

Gender, Islamic Law, and Sustainability

VOL. 1 NO. 1 (2026)

ISSN: XXX-XXX

Integrating Sustainable Environmental Law and *Maqāṣid al-Sharī‘ah*: A Preventive Legal Framework for Disaster Governance in Disaster-Prone Regions

Ahmad Irzal Fardiansyah*  and Arif Fikri 

To cite this article. A.I. Fardiansyah and A. Fikri “Integrating Sustainable Environmental Law and *Maqāṣid al-Sharī‘ah*: A Preventive Legal Framework for Disaster Governance in Disaster-Prone Regions”, *Gender, Islamic Law, and Sustainability*, vol. 1, no. 1, pp. 30-47, 2026. DOI: <https://doi.org/10.70211/gils.v1i1.386>

To link to this article:



Published online: 28 February 2026



Submit an article to this journal



View crossmark data

Full Terms & Conditions of access and use can be found at
<https://journal.wiseedu.co.id/index.php/gils/about>



Integrating Sustainable Environmental Law and Maqāsid al-Sharī'ah: A Preventive Legal Framework for Disaster Governance in Disaster-Prone Regions

Ahmad Irzal Fardiansyah* and Arif Fikri

Received: 18 December 2026

Revised: 20 January 2026

Accepted: 29 January 2026

Online: 28 February 2026

Abstract

Disasters in disaster-prone countries are increasingly recognized as the cumulative outcome of environmental degradation and regulatory failure rather than purely natural events; however, existing scholarship on environmental constitutionalism, climate litigation, and ecosystem-based disaster risk reduction (Eco-DRR) has paid limited attention to how statutory fragmentation weakens preventive disaster governance at the domestic level. This study addresses that gap by examining the coherence of Indonesia's environmental protection, disaster management, and spatial planning laws through a normative doctrinal methodology employing statutory, conceptual, and comparative legal analysis. The research systematically maps regulatory mandates and evaluates whether sustainability principles operate as binding pre-disaster obligations. The findings reveal four forms of fragmentation conceptual, functional, enforcement, and structural that prevent environmental norms from being institutionally integrated into disaster mitigation frameworks. Although precautionary and intergenerational equity principles are formally embedded in environmental law, they remain disconnected from disaster risk mapping, ecosystem protection mandates, and spatial enforcement mechanisms. By reframing environmental degradation as a legally constructed pre-disaster violation, this study advances environmental constitutionalism and resilience theory, positioning sustainable environmental law as the normative foundation of preventive disaster governance while highlighting the complementary normative role of Islamic harm-prevention principles. The study implies that effective disaster mitigation requires mandatory cross-sectoral harmonization mechanisms integrating environmental licensing, spatial governance, and disaster risk reduction into a coherent and enforceable legal architecture capable of strengthening long-term ecological resilience.

Keywords: Disaster Mitigation; Islamic Law; Sumatra; Sustainable Environmental Law

Publisher's Note:

WISE Pendidikan Indonesia stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright:

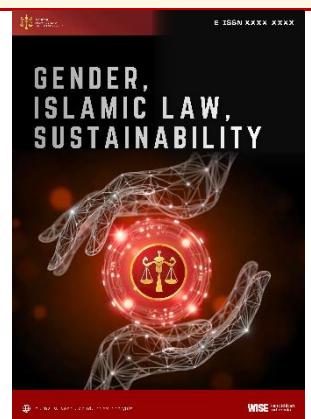
©

2026 by the author(s).

License WISE Pendidikan Indonesia, Bandar Lampung, Indonesia.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY 4.0) license

(<https://creativecommons.org/licenses/by/4.0/>).



INTRODUCTION

Natural disasters are increasingly recognized not merely as extreme natural events, but as manifestations of accumulated environmental degradation and governance failure [1], [2], [3], floods, landslides, forest and land fires, and hydrometeorological disasters often reflect unsustainable land-use practices, ecosystem destruction, regulatory fragmentation, and weak enforcement [4], [5], [6]. Contemporary disaster scholarship therefore emphasizes that vulnerability is socially and institutionally constructed rather than purely natural. Despite this shift, the doctrinal integration between sustainable environmental law and disaster governance remains insufficiently developed in both global and domestic legal discourse.

Recent developments in environmental law demonstrate an expanding normative commitment to preventive governance [7], [8], [9]. One of the most significant is the rise of environmental constitutionalism, through which environmental protection is recognized as a constitutional right and state obligation. Many jurisdictions now embed ecological protection within constitutional frameworks, strengthening judicial review and governmental accountability. However, constitutional environmental duties are frequently interpreted in relation to pollution control or natural resource management, while their structural connection to disaster mitigation remains under-theorized. The constitutional obligation to protect the environment is rarely framed explicitly as a duty to prevent disaster risk arising from ecosystem degradation.

At the same time, the growth of climate litigation has transformed environmental accountability at the global level [10], [11], [12]. Courts have increasingly been asked to require governments to strengthen mitigation and adaptation policies, particularly regarding greenhouse gas emissions. These cases reflect a shift toward rights-based environmental enforcement. Nevertheless, climate litigation discourse largely concentrates on emissions reduction and macro-level climate governance [12], [13], [14]. The relationship between localized ecosystem destruction such as deforestation, peatland drainage, watershed mismanagement, and spatial planning violations and disaster risk accumulation receives comparatively limited doctrinal attention. Environmental harm is thus litigated primarily as climate injustice, but not consistently conceptualized as a legally constructed pre-disaster condition within domestic disaster law regimes.

Parallel to these legal developments, environmental governance discourse has advanced the concept of Ecosystem-based Disaster Risk Reduction (Eco-DRR). Eco-DRR emphasizes the role of ecosystems as natural protective infrastructure [6], [15], [16]. Forests stabilize slopes and reduce landslides; wetlands regulate hydrological flows; mangroves buffer coastal storms;

and healthy watersheds mitigate flood intensity. This approach underscores that ecosystem conservation is not solely an environmental objective but also a disaster mitigation strategy. [17] [18], [19]. While Eco-DRR has gained strong policy recognition in international environmental and disaster frameworks, its internalization into binding domestic legal structures remains limited. In many jurisdictions, environmental protection and disaster mitigation operate within separate regulatory regimes, creating institutional silos that undermine preventive coherence.

The emergence of law and resilience theory further reshapes the discussion by emphasizing anticipatory governance and systemic adaptability. Resilience-oriented legal frameworks focus on long-term sustainability, adaptive capacity, and structural risk prevention rather than reactive emergency response [20], [21], [22], [23]. However, resilience discourse often prioritizes institutional flexibility and adaptive governance mechanisms without sufficiently grounding them in enforceable environmental obligations [24], [25], [26]. As a result, resilience may function more as a policy aspiration than as a doctrinally binding preventive framework [27], [28], [29]. The absence of structural integration between sustainability principles and disaster law weakens the transformative potential of resilience-based governance.

Taken together, these global developments reveal a persistent theoretical gap. Environmental constitutionalism, climate litigation, Eco-DRR, and resilience theory each contribute important preventive insights, yet their integration within a unified disaster governance framework remains fragmented [30], [31], [32]. In particular, limited scholarship has examined how sustainable environmental law can serve as the doctrinal bridge linking constitutional environmental duties, ecosystem protection, and disaster mitigation. Moreover, the role of faith-based legal ethics in reinforcing preventive environmental governance within plural legal systems remains insufficiently explored.

Indonesia provides a compelling context to address this gap. As one of the most disaster-prone countries globally, Indonesia experiences recurring floods, landslides, forest and land fires, and hydrometeorological disasters intensified by deforestation, peatland conversion, mining activities, and rapid infrastructure expansion [33], [34], [35]. Sumatra illustrates how environmental mismanagement structurally amplifies disaster vulnerability [36], [37], [38]. Extensive forest exploitation, watershed degradation, and spatial planning deviations contribute significantly to disaster risk accumulation. Although Indonesia possesses statutory frameworks governing environmental protection, disaster management, and spatial planning, these regimes operate largely in parallel rather than in an integrated preventive structure.

Regulatory fragmentation limits coordination and weakens enforcement, allowing environmental degradation to evolve into recurring disaster events.

Existing scholarship in Indonesia often examines environmental law, disaster governance, or Islamic legal principles independently. Environmental law research tends to focus on licensing compliance, environmental impact assessment, and pollution control. Disaster law scholarship emphasizes emergency response, institutional coordination, and post-disaster recovery. Islamic legal scholarship discusses ecological ethics and stewardship concepts but rarely integrates them into statutory disaster governance frameworks. Few studies systematically combine sustainable environmental law, resilience theory, Eco-DRR, environmental constitutional obligations, and Islamic legal doctrines into a coherent preventive disaster governance model [39], [40], [41].

This article addresses that theoretical and doctrinal gap by reframing environmental degradation as a legally constructed pre-disaster violation rather than merely a post-disaster policy failure. It argues that sustainable environmental law should function as the foundational framework of disaster mitigation. Through normative analysis of environmental protection law, disaster management law, and spatial planning law in Sumatra, this study demonstrates how regulatory fragmentation weakens preventive capacity. Furthermore, by integrating Islamic legal principles such as *maqāṣid al-sharī'ah*, *khalīfah fī al-ard*, and *lā ḍarar wa lā ḍirār*, the study proposes an ethically reinforced preventive governance model suited to plural legal systems [42], [43], [44].

The theoretical contribution of this study is threefold. First, it extends environmental constitutionalism by articulating disaster risk reduction as an implicit constitutional environmental obligation [45], [46], [47]. Second, it bridges law and resilience theory with enforceable sustainability principles, positioning environmental law as the structural core of disaster governance rather than as a complementary regulatory regime. Third, it demonstrates how Islamic legal ethics can strengthen preventive environmental obligations by embedding moral responsibility, life protection, and intergenerational justice within statutory frameworks.

By situating disaster mitigation within the integrated framework of sustainable environmental law, constitutional environmental duties, Eco-DRR, and resilience-based governance, this study contributes to global debates on preventive disaster law and offers a conceptual model applicable to disaster-prone jurisdictions beyond Indonesia.

METHODS

Research Design

This study employs a qualitative normative doctrinal legal research design with analytical and reconstructive orientation. The research does not merely describe statutory provisions but critically evaluates regulatory coherence and develops a prescriptive preventive governance model grounded in sustainable environmental law [48]. The doctrinal method is selected because the research question concerns legal structure, normative integration, and conceptual reconstruction rather than empirical measurement. To ensure methodological rigor, the study follows a structured analytical sequence consisting of four interrelated stages: normative mapping, coherence and fragmentation analysis, theoretical integration, and doctrinal reconstruction. The methodological flow is illustrated in Figure 1.

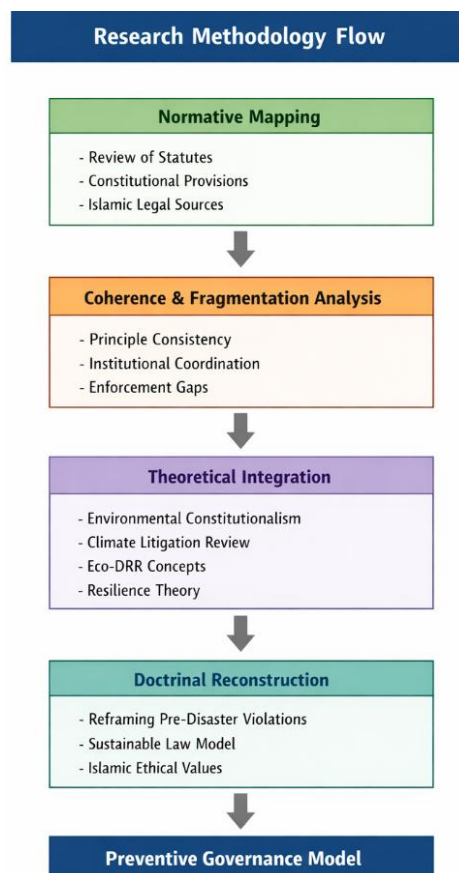


Figure 1. Research Methodology Flow

Unit of Analysis and Scope

The primary unit of analysis consists of three interconnected statutory regimes in Indonesia:

1. Law No. 32 of 2009 on Environmental Protection and Management,
2. Law No. 24 of 2007 on Disaster Management,
3. Law No. 26 of 2007 on Spatial Planning.

These statutes are examined as an integrated regulatory system governing sustainability and disaster mitigation. The geographical focus on Sumatra serves as a contextual normative reference due to its high disaster vulnerability associated with ecosystem degradation. However, this study remains doctrinal rather than empirical; Sumatra functions as a normative testing ground for evaluating legal coherence rather than as a quantitative case study.

Sources of Legal Materials

Legal materials are classified into three categories:

1. Primary Legal Materials
 - a. Constitutional provisions concerning environmental rights and state obligations.
 - b. Statutory regulations governing environmental protection, disaster management, and spatial planning.
2. Secondary Legal Materials
 - a. Peer-reviewed international scholarship on environmental constitutionalism, climate litigation, Ecosystem-based Disaster Risk Reduction (Eco-DRR), and law and resilience theory.
 - b. Academic literature on sustainable environmental law and disaster governance.
3. Normative Islamic Legal Sources
Foundational doctrines of *maqāṣid al-sharī‘ah*, *khalīfah fī al-arḍ*, *lā ḍarar wa lā ḍirār*, and *maṣlahah ‘āmmah*, analyzed at the level of legal principle rather than theological exposition.

Analytical Framework

To avoid purely descriptive exposition and ensure doctrinal rigor, this study applies four complementary analytical techniques [48]:

1. Normative Mapping
The first stage identifies and systematizes sustainability, prevention, and risk reduction principles embedded within the three statutory regimes. This includes grammatical and systematic interpretation of statutory provisions, focusing on precautionary principles, environmental licensing, spatial control mechanisms, and disaster mitigation mandates.
2. Coherence and Fragmentation Analysis
The second stage evaluates normative alignment among the statutory regimes using coherence criteria, including:
 - a. Principle consistency (precaution, prevention, sustainability),
 - b. Institutional coordination mechanisms,
 - c. Integration of ecosystem protection within disaster mitigation,
 - d. Enforcement compatibility.Regulatory fragmentation is identified where statutory provisions operate independently without structural linkage to disaster risk prevention.
3. heoretical Integration
The third stage situates domestic legal findings within broader global legal scholarship. The analysis engages with:
 - a. Environmental constitutionalism (constitutional environmental obligations),
 - b. Climate accountability and litigation discourse,
 - c. Ecosystem-based Disaster Risk Reduction (Eco-DRR),
 - d. Law and resilience theory.This step ensures that the doctrinal evaluation contributes to international theoretical debates rather than remaining domestically confined.
4. Doctrinal Reconstruction
The final stage develops a prescriptive normative model based on findings from the previous stages. This reconstruction involves:
 - a. Reframing environmental degradation as a legally constructed pre-disaster violation,

- b. Positioning sustainable environmental law as the structural foundation of disaster governance,
- c. Integrating Islamic legal principles as normative reinforcement within a plural legal system

The reconstruction is analytical and theoretical, aiming to propose a coherent preventive governance framework.

Methodological Justification

The normative doctrinal approach is appropriate because the research problem concerns legal coherence, theoretical integration, and structural reconstruction rather than empirical measurement of disaster frequency [49]. By combining systematic statutory interpretation, coherence assessment, theoretical positioning, and prescriptive reconstruction, the study moves beyond descriptive legal commentary and demonstrates methodological rigor consistent with advanced environmental and disaster law scholarship.

RESULTS AND DISCUSSION

Result

This section presents the doctrinal findings derived from the systematic analysis of Indonesian environmental, disaster management, and spatial planning law. The findings demonstrate structural inconsistencies and limited integration between sustainability principles and disaster mitigation obligations.

Sustainability Principles Are Normatively Recognized but Not Structurally Linked to Disaster Mitigation

Law No. 32 of 2009 on Environmental Protection and Management formally incorporates sustainability, precaution, prevention, and intergenerational equity principles. Article 2 affirms sustainable development as a foundational principle, while Article 3 emphasizes environmental protection to safeguard human life and ecosystem balance. However, the statute does not explicitly conceptualize environmental degradation as a legally constructed disaster risk. Environmental harm is primarily regulated as pollution control or licensing violation rather than as a pre-disaster condition requiring structural mitigation. Environmental Impact Assessment (AMDAL) procedures do not mandate systematic integration of disaster risk mapping or vulnerability assessment into licensing decisions. This demonstrates a conceptual gap: sustainability principles are embedded normatively but not operationalized as instruments of disaster risk reduction.

Disaster Management Law Emphasizes Response over Ecosystem Prevention

Law No. 24 of 2007 on Disaster Management defines mitigation as efforts to reduce disaster risk during the pre-disaster phase. Nevertheless, the law emphasizes preparedness measures, infrastructure development, emergency planning, and response coordination. Ecosystem protection is not positioned as a central mitigation strategy, nor does the statute establish binding mechanisms requiring integration between disaster risk reduction and environmental

governance. While environmental degradation is acknowledged as a contributing factor, it is not treated as a primary legal trigger for preventive enforcement. This reflects functional fragmentation, where disaster governance operates independently from environmental sustainability mechanisms.

Spatial Planning Law Lacks Effective Enforcement in Disaster-Prone Areas

Law No. 26 of 2007 on Spatial Planning regulates land-use zoning and protected areas, including disaster-prone zones. Normatively, the law provides preventive spatial governance instruments. However, no mandatory synchronization mechanism requires disaster risk assessments to be incorporated into environmental licensing decisions or spatial plan approvals. Violations of zoning regulations in ecologically sensitive areas particularly forest, peatland, and watershed zones in Sumatra illustrate weak enforcement integration. This results in enforcement fragmentation, allowing spatial deviations that contribute to disaster vulnerability.

Absence of Institutional Harmonization Mechanisms

The analysis identifies no explicit statutory obligation mandating structural harmonization among:

1. Environmental licensing (AMDAL),
2. Disaster risk mapping,
3. Spatial zoning compliance.

Each regime assigns responsibilities to separate institutional authorities without cross-referenced coordination requirements. This structural fragmentation produces regulatory silos, enabling environmental degradation to proceed administratively even in disaster-prone areas.

Normative Underutilization of Islamic Legal Principles

Within Indonesia’s plural legal context, Islamic legal principles such as harm prevention (*lā ḍarar wa lā ḍirār*), public welfare (*maṣlaḥah*), and life protection under *maqāṣid al-sharī‘ah* substantively align with precautionary and sustainability doctrines. However, these principles are not formally integrated into statutory disaster mitigation frameworks. Their absence from institutional design represents normative underutilization rather than incompatibility, indicating potential for ethical reinforcement of preventive environmental governance.

Summary of Doctrinal Findings

The findings are synthesized in Table 1 below.

Table 1. Summary of Doctrinal Findings on Regulatory Fragmentation in Indonesian Disaster Governance

Legal Regime	Normative Mandate	Identified Gap	Type of Fragmentation	Implication for Disaster Mitigation
--------------	-------------------	----------------	-----------------------	-------------------------------------

Law No. 32/2009 (Environmental Protection and Management)	Incorporates sustainability, precaution, and intergenerational equity	No explicit linkage between environmental degradation and disaster risk accumulation; AMDAL not integrated with disaster risk mapping	Conceptual fragmentation	Sustainability principles function administratively rather than as preventive disaster instruments
Law No. 24/2007 (Disaster Management)	Establishes pre-disaster mitigation framework	Ecosystem protection not central to mitigation; limited coordination with environmental authorities	Functional fragmentation	Disaster governance prioritizes preparedness and response over ecosystem-based prevention
Law No. 26/2007 (Spatial Planning)	Regulates zoning and protected areas	Weak enforcement and no mandatory synchronization with environmental licensing or disaster risk assessments	Enforcement fragmentation	Spatial violations in sensitive areas increase disaster vulnerability
Inter-regime Interaction	Preventive elements exist in each statute	No cross-referenced harmonization mechanisms	Structural fragmentation	Regulatory silos allow environmental degradation to evolve into recurring disaster risk
Islamic Legal Principles (Normative Context)	Emphasize harm prevention and public welfare	Not institutionally embedded in statutory disaster governance	Normative underutilization	Missed opportunity for ethical reinforcement of preventive environmental obligations

Collectively, these findings confirm that regulatory fragmentation conceptual, functional, enforcement-based, and structural limits the effectiveness of preventive disaster governance in Indonesia. Sustainability principles exist normatively but remain insufficiently integrated into disaster mitigation mechanisms.

Discussion

The findings of this study demonstrate that regulatory fragmentation within Indonesian environmental, disaster management, and spatial planning law weakens preventive disaster governance by failing to structurally integrate sustainability principles with disaster risk reduction. This conclusion aligns with broader environmental governance scholarship arguing that disasters are socially and institutionally constructed rather than purely natural phenomena [50], [51]. However, while prior studies emphasize institutional coordination and policy

implementation, the present research advances the debate by identifying doctrinal incoherence at the statutory level as a structural source of vulnerability accumulation.

Recent scholarship on environmental constitutionalism has demonstrated that constitutional environmental rights can strengthen state accountability and judicial oversight [42], [52]. Comparative analyses show that constitutional environmental provisions enhance enforceability of ecological obligations. Nevertheless, much of this literature focuses on pollution control, biodiversity protection, or climate commitments rather than explicitly linking constitutional environmental duties to disaster risk reduction. The present findings reveal that although sustainability principles are normatively embedded in Indonesian environmental law, they are not operationally connected to disaster mitigation frameworks. This supports arguments by Anna Gear [42] that constitutional environmental norms risk remaining symbolic unless integrated across sectoral regulatory regimes.

The study also intersects with expanding research on climate litigation, which has increasingly compelled governments to adopt stronger mitigation and adaptation strategies [53], [44]. Climate litigation scholarship highlights the judiciary's role in strengthening environmental governance. However, these cases typically address greenhouse gas emissions and macro-level climate governance. The present findings suggest a complementary dimension: localized ecosystem degradation such as deforestation, peatland drainage, and spatial zoning violations constitutes a legally relevant pre-disaster condition even in the absence of climate-focused litigation. This expands the scope of environmental accountability beyond emissions-based frameworks and aligns with arguments that environmental harm should be addressed preventively rather than reactively [54].

In relation to Ecosystem-based Disaster Risk Reduction (Eco-DRR), international research consistently emphasizes ecosystem conservation as an effective disaster mitigation strategy [54], [55]. Eco-DRR literature advocates integrating ecosystem restoration into disaster governance frameworks. However, scholars have observed that policy recognition often exceeds legal institutionalization [56]. The findings of this study confirm that although ecosystem protection is substantively compatible with disaster mitigation goals, Indonesian disaster law does not structurally embed ecosystem conservation as a binding mitigation obligation. This reveals a gap between environmental policy discourse and statutory architecture, reinforcing critiques that Eco-DRR remains under-legalized in domestic systems.

Law and resilience theory further contextualizes these findings. Resilience-oriented governance promotes adaptive capacity and anticipatory regulation in the face of complex environmental risks [57]. Yet resilience scholarship also warns against normative ambiguity if

adaptability is not grounded in enforceable legal obligations. The results of this study illustrate such a challenge: disaster management law emphasizes preparedness and response, but lacks binding cross-sectoral harmonization mechanisms linking sustainability principles to risk prevention. This supports the argument that resilience must be legally operationalized through coherent regulatory structures rather than remaining a policy aspiration [26], [58], [59].

The integration of Islamic legal principles into environmental governance has also gained attention in recent scholarship on law and religion [60], [61]. Studies in Muslim-majority contexts highlight the compatibility between *maqāṣid al-sharī‘ah* and sustainability principles, particularly regarding life protection and public welfare. Indonesian SINTA-indexed research similarly underscores the ethical alignment between Islamic jurisprudence and environmental stewardship [62], [63]. However, these works generally remain normative or ethical in orientation without examining institutional embedding within disaster governance law. The present study contributes to this discourse by identifying normative underutilization rather than incompatibility: Islamic harm-prevention doctrines substantively reinforce precautionary and sustainability principles but are not formally integrated into statutory disaster mitigation structures.

The novelty of this research lies in its integrated doctrinal reconstruction. Whereas previous studies have examined environmental constitutionalism, climate litigation, Eco-DRR, resilience governance, or Islamic environmental ethics independently, this study synthesizes these strands into a unified preventive disaster governance model. By reframing environmental degradation as a legally constructed pre-disaster violation, it shifts the analytical focus from post-disaster liability to structural risk prevention. The identification of conceptual, functional, enforcement, and structural fragmentation within Indonesian statutory regimes advances the theoretical understanding of how regulatory silos contribute to vulnerability.

The implications are both theoretical and policy oriented. Theoretically, the study extends environmental constitutionalism by articulating disaster risk reduction as an implicit constitutional environmental obligation. It bridges resilience theory with enforceable sustainability norms, grounding adaptive governance in doctrinal coherence. It also advances Eco-DRR scholarship by demonstrating that ecosystem-based mitigation requires formal statutory integration rather than policy endorsement alone. From a policy perspective, the findings suggest the necessity of mandatory harmonization mechanisms among environmental licensing (AMDAL), disaster risk mapping, and spatial planning enforcement. Institutionalizing ecosystem protection as a legally binding pre-disaster obligation could significantly strengthen preventive governance in disaster-prone jurisdictions.

Despite these contributions, the study has limitations. The analysis is normative doctrinal and does not empirically assess enforcement practices or administrative implementation. While statutory fragmentation is identified, the study does not quantitatively evaluate its impact on disaster frequency or severity. The focus on Sumatra provides contextual grounding but does not constitute a comparative regional analysis across Indonesia. Furthermore, the integration of Islamic legal principles is examined at the doctrinal level without assessing socio-political feasibility or institutional receptivity. Future research combining doctrinal analysis with empirical socio-legal investigation would provide deeper insight into the operationalization of preventive governance models.

Overall, the findings confirm that disaster vulnerability in Indonesia is structurally embedded within fragmented legal regimes. By reconstructing sustainable environmental law as the normative foundation of disaster mitigation and integrating ethical reinforcement within a plural legal context, this study contributes to contemporary debates on preventive disaster governance and ecological constitutionalism..

CONCLUSION

This study demonstrates that disaster vulnerability in Indonesia is structurally embedded within fragmented legal regimes governing environmental protection, disaster management, and spatial planning. Through a normative–doctrinal analysis, the research identifies conceptual, functional, enforcement, and structural fragmentation that prevent sustainability principles from operating as binding pre-disaster obligations. The findings reveal that although environmental law formally incorporates precautionary and intergenerational equity principles, these norms remain disconnected from disaster mitigation frameworks, thereby limiting their preventive capacity. By reframing environmental degradation as a legally constructed pre-disaster violation, this study advances environmental constitutionalism and resilience theory, positioning sustainable environmental law as the normative foundation of preventive disaster governance. The integration of ecosystem-based disaster risk reduction within statutory structures, reinforced by Islamic harm-prevention principles, further illustrates the potential for a plural yet coherent legal architecture. Theoretically, this research contributes to contemporary debates on climate accountability and adaptive governance by demonstrating that regulatory harmonization rather than reactive disaster response is central to resilience-building. Practically, it underscores the necessity of institutionalized cross-sectoral coordination among environmental licensing, spatial planning enforcement, and disaster risk mapping mechanisms. While limited to doctrinal analysis and lacking empirical assessment of implementation dynamics, the study provides a conceptual governance model adaptable to other disaster-prone jurisdictions, thereby offering both normative reconstruction and policy direction for strengthening sustainable and resilient legal systems.

AUTHOR INFORMATION

Corresponding Author

Ahmad Irzal Fardiansyah – Universitas Lampung, Lampung (Indonesia).

 orcid.org/0000-0001-8311-9354

Email: ahmad.irzal@fh.unila.ac.id

Authors

Arif Fikri – Universitas Islam Negeri Raden Intan Lampung, Lampung (Indonesia).

 orcid.org/0009-0000-7156-5701

Email: ariffikri@radenintan.ac.id

AUTHOR CONTRIBUTION

A.I.F. contributed to the conceptualization of the research, methodological design, and the development of the sustainable environmental law framework. A.I.F. conducted legal analysis of environmental regulations, disaster management, and spatial planning in Indonesia. In addition, A.F contributed to the preparation of the literature review, collection and management of legal materials, and analysis of Islamic legal perspectives on environmental governance and disaster mitigation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

DECLARATION OF USE OF AI IN SCIENTIFIC WRITING

The authors used several generative AI tools in the process. ChatGPT was used to help organise complex concepts, while Grammarly was employed to enhance the grammar, style, readability of the text and improve the overall clarity of the writing. Although these tools provided valuable support, the researcher wrote all the content and conclusions.

REFERENCES

- [1] P. A. Kaban, R. Kurniawan, R. E. Caraka, B. Pardamean, and B. Yuniarto, “Biclustering method to capture the spatial pattern and to identify the causes of social vulnerability in Indonesia: A new recommendation for disaster mitigation policy,” *Procedia Computer Science*, 2019, pp. 31–37, DOI: <https://doi.org/10.1016/j.procs.2019.08.138>.
- [2] S. Meng, “Environmental governance is critical for mitigating human displacement due to weather-related disasters,” *Commun. Earth Environ.*, vol. 5, no. 1, p. 363, Jul. 2024, DOI: <https://doi.org/10.1038/s43247-024-01528-y>.
- [3] A. Pereira Covarrubias and E. Raju, “The Politics of Disaster Risk Governance and Neo-Extractivism in Latin America,” *Polit. Gov.*, vol. 8, no. 4, pp. 220–231, Dec. 2020, DOI: <https://doi.org/10.17645/pag.v8i4.3147>.
- [4] V. Fernando, R. Aldrian, M. Soffin Hadi, Y. Sukrislismo, and I. Pardiansyah, “Quantitative

- Approach Of A Novel Disaster-Based Vulnerability Index In Distribution System By Utilizing-Geographical Information System Study Case In Palu After Disaster,” *IET Conference Proceedings*, 2023, pp. 1578–1582, DOI: <https://doi.org/10.1049/icp.2023.0937>.
- [5] Q. Su, K. Chen, and L. Liao, “The Impact of Land Use Change on Disaster Risk from the Perspective of Efficiency,” *Sustainability*, vol. 13, no. 6, p. 3151, Mar. 2021, DOI: <https://doi.org/10.3390/su13063151>.
- [6] P. K. Paudel, S. Dhakal, and S. Sharma, “Pathways of ecosystem-based disaster risk reduction: A global review of empirical evidence,” *Sci. Total Environ.*, vol. 929, p. 172721, Jun. 2024, DOI: <https://doi.org/10.1016/j.scitotenv.2024.172721>.
- [7] M. Nursaputra, A. R. Arif, R. Dwiyani, L. Chania, I. B. O. Agastya, and D. A. Arif, “Ecological Disaster in Northern Sumatra: How Extreme Rainfall and Land-Cover Disturbance Triggered Widespread Flash Flooding,” *J. Penelit. Kehutan. Wallacea*, vol. 14, no. 14, pp. 111–121, 2025, DOI: <https://doi.org/10.24259/jpkwallacea.v14i2.48907>.
- [8] J. Wang, M. Deng, and T. Chen, “How does the penetration of new energy vehicles affect global energy security? Empirical evidence from multiple countries,” *Energy Strateg. Rev.*, vol. 62, p. 101945, Nov. 2025, DOI: <https://doi.org/10.1016/j.esr.2025.101945>.
- [9] J. W. Proyogo, “Balancing Risk and Caution: The Precautionary Principle in Indonesian Environmental Law Context,” *Indones. J. Environ. Law Sustain. Dev.*, vol. 3, no. 1, Jan. 2024, DOI: <https://doi.org/10.15294/ijel.v3i1.78896>.
- [10] A. T. W. Almais, R. A. Fajrin, A. Naba, M. Sarosa, and A. Susilo, “Assessment of Post-Disaster Building Damage Levels Using Back-Propagation Neural Network Prediction Techniques,” *Int. J. Informatics Vis.*, vol. 9, no. 3, pp. 1149–1156, 2025, DOI: <https://doi.org/10.62527/joiv.9.3.2711>.
- [11] M. Sato, G. Gostlow, C. Higham, J. Setzer, and F. Venmans, “Impacts of climate litigation on firm value,” *Nat. Sustain.*, vol. 7, no. 11, pp. 1461–1468, Nov. 2024, DOI: <https://doi.org/10.1038/s41893-024-01455-y>.
- [12] M. Eilstrup-Sangiovanni, N. Hall, L. Vanhala, J. Setzer, I. Higham, and H. van Asselt, “Reorienting climate litigation in a time of backlash,” *Nat. Clim. Chang.*, vol. 15, no. 11, pp. 1133–1135, Nov. 2025, DOI: <https://doi.org/10.1038/s41558-025-02475-y>.
- [13] S. Lee, “Human Rights and Climate Litigation: Trends, Challenges, and Implications,” *Korean J. Int. Comp. Law*, vol. 13, no. 1, pp. 80–100, Jul. 2025, DOI: <https://doi.org/10.1163/22134484-12341219>.
- [14] H.-M. Jo, “Rights-based Climate Change Litigation: A Comparative Study of Legal Foundations, Judicial Strategies, and the Expansion of the Role of Human Rights and Rights of Nature,” *KnE Soc. Sci.*, vol. 10, no. 26, pp. 1–25, 2025, DOI: <https://doi.org/10.18502/kss.v10i26.19977>.
- [15] E. Mugari and N. S. Nethengwe, “Mainstreaming Ecosystem-Based Disaster Risk Reduction: Towards a Sustainable and Just Transition in Local Development Planning in Rural South Africa,” *Sustainability*, vol. 14, no. 19, p. 12368, Sep. 2022, DOI: <https://doi.org/10.3390/su141912368>.
- [16] C. S. Watson et al., “Enhancing disaster risk resilience using greenspace in urbanising Quito, Ecuador,” *Nat. Hazards Earth Syst. Sci.*, vol. 22, no. 5, pp. 1699–1721, May 2022, DOI: <https://doi.org/10.5194/nhess-22-1699-2022>.
- [17] A. M. B. Salman and E. Asmanto, “Islamic Environmental Stewardship: A Sociological

- Approach to Hadith and Legal Frameworks for Ecological Responsibility,” *Volksgeist J. Ilmu Huk. dan Konstitusi*, vol. 7, no. 2, pp. 361–378, 2024, DOI: <https://doi.org/10.24090/volksgeist.v7i2.12205>.
- [18] M. El-Gammal and A. Abozaid, “Environmental Protection and Sustainable Development: An Islamic Perspective,” in *Gulf Studies*, vol. 5, 2021, pp. 27–40, DOI: https://doi.org/10.1007/978-981-16-6061-0_3.
- [19] I. Pelckmans, J.-P. Belliard, O. Gourgue, L. E. Dominguez-Granda, and S. Temmerman, “Nature-based flood risk mitigation in river deltas is most effective with upstream and uniformly spread mangroves,” *Ocean Coast. Manag.*, vol. 271, p. 107967, Jan. 2026, DOI: <https://doi.org/10.1016/j.ocecoaman.2025.107967>.
- [20] F. Mu, R. N. Edi, and R. Santoso, “A Review of Maqâshid Sharîa on Handling the COVID-19 Pandemic in Lampung and West Java Province,” *Al-'Adalah*, pp. 221–244, 2024.
- [21] Y. Yulianto, F. Rosalia, and S. S. Hutagalung, “Adaptive Governance in Environmental Issue: Systematic Literature Review,” *Int. J. Environ. Impacts*, vol. 8, no. 3, pp. 615–625, Jun. 2025, DOI: <https://doi.org/10.18280/ijei.080319>.
- [22] A. van der Berg and M. Pieterse, “Governing Urban Crisis Through Adaptive Urban Law: Lessons from City Responses to COVID-19 in the Netherlands and South Africa,” *Utr. Law Rev.*, vol. 20, no. 1, pp. 1–18, May 2024, DOI: <https://doi.org/10.36633/ulr.906>.
- [23] V. Pellerey, S. Torabi Moghadam, and P. Lombardi, “A systematic review of justice integration to climate resilience: Current trends and future directions,” *Urban Clim.*, vol. 59, p. 102250, Feb. 2025, DOI: <https://doi.org/10.1016/j.uclim.2024.102250>.
- [24] Z. Amin, “Sharî'ah and Climate Justice: Exploring Islamic Legal Foundations for Environmental Protection in Pakistan,” *Muslim World J. Hum. Rights*, vol. 22, no. 1, pp. 53–79, 2025, DOI: <https://doi.org/10.1515/mwjhr-2025-0014>.
- [25] A. Garmestani et al., “Untapped capacity for resilience in environmental law,” *Proc. Natl. Acad. Sci.*, vol. 116, no. 40, pp. 19899–19904, Oct. 2019, DOI: <https://doi.org/10.1073/pnas.1906247116>.
- [26] H. Du, K. K. Dang, H. Q. Nguyen, and H. F. M. van Rijswijk, “A framework for reviewing laws and policies for climate resilience: the case of the Vietnamese Mekong Delta,” *J. Environ. Plan. Manag.*, vol. 66, no. 6, pp. 1280–1304, May 2023, DOI: <https://doi.org/10.1080/09640568.2022.2026308>.
- [27] Nur Asiah, “Maslahah Menurut Konsep Imam Al Ghazali,” *DIKTUM J. Syariah dan Huk.*, vol. 18, 2020.
- [28] A. Sari, “Legal Resilience,” in *Hybrid Threats and Grey Zone Conflict*, Oxford University Press, New York, 2024, pp. 533–556, DOI: <https://doi.org/10.1093/oso/9780197744772.003.0024>.
- [29] K. Kulovesi, S. Oberthür, H. van Asselt, and A. Savaresi, “The European Climate Law: Strengthening EU Procedural Climate Governance?,” *J. Environ. Law*, vol. 36, no. 1, pp. 23–42, Apr. 2024, DOI: <https://doi.org/10.1093/jel/eqad034>.
- [30] T. Jejak and I. Ridho, “Environmental Law Enforcement as an Effort for Sustainable Development,” vol. 1, pp. 100–109, 2025.
- [31] H. K. Setiacahyandari and D. R. Hizbaron, “Understanding Eco-DRR as a sustainability indicator for mangrove conservation in urbanized area of North Jakarta, Indonesia,” *Environ. Sustain. Indic.*, vol. 24, p. 100494, Dec. 2024, DOI:

- <https://doi.org/10.1016/j.indic.2024.100494>.
- [32] A. Majlingova and T. S. Kádár, “From Risk to Resilience: Integrating Climate Adaptation and Disaster Reduction in the Pursuit of Sustainable Development,” *Sustainability*, vol. 17, no. 12, p. 5447, Jun. 2025, DOI: <https://doi.org/10.3390/su17125447>.
- [33] R. S. Zahra, “Deforestation as a Trigger for Flooding in North Sumatra: Analysis of Causal Relationships and the Legal Responsibility of the Government and Business Actors,” *Raisya Syafi*, 2024.
- [34] M. Yazid, D. Adriani, Riswani, and D. Damayanthi, “Farm Household Vulnerability Due to Land and Forest Fire in Peatland Areas in South Sumatra,” *Land*, vol. 13, no. 5, p. 642, May 2024, DOI: <https://doi.org/10.3390/land13050642>.
- [35] F. Fatmawaty, “Flood Hazard Zonation and Agricultural Vulnerability Assessment Using GIS in Indonesia,” *Agric. Power J.*, vol. 2, no. 4, pp. 44–58, Nov. 2025, DOI: <https://doi.org/10.70076/apj.v2i4.124>.
- [36] A. Purnawati, S. Haling, and M. Lubis, “The decline of legal authority in addressing ecocide: an environmental law analysis,” *AACL Bioflux*, vol. 18, no. 1, pp. 489–499, 2025.
- [37] L. B. Prasetyo et al., “Assessing Sumatran Peat Vulnerability to Fire under Various Condition of ENSO Phases Using Machine Learning Approaches,” *Forests*, vol. 13, no. 6, p. 828, May 2022, DOI: <https://doi.org/10.3390/f13060828>.
- [38] Z. A. Hanami et al., “Spatial–Temporal Changes in Air Pollutants in Four Provinces of Sumatra Island, Indonesia: Insights from Sentinel-5P Satellite Imagery,” *Urban Sci.*, vol. 9, no. 2, p. 42, Feb. 2025, DOI: <https://doi.org/10.3390/urbansci9020042>.
- [39] S. Suprpto, “Environmental Impact Assessment (EIA) in Indonesian Law: Implementation and Effectiveness,” *J. Adv. Res. Soc. Sci. Humanit.*, vol. 8, no. 2, 2023, DOI: <https://doi.org/10.26500/JARSSH-08-2023-0201>.
- [40] D. Hidayati, Y. E. Prasetyo, J. Lassa, and S. A. Dalimunthe, Eds., *Examining Disaster Risk Reduction in Indonesia*, Sustainable Development Goals Series. Singapore: Springer Nature Singapore, 2025, DOI: <https://doi.org/10.1007/978-981-96-4182-6>.
- [41] S. Hakim, Jalaluddin, Sukarni, M. A. Abas, A. Jamil, and M. R. Hafizi, “Integrating Islamic Environmental Ethics into Legal Frameworks: The Role of Hima, Primum Remedium, and Strict Liability in Protecting Mining-Affected Communities,” *J. Stud. Agama dan Masy.*, vol. 21, no. 1, pp. 1–10, Oct. 2025, DOI: <https://doi.org/10.23971/jsam.v21i1.10014>.
- [42] A. Grear, “Editorial: Painful excavations: extractivism, dispossession, rights and resistance,” *J. Hum. Rights Environ.*, vol. 12, no. 1, pp. 1–4, Mar. 2021, DOI: <https://doi.org/10.4337/jhre.2021.01.00>.
- [43] D. Desai, “The Politics of Rule of Law Reform: From Delegation to Autonomy,” *Mod. Law Rev.*, vol. 83, no. 6, pp. 1168–1187, Nov. 2020, DOI: <https://doi.org/10.1111/1468-2230.12554>.
- [44] J. Peel and H. M. Osofsky, “Climate Change Litigation,” *Annu. Rev. Law Soc. Sci.*, vol. 16, no. 1, pp. 21–38, Oct. 2020, DOI: <https://doi.org/10.1146/annurev-lawsocsci-022420-122936>.
- [45] L. K. Weis, “Environmental constitutionalism: Aspiration or transformation?,” *Int. J. Const. Law*, vol. 16, no. 3, pp. 836–870, Nov. 2018, DOI: <https://doi.org/10.1093/icon/moy063>.
- [46] E. L. Wang, “Environmental Constitutionalism in China: A Constitution without Constitutionalism?,” *J. Environ. Law*, vol. 36, no. 2, pp. 187–202, Jul. 2023, DOI:

- <https://doi.org/10.1093/jel/eqae012>.
- [47] D. A. Wicaksono and B. F. Hantoro, “Struggle for Eco-constitutionalism: The Role of the Constitutional Court in Realising the Right to a Good and Healthy Environment in Indonesia,” 2023, pp. 27–49, DOI: https://doi.org/10.1007/978-3-031-46142-2_3.
- [48] J. W. Creswell and J. D. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, SAGE Publications, 2022. [Online]. Available: <https://books.google.co.id/books?id=Pr2VEAAAQBAJ>.
- [49] N. Majeed, A. Hilal, and A. N. Khan, “Doctrinal Research in Law: Meaning, Scope and Methodology,” *Bull. Bus. Econ.*, vol. 12, no. 4, pp. 559–563, Dec. 2023, DOI: <https://doi.org/10.61506/01.00167>.
- [50] G. Delima et al., “DisCoord: Co-creating DRR knowledge in Uganda through interaction in a serious game,” *Int. J. Disaster Risk Reduct.*, vol. 60, p. 102303, Jun. 2021, DOI: <https://doi.org/10.1016/j.ijdr.2021.102303>.
- [51] UNDRR, *United Nations Office for Disaster Risk Reduction*, “To download the full report visit: <https://gar.unisdr.org>. To share your comments and news on the GAR on Twitter and Facebook, please use #GAR2019,” 2019.
- [52] J. R. May and E. Daly, *Global Environmental Constitutionalism*, Cambridge University Press, 2014, DOI: <https://doi.org/10.1017/CBO9781139135559>.
- [53] J. Setzer et al., “Global trends in climate change litigation: 2022 snapshot Acknowledgements,” no. June, 2022, [Online]. Available: www.cccep.ac.uk.
- [54] E. Fisher, E. Scotford, and E. Barritt, “The Legally Disruptive Nature of Climate Change,” *Mod. Law Rev.*, vol. 80, no. 2, pp. 173–201, Mar. 2017, DOI: <https://doi.org/10.1111/1468-2230.12251>.
- [55] P. Sarango-Lalangui, J. L. S. Santos, and E. Hormiga, “The Development of Sustainable Entrepreneurship Research Field,” *Sustainability*, vol. 10, no. 6, p. 2005, Jun. 2018, DOI: <https://doi.org/10.3390/su10062005>.
- [56] K. B. Best, M. E. Miro, R. M. Kirpes, N. Kaynar, and A. Najera Chesler, “Data-driven decision support tools for assessing the vulnerability of community water systems to groundwater contamination in Los Angeles County,” *Environ. Sci. Policy*, vol. 124, pp. 393–400, Oct. 2021, DOI: <https://doi.org/10.1016/j.envsci.2021.07.015>.
- [57] J. B. Ruhl, “Climate Change Adaptation and the Structural Transformation of Environmental Law,” *Environ. Law*, vol. 363, pp. 363–431, 2010, DOI: <https://doi.org/10.2139/ssrn.1517374>.
- [58] B. T. Vu et al., “Enablers and barriers to implementing effective disaster risk management according to good governance principles: Lessons from Central Vietnam,” *Int. J. Disaster Risk Reduct.*, vol. 120, p. 105344, Apr. 2025, DOI: <https://doi.org/10.1016/j.ijdr.2025.105344>.
- [59] R. McNaught, “The application of collaborative governance in local level climate and disaster resilient development – A global review,” *Environ. Sci. Policy*, vol. 151, p. 103627, Jan. 2024, DOI: <https://doi.org/10.1016/j.envsci.2023.103627>.
- [60] Ach. Syaiful Islam, Suhermanto Ja’far, and Ahmad Sunawari Long, “Islam and Eco-Theology: Perspectives and Strategies of Muhammadiyah in Addressing the Environmental Crisis,” *Fikri J. Kaji. Agama, Sos. dan Budaya*, vol. 9, no. 2, pp. 170–181, Aug. 2024, DOI: <https://doi.org/10.25217/jf.v9i2.4821>.

- [61] H. B. Jaiyeoba, M. A. Jamaludin, S. A. Busari, and Y. J. Amuda, “The implications of Maqasid al-Shari’ah for integrated sustainability practices among businesses: a qualitative inquiry,” *Qual. Res. Financ. Mark.*, vol. 17, no. 3, pp. 511–531, Apr. 2025, DOI: <https://doi.org/10.1108/QRFM-09-2023-0222>.
- [62] S. Basri, Y. Adnan, L. Widiastuty, M. Asrul Syamsul, and I. Indar, “Islamic Environmental Ethics: A Cultural Framework for Sustainable Resource Management and Global Ecological Stewardship,” *Divers. Dis. Prev. Res. Integr.*, pp. 86–93, Dec. 2024, DOI: <https://doi.org/10.24252/diversity.v5i2.52342>.
- [63] A. Najemi and M. Rapik, “Islamizing Environmental Law in Indonesia; Rethinking the Green Fatwa,” *Jambe Law J.*, vol. 7, no. 1, pp. 253–274, Jul. 2024, DOI: <https://doi.org/10.22437/home.v7i1.290>.