pollution Act)	Stronger corporate liability for forest and land fires	Sovereignty, diplomatic relations, and the ASEAN framework
Open environmental data	An integrated national environmental data portal	Digital infrastructure in the regions and data quality
Centralized regulator (NEA)	Stronger coordination, not full centralization	Regional autonomy and the archipelagic geography

Source: Author's analysis based on reviewed regulations and literature.

Every adaptation must pass a suitability test against four criteria: (1) the Constitution, particularly Article 28H paragraph (1) and Article 33 paragraph (4) of the 1945 Constitution; (2) the principle of environmental justice, meaning a fair distribution of burdens and benefits and protection of vulnerable groups; (3) the institutional capacity of central and regional governments; and (4) the need to protect Indonesian communities and ecosystems, which differ from Singapore's context.

Strengthening Indonesia's environmental law requires regulatory harmonization, consistent administrative, civil, and criminal enforcement, transparent and high-integrity economic instruments, and stronger institutions and information disclosure. Singapore offers valuable lessons on regulatory certainty, firm enforcement, and open data, but adoption must be selective and contextual so that it remains consistent with the Constitution, environmental justice, and Indonesia's reality as an archipelagic state with regional autonomy.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This study demonstrates that while both Indonesia and Singapore have established legal frameworks to support Sustainable Development Goals (SDGs) 13, 14, and 15, their regulatory architectures and operational capacities differ significantly. Indonesia relies on a constitutional rights-based foundation through Article 28H paragraph (1) of the 1945 Constitution and an umbrella legal framework under Law No. 32 of 2009, as amended by Law No. 6 of 2023. However, Indonesia's environmental governance remains hindered by legal fragmentation across sectoral statutes, regulatory overlaps, and delays in issuing technical implementing rules for key instruments, such as the carbon economic value framework under Presidential Regulation No. 110 of 2025. Conversely, Singapore employs issue-specific statutory regimes most notably the Environmental Protection and Management Act, the Carbon Pricing Act 2018, and the Transboundary Haze Pollution Act 2014 integrated within the non-statutory policy roadmap of the Singapore Green Plan 2030. This centralized and statutory approach grants Singapore greater regulatory certainty and operational enforceability, contributing to its higher ranking (59th, score 73.82) compared to Indonesia (74th, score 70.81) in global SDG achievements.

Despite these performance gaps, a comparative evaluation reveals complementary legal strengths between the two nations. Indonesia excels in providing broad access to environmental justice, procedural rights, and public litigation avenues, whereas Singapore stands out for its high enforcement capacity, centralized administration, and predictable economic instruments. Synthesizing Singapore’s operational rigor with Indonesia’s rights-based judicial access offers a viable pathway for strengthening environmental governance. For Indonesia, legal reforms should focus on four strategic pillars: harmonizing fragmented sectoral laws with Law No. 32 of 2009 without compromising regional autonomy; reinforcing multi-track enforcement and preserving strict liability to ease the burden of proof for affected communities; establishing a transparent, predictable carbon pricing roadmap with robust emissions verification and socio-economic safeguards; and enhancing institutional coordination alongside an integrated open-data portal for real-time environmental disclosure.

Ultimately, adapting Singapore’s regulatory practices into the Indonesian legal system cannot be executed through simple legal transplantation. Any adaptation must pass a strict contextual suitability test aligned with Article 28H paragraph (1) and Article 33 paragraph (4) of the 1945 Constitution, the principles of environmental justice, local institutional readiness, and the distinct socio-ecological realities of an archipelagic state. By selectively integrating functional regulatory mechanisms while upholding constitutional guarantees, Indonesia can build a more resilient legal framework to accelerate the realization of SDGs 13, 14, and 15.

Recommendations

Based on the comparative legal analysis between Indonesia and Singapore regarding SDGs 13, 14, and 15, the following strategic recommendations are proposed:

1. Harmonize Sectoral Laws: Streamline overlapping forestry, mining, and spatial regulations under Law No. 32 of 2009 (as amended by Law No. 6 of 2023) to eliminate legal conflicts while maintaining baseline environmental standards.
2. Strengthen Law Enforcement: Optimize administrative sanctions, establish clear judicial guidelines to uphold strict liability for ecological damage, and reinforce joint corporate criminal prosecution.
3. Implement Predictable Carbon Pricing: Establish a transparent carbon tax and credit framework with robust Measurement, Reporting, and Verification (MRV) systems and socio-economic safeguards.

4. Enhance Coordination and Open Data: Create binding inter-agency coordination mechanisms and launch an integrated public portal for real-time environmental disclosure, fulfilling constitutional rights under Article 28H(1).

Ensure Contextual Legal Adaptation: Subject any adaptation of Singaporean regulatory mechanisms to a strict suitability test aligned with Indonesia's archipelagic geography, regional autonomy, and environmental justice principles.

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