



Comparative Disaster Law and Governance in Asia and Europe: Legal Frameworks and Institutional Leadership

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Abstract

Natural disasters have become a persistent challenge for contemporary legal systems, requiring not only emergency response mechanisms but also robust disaster law frameworks that integrate governance, institutional coordination, and sustainable development objectives. This study examines comparative disaster law and governance in Indonesia, Malaysia, Yemen, and Portugal to analyze how legal frameworks and institutional leadership influence disaster resilience and sustainable economic development. The study addresses three research questions: how disaster governance is legally structured in different jurisdictions, how institutional leadership contributes to the effectiveness of disaster law implementation, and how comparative legal lessons can inform an integrative governance model for resilience and development. A normative-comparative legal research method is employed, using statutory analysis, policy documents, and relevant scholarly literature. The analysis is guided by legal system theory, good governance theory, and responsive law theory to evaluate the interaction between legal norms, institutional structures, and governance effectiveness across jurisdictions. The findings indicate that Indonesia applies a decentralized disaster law framework under Law No. 24 of 2007, Malaysia implements a centralized coordination model through national directives and the National Disaster Management Agency (NADMA), Yemen reflects fragmented disaster governance due to political instability and limited institutional capacity, and Portugal adopts an integrated European Union-aligned civil protection system emphasizing prevention and resilience. The study demonstrates that effective disaster governance depends on legal certainty, institutional coordination, and leadership capacity. Based on the comparative findings, this research develops the Integrative Legal Leadership and Disaster Governance (ILDG) Model, which links legal foundations, institutional leadership, governance capacity, disaster resilience, and sustainable economic development as a unified analytical framework contributing to disaster law scholarship.

Keywords:

Disaster Law; Comparative Disaster Law; Legal Institutional Framework; Public Legal Governance; Disaster Risk Regulation; Sustainable Development Law



1. Introduction

Natural disasters have emerged as one of the most pressing challenges confronting contemporary legal systems and governance institutions worldwide. Floods, earthquakes, droughts, storms, and other climate-related hazards increasingly threaten human security, public welfare, and economic sustainability. The increasing frequency and intensity of such disasters have transformed disaster management from a purely humanitarian response into a complex legal and governance issue that requires structured regulatory frameworks, institutional coordination, and long-term development planning. In this context, disaster governance is no longer limited to emergency response but has evolved into a core function of the modern state in ensuring resilience, legal certainty, and sustainable development. Recent studies emphasize that disaster governance must integrate legal frameworks with policy coherence and institutional capacity in order to effectively reduce vulnerability and enhance societal resilience (Zhang et al., 2026; Gatto & Magazzino, 2026; Cabral Roque et al., 2026).

Recent scholarship further highlights that disaster risk reduction cannot rely solely on technological innovation or emergency response systems, but must be grounded in strong legal and institutional foundations. Effective governance requires coordination between multiple actors, including national governments, local authorities, and civil society institutions, supported by clear legal mandates and enforceable regulations. Okunola et al. (2026) argue that integrated risk governance frameworks are essential for improving institutional coordination and reducing fragmentation in disaster management systems. Similarly, Rostami and Bagheri (2026) demonstrate that weak governance structures significantly undermine flood risk management and disaster preparedness. These findings are reinforced by comparative governance studies showing that institutional design, legal certainty, and inter-agency coordination play decisive roles in determining disaster resilience outcomes (He et al., 2026; Bongo et al., 2025). Therefore, disaster governance should be understood as a legally structured system rather than a purely administrative function.

In addition to institutional structures, leadership has been widely recognized as a critical determinant of disaster governance effectiveness. Contemporary governance literature emphasizes that accountability, transparency, responsiveness, and political trust are essential components of effective crisis management. McKeown (2026) highlights that democratic agility and institutional trust significantly influence governance performance during crises, including disasters. Furthermore, comparative studies in different jurisdictions show that adaptive leadership and strong legal institutions improve disaster preparedness and climate adaptation outcomes (Horasan & Özerol, 2026; Hammermeister et al., 2026). From a theoretical perspective, legal leadership extends beyond administrative authority and reflects the ability of institutions to translate legal norms into effective policy implementation, particularly in high-risk and uncertain environments. In this sense, disaster governance becomes a manifestation of the interaction between legal systems, institutional leadership, and societal resilience.

Comparative analysis across jurisdictions provides important insights into how different legal traditions shape disaster governance systems. Indonesia has established a decentralized disaster governance framework under Law No. 24 of 2007, supported by the National Disaster Management Agency (BNPB) and regional disaster management agencies. Malaysia



implements a centralized coordination model through national directives and the National Disaster Management Agency (NADMA), emphasizing administrative efficiency and policy coherence. Yemen represents a fragile governance system characterized by political instability, fragmented institutions, and limited disaster response capacity. In contrast, Portugal adopts an integrated disaster governance system aligned with European Union frameworks, emphasizing prevention, climate adaptation, and sustainability. These diverse governance models demonstrate that legal traditions, institutional capacity, and governance design significantly influence disaster resilience and development outcomes (Ammar et al., 2026; Gwambene et al., 2026; Khorram-Manesh & Goniewicz, 2027).

Despite the growing body of literature on disaster risk reduction, climate governance, and resilience studies, there remains a significant research gap in comparative legal analysis that explicitly links disaster law, institutional leadership, and sustainable economic development. Existing studies tend to focus on technical risk management, environmental policy, or institutional performance in isolation, without fully integrating legal governance perspectives across different legal systems. Moreover, limited attention has been given to how comparative legal frameworks across Asia and Europe can inform a unified conceptual model of disaster governance. Addressing this gap is essential in light of increasing climate-related risks and the urgent need for governance systems that can simultaneously ensure legal certainty, institutional coordination, and sustainable development. This study therefore seeks to contribute to disaster law scholarship by providing an integrated comparative legal perspective.

Accordingly, this study addresses three research questions: (1) How are disaster governance frameworks legally structured and implemented in Indonesia, Malaysia, Yemen, and Portugal? (2) How does legal leadership influence institutional effectiveness and disaster resilience in these jurisdictions? and (3) How can comparative legal principles, including relevant normative governance values, contribute to the development of a more integrative disaster governance framework? Based on these questions, the objective of this study is to analyze and compare disaster governance systems across the selected countries and to develop a conceptual framework that integrates legal leadership, institutional capacity, disaster resilience, and sustainable economic development. The novelty of this research lies in its cross-continental comparative legal analysis (Asia and Europe) and the development of an integrative governance model that connects disaster law with sustainable development theory, offering both theoretical and policy-oriented contributions to contemporary disaster governance scholarship.

2. Literature Review

Disaster governance has undergone a significant conceptual transformation from a reactive emergency-response mechanism into a comprehensive legal and institutional framework that integrates risk reduction, resilience building, and sustainable development. Contemporary scholarship increasingly rejects the view of disasters as purely natural phenomena and instead conceptualizes them as governance outcomes shaped by legal capacity, institutional design, and policy effectiveness. Within this perspective, law is not merely an enabling instrument but a constitutive element of disaster governance systems that determines how risks are defined, distributed, and managed across institutions and communities. Studies by Zhang et al. (2026), He et al. (2026), and Khorram-Manesh and Goniewicz (2027) demonstrate that robust legal



preparedness significantly enhances state capacity in disaster mitigation and recovery. Similarly, Okunola et al. (2026) highlight that integrated flood-risk governance depends on regulatory coherence, inter-agency coordination, and community participation. Conversely, governance failures are frequently associated with fragmented authority, overlapping mandates, and weak enforcement structures (Gwambene et al., 2026; He et al., 2026). These findings collectively position disaster governance as a legal-institutional system in which normative frameworks and administrative capacity interact to produce resilience outcomes.

Within this evolving paradigm, the concept of legal leadership has emerged as a central analytical category for understanding governance effectiveness in crisis contexts. Legal leadership refers to the capacity of governing authorities to design, coordinate, and enforce legal norms in ways that ensure accountability, responsiveness, and public legitimacy. This concept extends beyond formal authority structures and emphasizes adaptive governance behavior under conditions of uncertainty and systemic risk. It is closely aligned with Good Governance Theory, which underscores transparency, participation, accountability, and rule of law as foundational governance principles. McKeown (2026) argues that political trust and democratic agility are key determinants of effective crisis governance, while Horasan and Özerol (2026) demonstrate that local leadership capacity significantly shapes climate adaptation outcomes. From a legal-theoretical perspective, Friedman's Legal System Theory explains governance outcomes through the interaction of legal substance, structure, and culture, whereas Responsive Law Theory (Nonet & Selznick) highlights the importance of adaptive and socially responsive legal institutions. Accordingly, legal leadership in disaster governance should be understood as a dynamic institutional capability that connects legal norms with operational decision-making in high-risk environments.

The literature further establishes a strong conceptual link between disaster governance and sustainable economic development. Sustainable development theory emphasizes the integration of economic growth, environmental protection, and social equity within governance systems. Disasters, however, disrupt this balance by generating long-term economic losses, weakening institutional capacity, and increasing social vulnerability. As a result, disaster governance is increasingly viewed as a structural component of development policy rather than an auxiliary emergency function. Rostami and Bagheri (2026) demonstrate that weak flood governance can significantly undermine regional economic performance, while Zhang et al. (2026) and McKeown (2026) show that resilience-oriented governance enhances economic stability through institutional adaptability and risk reduction. The Sendai Framework for Disaster Risk Reduction further institutionalizes this integration by promoting the mainstreaming of disaster risk into development planning. Moreover, emerging studies emphasize that sustainability-oriented governance requires coordinated legal and institutional mechanisms capable of simultaneously ensuring infrastructure protection, environmental sustainability, and social welfare (Gatto & Magazzino, 2026; Khorram-Manesh & Goniewicz, 2027). Thus, disaster governance is increasingly conceptualized as a developmental legal instrument that structures long-term economic resilience.

Comparative disaster governance literature reveals significant variation in institutional design and legal implementation across jurisdictions. Indonesia operates under Law No. 24 of 2007,



establishing a decentralized disaster management system supported by national and regional agencies. Malaysia adopts a centralized coordination model emphasizing administrative efficiency and inter-agency collaboration. Yemen represents a case of governance fragility, where conflict, institutional breakdown, and limited administrative capacity constrain disaster preparedness and response. Portugal, in contrast, reflects a highly institutionalized European governance model in which disaster risk reduction is embedded within environmental law and EU-aligned resilience strategies. Comparative studies indicate that governance effectiveness is not solely determined by legal codification but also by institutional coherence, leadership capacity, and participatory mechanisms (He et al., 2026; Horasan & Özerol, 2026). Additionally, adaptive governance structures are consistently found to outperform rigid bureaucratic systems in responding to complex and uncertain disaster risks (Zhang et al., 2026; Okunola et al., 2026). These comparative insights confirm that disaster governance is fundamentally context-dependent yet analytically comparable through legal-institutional variables.

Despite the growing interdisciplinary literature on disaster risk reduction, climate governance, and sustainability transitions, a critical gap remains in the integration of legal leadership, comparative governance analysis, and sustainable economic development within a unified analytical framework. Existing studies tend to isolate governance dimensions—focusing either on institutional capacity, environmental adaptation, or policy implementation—without systematically linking these elements to legal structures and leadership functions. Furthermore, normative legal perspectives, particularly Islamic legal principles such as ‘*adl* (justice), *amānah* (trust), and *maṣlaḥah* (public interest), remain underexplored in mainstream disaster governance scholarship, despite their relevance to accountability and public welfare. In response to these gaps, this study develops a comparative legal analysis of disaster governance in Indonesia, Malaysia, Yemen, and Portugal by integrating legal system theory, good governance theory, and responsive law theory. The originality of this research lies in its construction of an integrative analytical framework that connects legal leadership, institutional governance, disaster resilience, and sustainable economic development across diverse legal traditions, thereby advancing disaster law scholarship beyond descriptive institutional analysis toward a normative-comparative governance model.

3. Methodology

This study adopts a normative-comparative legal research methodology to examine disaster governance frameworks, legal leadership structures, and their implications for sustainable economic development across Indonesia, Malaysia, Yemen, and Portugal. Normative legal research is appropriate because the primary focus lies in the analysis of legal norms, institutional mandates, and governance principles that regulate disaster risk reduction and resilience-building mechanisms within different legal systems. In line with Friedman’s Legal System Theory, legal systems are understood as an interaction between legal structure, substance, and culture, which collectively shape governance outcomes. This study also draws on transformative governance perspectives, which emphasize the role of law as an adaptive instrument for managing complex socio-environmental risks (Korhonen-Kurki et al., 2025; Wainiqolo et al., 2026). Furthermore, disaster governance is conceptualized as part of broader sustainability transitions, where legal systems are expected to integrate resilience, institutional



coordination, and long-term development objectives (Gatto & Magazzino, 2026; Khorram-Manesh & Goniewicz, 2027). The comparative selection of jurisdictions reflects a deliberate analytical strategy: Indonesia and Malaysia represent governance systems influenced by hybrid legal traditions and institutional coordination mechanisms, Yemen represents a fragile governance context with limited institutional capacity, while Portugal reflects a highly institutionalized European disaster governance model embedded in sustainability-oriented regulation and climate adaptation strategies (Hammermeister et al., 2026; Horasan & Özerol, 2026).

The data used in this study consist of secondary doctrinal and policy-based legal materials, supported by interdisciplinary scholarly literature. Primary legal materials include national disaster management laws, environmental regulations, civil protection frameworks, and international governance instruments such as the Sendai Framework for Disaster Risk Reduction 2015–2030 and the Sustainable Development Goals (SDGs). These legal sources are complemented by governance policy documents addressing institutional coordination, climate adaptation, and sustainability planning across jurisdictions. In addition, peer-reviewed journal articles and academic publications between 2020 and 2026 were systematically analyzed to capture recent developments in disaster governance, legal leadership, and resilience theory. Studies focusing on institutional coordination and governance effectiveness highlight the importance of stakeholder trust, regulatory coherence, and anticipatory governance mechanisms in disaster risk management (Aziz et al., 2026; Bongo et al., 2025). Similarly, research on environmental governance and sustainability-oriented innovation demonstrates that legal systems increasingly function as instruments for integrating ecological protection and socio-economic resilience (Harsanto et al., 2026; Barros et al., 2026). The selection of sources was guided by relevance, academic credibility, and contribution to legal-institutional analysis in disaster governance.

The analytical procedure is conducted through a three-stage qualitative legal analysis framework. First, doctrinal legal analysis is used to examine statutory frameworks, institutional arrangements, and regulatory structures governing disaster management in each jurisdiction. This stage focuses on identifying legal authority distribution, governance hierarchies, and institutional mandates responsible for disaster risk reduction and emergency response. Second, a comparative legal analysis is undertaken to identify similarities and differences in governance design, legal leadership functions, and institutional coordination mechanisms across the four countries. This comparative stage draws on global governance literature emphasizing the importance of adaptive institutions, multi-level coordination, and policy responsiveness in disaster governance systems (He et al., 2026; Zhang et al., 2026). Third, interpretive legal analysis is applied using theoretical frameworks including Good Governance Theory, Responsive Law Theory, and sustainability-oriented governance perspectives, which emphasize accountability, adaptability, and institutional effectiveness in crisis contexts. Additionally, normative evaluation incorporates selected principles of justice and public interest—such as those reflected in sustainable development theory (Sen, 1999; Rawls, 1999)—to assess governance legitimacy and distributive outcomes. Through this integrated methodological design, the study constructs a structured comparative legal explanation of how



legal leadership and institutional governance contribute to disaster resilience and sustainable economic development across diverse legal systems.

4. Results and Discussion

4.1 Comparative Legal Frameworks of Disaster Governance in Indonesia, Malaysia, Yemen, and Portugal

Disaster governance has increasingly evolved into a complex legal and institutional system that extends beyond emergency response toward integrated risk reduction, resilience-building, and sustainable development. Contemporary scholarship emphasizes that disaster governance effectiveness is determined by the interaction between legal frameworks, institutional coordination, and multi-level governance capacity rather than by regulatory presence alone (Khorram-Manesh & Goniewicz, 2027; Zhang et al., 2026). In this context, disaster risks are increasingly conceptualized as governance failures rather than purely natural phenomena, reflecting weaknesses in institutional design, regulatory coherence, and policy implementation. Empirical studies further highlight that effective governance systems require strong coordination mechanisms across governmental levels and stakeholders, particularly in addressing climate-related hazards and urban vulnerabilities (He et al., 2026; Horasan & Özerol, 2026). Accordingly, disaster governance has become a critical domain of legal inquiry, linking institutional resilience with sustainable development outcomes.

Indonesia represents a decentralized disaster governance system anchored in Law No. 24 of 2007 on Disaster Management, which establishes the National Disaster Management Agency (BNPB) and Regional Disaster Management Agencies (BPBDs). This framework reflects a hybrid governance structure in which authority is shared between central and sub-national governments. From a legal perspective, this decentralization enables contextualized responses to geographically diverse risks; however, it simultaneously generates coordination challenges and disparities in institutional capacity across regions. Recent studies indicate that governance effectiveness in such systems is strongly influenced by stakeholder collaboration, regulatory integration, and institutional trust (Aziz et al., 2026; Dong et al., 2026). Furthermore, disaster governance is increasingly linked to broader sustainability agendas, including urban development and infrastructure resilience, particularly in the context of Indonesia's ongoing development initiatives such as the Nusantara capital project (Ammar et al., 2026). Consequently, Indonesia's model can be characterized as a decentralized-hybrid legal governance system, where strong normative frameworks coexist with uneven implementation capacity.

Malaysia, in contrast, adopts a more centralized disaster governance model coordinated through the National Security Council Directive No. 20 and operationalized by the National Disaster Management Agency (NADMA). This structure emphasizes hierarchical coordination, rapid decision-making, and administrative efficiency during disaster events. Comparative governance literature suggests that centralized systems can enhance response speed and policy consistency when supported by clear legal mandates and institutional legitimacy (McKeown, 2026; Aziz et al., 2026). In addition, Malaysia has increasingly aligned its disaster governance framework with sustainability and climate adaptation objectives, reflecting global shifts toward integrated resilience governance systems (Gatto & Magazzino, 2026; Khan et al., 2026).



Nevertheless, the effectiveness of centralized governance remains dependent on inter-agency coordination and the ability to maintain public trust during crises (Akande et al., 2026). Therefore, Malaysia represents a centralized-coordinated governance model with strong operational efficiency but requiring continuous institutional integration for long-term resilience.

Yemen presents a contrasting case characterized by governance fragility, institutional fragmentation, and prolonged political instability. In this context, disaster governance is heavily constrained by weak state capacity, overlapping institutional mandates, and limited enforcement of legal norms. Literature on fragile governance systems indicates that disaster risk management in such environments is often shifted toward humanitarian actors and international organizations rather than domestic legal institutions (Leppert et al., 2026; Roy et al., 2026). As a result, governance mechanisms are predominantly reactive and externally supported rather than structurally institutionalized. This condition highlights that legal frameworks alone are insufficient in the absence of political stability and administrative capacity. Yemen thus reflects a conflict-sensitive humanitarian governance model, where resilience is primarily driven by community adaptation and external assistance rather than formal legal institutions.

Portugal represents a contrasting European model characterized by integrated disaster governance embedded within European Union civil protection and climate adaptation frameworks. The Portuguese Civil Protection Law consolidates disaster risk reduction, emergency preparedness, and environmental sustainability within a unified legal structure. This approach aligns with contemporary resilience-oriented governance paradigms that prioritize prevention, systemic adaptation, and long-term sustainability (Hammermeister et al., 2026; Mehvar et al., 2026). Moreover, European governance literature emphasizes the importance of integrating disaster risk reduction into spatial planning, environmental policy, and infrastructure governance to address compound risks associated with climate change and urbanization (Maleki et al., 2026; Korhonen-Kurki et al., 2025). Accordingly, Portugal can be classified as an integrated resilience-based governance model, where legal instruments function as adaptive tools for systemic risk governance.

Comparatively, the four jurisdictions illustrate distinct legal governance typologies shaped by institutional capacity, legal tradition, and socio-political context. Indonesia demonstrates decentralized legal pluralism, Malaysia reflects centralized coordination efficiency, Yemen embodies fragile and humanitarian-dependent governance, while Portugal represents integrated resilience-based legal governance. Despite these differences, all cases confirm that disaster governance effectiveness is ultimately determined by the alignment between legal frameworks, institutional capacity, and leadership effectiveness in crisis contexts (Friedman, 1975; Khorram-Manesh & Goniewicz, 2027). These findings reinforce the argument that disaster governance should be conceptualized as an adaptive legal system that integrates regulatory design, institutional coordination, and sustainable development objectives.

Table 1. Comparative Disaster Governance Frameworks

Country	Primary Legal Framework	Main Institution	Governance Model	Key Strengths	Major Challenges
Indonesia	Law No. 24/2007 on Disaster Management	BNPB & BPBD	Decentralized hybrid governance	Strong legal foundation; local responsiveness	Uneven capacity; coordination gaps
Malaysia	National Security Council Directive No. 20	NADMA	Centralized coordinated governance	Rapid response; policy consistency	Dependency on central authority
Yemen	Fragmented disaster and humanitarian legal framework	State & humanitarian actors	Conflict-sensitive humanitarian governance	Community resilience; external support	Institutional fragility; instability
Portugal	Civil Protection Law + EU DRR framework	National Civil Protection Authority	Integrated resilience governance	Strong prevention; climate integration	Increasing climate and urban risks

Source: Author's elaboration based on comparative legal and governance literature synthesis (see references).

4.2 Legal Leadership and Institutional Capacity in Disaster Governance

Legal leadership is a decisive determinant in the effectiveness of disaster governance, as it shapes how legal norms are interpreted, operationalised, and implemented across institutional levels. Contemporary disaster governance scholarship increasingly conceptualises disasters not merely as natural phenomena but as complex governance failures requiring adaptive legal leadership, institutional coordination, and regulatory foresight. Within this framework, disaster governance is embedded in broader systems of public accountability, administrative responsiveness, and sustainability-oriented policy integration. Recent literature highlights that effective disaster governance depends on the alignment between legal structures, institutional capacity, and multi-stakeholder coordination mechanisms that enable timely and coherent responses to risk and uncertainty (Khorram-Manesh & Goniewicz, 2027; Zhang et al., 2026; McKeown, 2026). From a theoretical perspective, Good Governance Theory emphasises accountability, transparency, participation, and effectiveness, while Friedman's Legal System Theory underlines the interaction between legal substance, structure, and culture as determinants of governance performance. Complementarily, Responsive Law Theory highlights the adaptive capacity of legal institutions in responding to dynamic social and environmental challenges. In synthesis, legal leadership functions as both an institutional driver and a normative mechanism for strengthening disaster resilience and advancing sustainable development objectives (Akande et al., 2026; Gatto & Magazzino, 2026).

Indonesia illustrates a hybrid model of legal leadership characterised by collaborative and decentralised disaster governance. The legal framework under Law No. 24 of 2007 establishes a multi-level governance structure involving the National Disaster Management Agency (BNPB), Regional Disaster Management Agencies (BPBDs), and subnational governments. This structure reflects a deliberate decentralisation of disaster authority intended to enhance local responsiveness and contextualised risk management. From the perspective of Legal System Theory, Indonesia demonstrates a differentiated interaction between legal structure and administrative practice, where local governments play a substantial role in operational implementation. However, empirical governance studies indicate that decentralised systems



often face coordination deficits, uneven institutional capacity, and disparities in resource allocation across regions (Dong et al., 2026; Zhang, 2026). Furthermore, stakeholder engagement and institutional trust remain critical challenges that affect the effectiveness of collaborative disaster governance systems (Aziz et al., 2026). Nevertheless, Indonesia's model aligns with emerging governance paradigms that emphasise participatory leadership and multi-actor coordination, particularly in contexts of high socio-ecological complexity and climate vulnerability (Ammar et al., 2026; Harsanto et al., 2026).

Malaysia represents a contrasting governance configuration characterised by centralised legal leadership and hierarchical institutional coordination. Disaster governance is primarily directed through the National Security Council Directive No. 20 and operationalised by the National Disaster Management Agency (NADMA), ensuring a unified command structure during emergencies. From a Legal System Theory perspective, this arrangement demonstrates high coherence between legal authority and administrative execution, reducing fragmentation and enhancing policy consistency. Good Governance Theory further suggests that centralised systems may improve efficiency and responsiveness when supported by clear accountability mechanisms and institutional legitimacy. Empirical studies on crisis governance emphasise that political trust and administrative credibility are essential factors in ensuring compliance and coordination during disaster events (McKeown, 2026; Akande et al., 2026). Moreover, Malaysia's governance system increasingly integrates climate adaptation and sustainability principles into disaster risk reduction strategies, reflecting broader global shifts toward resilience-based governance frameworks (Horasan & Özerol, 2026; Khan et al., 2026). This demonstrates that centralised legal leadership can be effective when combined with adaptive policy innovation and institutional trust-building mechanisms.

The Yemeni case represents a structurally constrained governance environment where legal leadership is weakened by political instability, conflict dynamics, and institutional fragmentation. Disaster governance operates under conditions of limited state capacity, overlapping authority structures, and significant reliance on international humanitarian actors. Within the framework of Responsive Law Theory, Yemen illustrates a situation where legal institutions struggle to adapt to rapidly evolving social, environmental, and humanitarian pressures. The absence of coherent institutional coordination significantly undermines disaster preparedness, risk reduction, and recovery processes. Comparative studies on fragile governance systems indicate that institutional legitimacy and administrative continuity are critical prerequisites for effective disaster governance, particularly in conflict-affected settings (Leppert et al., 2026; Roy et al., 2026). Consequently, community-based resilience mechanisms and external humanitarian interventions often substitute for formal state functions, creating a hybrid governance structure characterised by fragmentation and external dependency. Yemen therefore demonstrates that legal frameworks alone are insufficient in the absence of stable leadership and functional institutional capacity.

Portugal represents an advanced model of integrated legal leadership embedded within European Union disaster risk reduction and climate governance frameworks. The Portuguese Civil Protection system integrates disaster preparedness, emergency response, climate adaptation, and environmental sustainability into a unified legal-administrative structure. This



reflects a high degree of institutional integration consistent with both Good Governance Theory and Responsive Law Theory, particularly in terms of transparency, accountability, and adaptive governance capacity. European studies on urban resilience and climate governance highlight that integrated systems are more effective in managing complex, multi-dimensional risks because they facilitate coordination across governmental agencies, scientific institutions, and civil society actors (Hammermeister et al., 2026; Mehvar et al., 2026; Maleki et al., 2026). In this context, Portugal demonstrates how legal leadership can evolve toward anticipatory governance models that prioritise prevention and long-term resilience rather than reactive crisis management.

Comparatively, the four jurisdictions reveal distinct configurations of legal leadership and institutional capacity in disaster governance: Indonesia's collaborative decentralisation, Malaysia's centralised coordination, Yemen's fragile and fragmented governance, and Portugal's integrated resilience-based model. Despite structural differences, a consistent pattern emerges across cases: effective disaster governance depends on the quality of legal leadership, institutional coordination capacity, stakeholder trust, and the ability of legal systems to adapt to socio-environmental complexity. These findings reinforce the argument that disaster governance is fundamentally a legal-institutional challenge in which governance effectiveness is determined not only by regulatory design but also by leadership capacity and institutional coherence within dynamic risk environments.

4.3 Disaster Governance and Sustainable Economic Development

The relationship between disaster governance and sustainable economic development must be understood primarily within a public law and administrative law framework, rather than as a purely socio-economic or policy-driven discourse. From a doctrinal perspective, disaster governance constitutes a legally structured regulatory system through which the state exercises its public authority to manage risk, allocate institutional responsibilities, and ensure the continuity of essential public functions under conditions of hazard and crisis. In this sense, sustainable economic development is not an external outcome of disaster governance, but a legally mediated objective embedded within statutory mandates governing risk prevention, emergency response, and recovery. Contemporary legal scholarship emphasizes that resilience-oriented governance must be grounded in enforceable legal norms and institutional obligations that integrate risk governance into the broader structure of state responsibility (Gatto & Magazzino, 2026; Zhang et al., 2026; Khorram-Manesh & Goniewicz, 2027).

In Indonesia, disaster governance is normatively structured under Law No. 24 of 2007 on Disaster Management, which establishes a decentralized legal framework assigning differentiated responsibilities to national and regional authorities through BNPB and BPBD. From a legal standpoint, the effectiveness of disaster governance depends on the coherence between statutory delegation of authority and administrative implementation at subnational levels. However, decentralization also introduces legal fragmentation risks when regulatory coordination and enforcement mechanisms are inconsistently applied across jurisdictions. Empirical legal studies indicate that the integration of disaster risk considerations into regulatory planning instruments—such as spatial planning law and infrastructure regulation—strengthens the normative consistency of governance systems (Ammar et al., 2026; Harsanto et



al., 2026; Roy et al., 2026; Pan et al., 2026). Nevertheless, the Indonesian framework continues to face challenges in ensuring vertical legal harmonization between national disaster legislation and regional implementing regulations, thereby affecting the uniformity of legal protection in disaster contexts.

Malaysia presents a contrasting model characterized by centralized legal-administrative coordination under the National Security Council Directive No. 20 and the institutional authority of the National Disaster Management Agency (NADMA). This framework reflects a command-based legal structure in which executive authority is clearly defined and operationalized through hierarchical regulatory mechanisms. From a legal-institutional perspective, this model enhances normative clarity in the allocation of emergency powers and reduces ambiguity in inter-agency coordination. The integration of disaster governance within centralized statutory and executive instruments reflects a consolidated approach to legal authority, particularly in emergency decision-making and enforcement. Comparative governance literature highlights that such structured legal coordination strengthens institutional compliance and enhances regulatory predictability in disaster management systems (Horasan & Özerol, 2026; Chowdhury et al., 2026; Kaushik et al., 2026; Khadka et al., 2026).

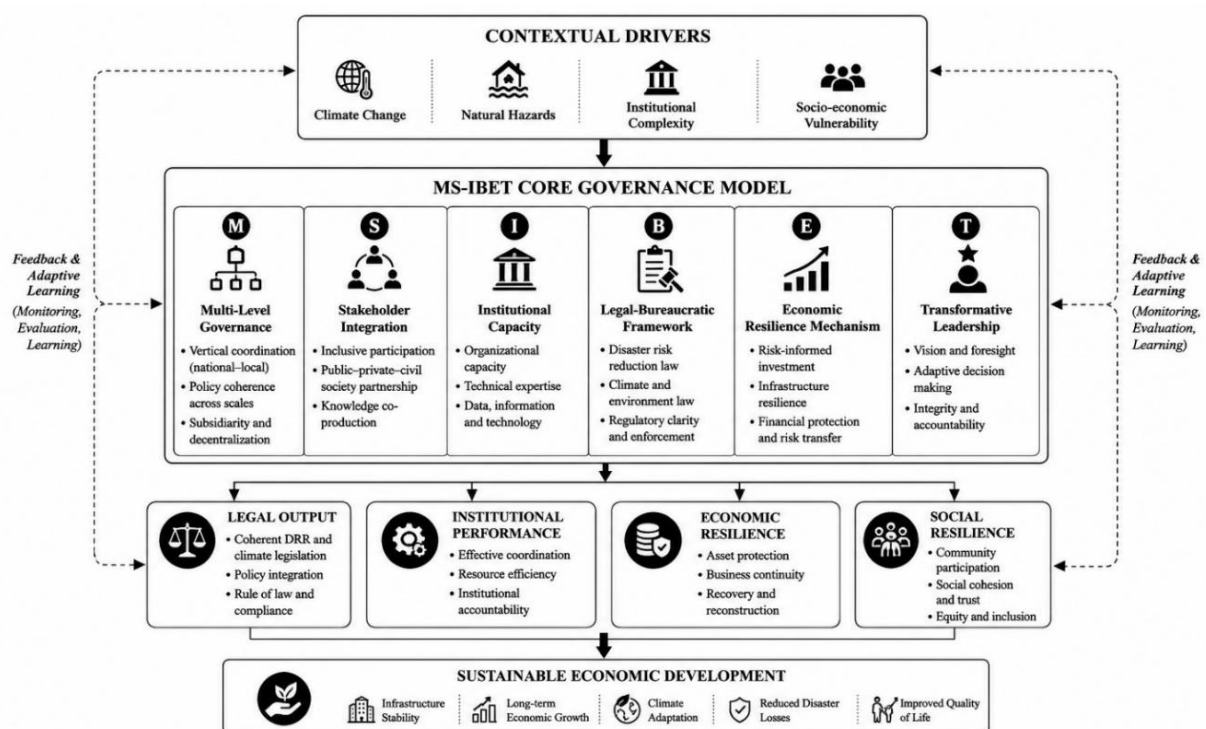
Yemen, by contrast, illustrates a fragmented legal order in which disaster governance is constrained by weak statutory enforceability and institutional instability. The absence of a coherent and uniformly applied disaster law framework results in fragmented allocation of authority across state and humanitarian actors. In legal terms, this fragmentation undermines the principle of legal certainty and weakens the state's capacity to exercise effective regulatory control over disaster risk governance. The literature on fragile legal systems demonstrates that institutional breakdown significantly limits the enforceability of governance obligations and disrupts the continuity of public legal functions in disaster contexts (Leppert et al., 2026; Radianti, 2026; Roy et al., 2026; Hickey et al., 2026). As a result, disaster governance in Yemen operates in a legally hybrid and often non-codified environment, where informal mechanisms partially substitute formal statutory authority.

Portugal represents a highly institutionalized legal model grounded in European Union civil protection law and national civil protection statutes, which collectively establish a multi-level legal governance system. Disaster governance is embedded within binding preventive and preparedness obligations, particularly through regulatory integration with environmental, spatial planning, and infrastructure law. From a doctrinal perspective, this reflects a preventive legal paradigm in which disaster risk reduction is not merely policy-oriented but normatively mandated within statutory frameworks. The integration of EU disaster risk governance standards ensures legal coherence across national and supranational levels, reinforcing the principle of regulatory harmonization (Rashid & Sutley, 2026). Comparative legal studies confirm that preventive legal frameworks enhance institutional compliance and strengthen the enforceability of risk governance obligations across sectors (Hammermeister et al., 2026; Mehvar et al., 2026; Maleki et al., 2026; Ragosa et al., 2026).

Comparatively, the four jurisdictions demonstrate distinct legal configurations of disaster governance: statutory decentralization in Indonesia, centralized executive legality in Malaysia,

fragmented and weakened legal order in Yemen, and supranationally integrated preventive legal governance in Portugal. Despite these differences, a consistent doctrinal pattern emerges: the effectiveness of disaster governance in supporting sustainable economic development is primarily determined by the strength of legal codification, institutional enforceability, and regulatory coherence within disaster law systems. This confirms that disaster governance operates not merely as administrative practice, but as a legally structured mechanism of state responsibility embedded within public law frameworks.

Figure 1. Disaster Governance–Economic Sustainability Nexus



Source: Author's own construction based on disaster governance, resilience, and legal system theories synthesized from Khorram-Manesh and Goniewicz (2027), Friedman (1975), Gatto and Magazzino (2026), and Zhang et al. (2026).

4.4 Comparative Analysis of Governance Strengths and Challenges (Legal-Doctrinal Perspective)

Comparative disaster governance must be understood as a manifestation of public law and administrative law in regulating state responsibility for disaster risk reduction. From a normative-comparative legal perspective, governance effectiveness is not only determined by policy performance, but by the coherence of statutory frameworks, clarity of institutional mandates, and enforceability of legal instruments across governance levels. In this sense, disaster governance reflects the operationalization of legal norms into institutional practice, where the state exercises regulatory authority to protect life, property, and socio-economic stability under conditions of systemic risk (Friedman, 1975; Korhonen-Kurki et al., 2025). Therefore, differences among Indonesia, Malaysia, Yemen, and Portugal must be analyzed



through their respective legal architectures rather than solely through administrative effectiveness.

Indonesia represents a decentralized civil-law based disaster governance system anchored in Law No. 24 of 2007 on Disaster Management, which provides a comprehensive statutory foundation for disaster risk reduction, emergency response, and post-disaster recovery. The establishment of BNPB and BPBDs reflects a multi-level legal governance structure that distributes authority between central and regional governments. From a doctrinal standpoint, this framework demonstrates strong normative completeness and alignment with preventive governance principles. However, its main legal weakness lies in vertical implementation inconsistency. The decentralization of authority generates uneven legal enforcement across regions, creating disparities in compliance, capacity, and regulatory interpretation. This indicates a gap between law in the books and law in action, where statutory strength is not fully translated into uniform institutional effectiveness (Dong et al., 2026; Ammar et al., 2026).

Malaysia demonstrates a centralized administrative legal model characterized by strong executive coordination through the National Security Council Directive No. 20 and operational authority of NADMA. Unlike Indonesia, Malaysia does not rely on a single codified disaster law but instead uses a system of executive directives and sectoral regulations. This structure enhances administrative efficiency and allows rapid mobilization of disaster response mechanisms under clear hierarchical authority. However, from a legal-doctrinal perspective, the fragmentation of legal instruments creates normative dispersion, limiting legal clarity regarding institutional accountability and long-term governance obligations. The absence of a unified disaster management statute reduces doctrinal coherence, particularly in addressing complex and climate-induced disaster risks (Aziz et al., 2026; Kaushik et al., 2026).

Yemen illustrates a fragile legal governance system where formal disaster law exists but is significantly weakened by political instability and institutional breakdown. In normative terms, disaster governance operates in a hybrid space between limited state law and informal humanitarian governance structures. Weak enforcement capacity, fragmented authority, and ongoing conflict undermine the functionality of statutory frameworks. As a result, disaster response relies heavily on non-state actors and community-based networks rather than enforceable legal institutions. From a legal perspective, this reflects a decline in state regulatory authority and disruption of legal continuity, where governance legitimacy is redistributed outside formal legal structures (Opdyke et al., 2026; Leppert et al., 2026).

Portugal represents a highly integrated disaster governance system embedded within the European Union legal framework, including EU Civil Protection Mechanisms and climate adaptation directives. This multi-level legal structure ensures strong coherence between national and supranational disaster law, promoting preventive governance, regulatory harmonization, and institutional coordination. Portugal demonstrates high legal institutionalization of disaster risk management, particularly in integrating environmental law and climate adaptation law into governance practice. However, increasing climate risks such as wildfires and extreme weather events require continuous legal adaptation, highlighting the



challenge of maintaining regulatory responsiveness within a complex multi-level legal order (Hammermeister et al., 2026; Gatto & Magazzino, 2026).

4.5 Toward an Integrative Legal Leadership and Disaster Governance Model (ILDG Model)

The comparative legal examination of Indonesia, Malaysia, Yemen, and Portugal demonstrates that disaster governance must be conceptualized as a normative legal construct embedded within public law architecture, particularly constitutional and administrative law. Within this doctrinal framing, disaster governance is not merely an operational policy domain, but a structured legal system through which the state exercises regulated authority to allocate responsibilities, define institutional competencies, and ensure enforceable compliance under conditions of risk and emergency. The coherence between normative legality (“law in books”) and institutional realization (“law in action”) constitutes a central criterion of legal effectiveness in disaster governance systems (Friedman, 1975; Hickey et al., 2026).

Based on this legal premise, the Integrative Legal Leadership and Disaster Governance (ILDG) Model is developed as a normative doctrinal framework derived from comparative legal reasoning. The first component, Legal Foundation, refers to the hierarchical structure, normative clarity, and enforceability of disaster-related legal instruments, including statutes, executive regulations, and supranational legal norms. The comparative analysis indicates that Indonesia (Law No. 24/2007), Malaysia (National Security Council Directive No. 20 and related administrative regulations), and Portugal (EU civil protection and regulatory framework) exhibit relatively consolidated legal foundations, whereas Yemen reflects fragmented and weakly enforceable legal arrangements. From a doctrinal perspective, the degree of legal consolidation directly determines the predictability of state action and the clarity of institutional responsibility allocation (Rashid & Sutley, 2026; Wainiqolo et al., 2026).

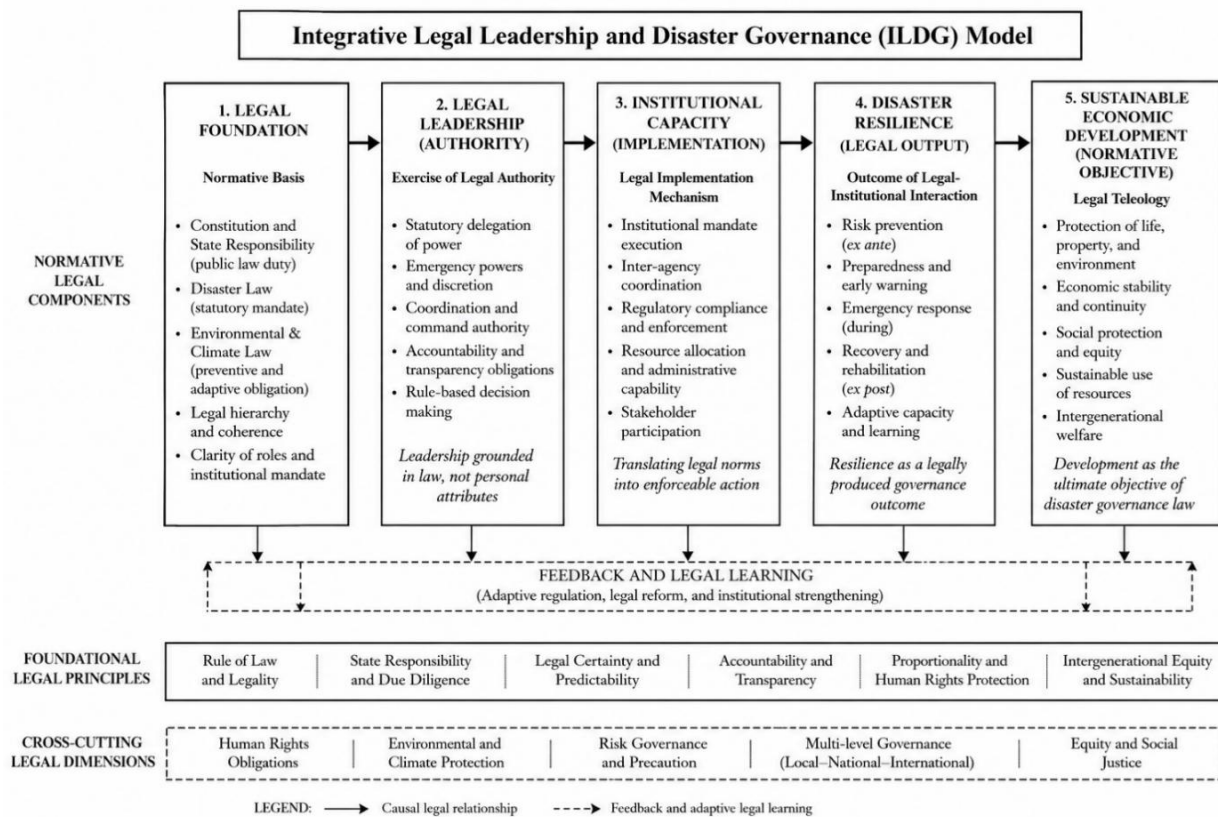
The second component, Legal Leadership as Statutory Authority, conceptualizes leadership not as a managerial attribute but as a legally constituted function of command, coordination, and accountability derived from statutory delegation and emergency powers. In this sense, legal leadership operates through formalized authority structures that determine decision-making legitimacy and hierarchical control in disaster situations. The comparative findings show that Malaysia and Portugal demonstrate stronger institutionalized command authority, Indonesia reflects a decentralized but coordinated legal authority structure, while Yemen exhibits weakened legal leadership due to institutional fragmentation and limited enforceability of state authority (Ragosa et al., 2026).

The third component, Institutional Capacity as Legal Implementation Mechanism, refers to the juridical ability of designated institutions to operationalize statutory mandates through administrative enforcement, inter-agency coordination, and regulatory compliance. Institutions such as BNPB–BPBD in Indonesia, NADMA in Malaysia, and EU-integrated civil protection authorities in Portugal illustrate varying degrees of legal implementation capacity, while Yemen demonstrates constrained institutional execution due to instability and fragmented administrative authority. Institutional capacity, in this doctrinal sense, represents the functional translation of legal norms into binding administrative action (Cabral Roque et al., 2026; Khadka

et al., 2026). The fourth component, Disaster Resilience as Legal Output, is defined as a legally conditioned outcome generated through the effective operation of preventive, responsive, and corrective legal norms. Resilience is therefore not treated as a sociological or developmental variable, but as an outcome of enforceable legal compliance across institutional layers of governance. Variations in resilience across jurisdictions reflect differences in normative coherence, enforcement capacity, and institutional legal integration.

Accordingly, the ILDG Model establishes a sequential doctrinal structure that links Legal Foundation, Legal Leadership, Institutional Capacity, and Disaster Resilience as interdependent components of a unified legal governance system. The model reconceptualizes disaster governance as a structured legal order governed by normative hierarchy, delegated authority, and enforceable institutional obligations. Within this framework, disaster governance is repositioned as a coherent domain of public law, rather than a fragmented administrative or policy-oriented arrangement, thereby contributing to comparative disaster law scholarship through a consolidated doctrinal architecture (Friedman, 1975; Hickey et al., 2026; Rashid & Sutley, 2026).

Figure 2. Integrative Legal Leadership and Disaster Governance (ILDG) Model: A Normative Causal Framework of Disaster Law and Sustainable Development



Source: Author's own construction based on legal system theory and comparative disaster governance literature (Friedman, 1975; Gatto & Magazzino, 2026; Zhang et al., 2026).



5. Conclusion

This study has examined the comparative legal frameworks of disaster governance in Indonesia, Malaysia, Yemen, and Portugal using a normative-comparative legal approach grounded in public law and administrative law analysis. The findings provide structured answers to the research questions by demonstrating how legal structures, institutional mandates, and legal leadership shape disaster governance outcomes across different legal systems. In relation to the first research question, the study finds that disaster governance is fundamentally determined by its legal architecture, where Indonesia operates under Law No. 24 of 2007 with a decentralized framework, Malaysia applies a centralized legal-administrative structure through the National Security Council and NADMA, Yemen reflects a fragmented legal system with limited enforceability, and Portugal demonstrates a highly integrated multi-level legal framework aligned with European Union civil protection law.

Regarding the second and third research questions, the study confirms that legal leadership is a statutory and administrative function derived from legally defined authority rather than informal governance capacity, where Malaysia and Portugal demonstrate stronger legal leadership due to clear command structures and enforceable mandates, Indonesia reflects a hybrid model dependent on intergovernmental coordination, and Yemen shows weakened legal leadership due to institutional fragmentation. The study further confirms that disaster resilience and sustainable economic development are outcomes of effective legal implementation, depending on the coherence between legal norms, institutional capacity, and enforcement mechanisms. Jurisdictions with stronger legal integration, particularly Portugal and Malaysia, demonstrate more stable disaster governance and better alignment with development planning, while Indonesia shows partial effectiveness and Yemen reflects systemic vulnerability due to legal fragmentation.

Based on these findings, the study develops the Integrative Legal Leadership and Disaster Governance (ILDG) Model as a conceptual contribution to disaster law scholarship, linking Legal Foundation, Legal Leadership, Institutional Capacity, Disaster Resilience, and Sustainable Economic Development as a sequential legal framework grounded in public law theory. It emphasizes that disaster governance effectiveness depends on the translation of legal norms into enforceable institutional action. From a policy perspective, the study recommends strengthening harmonization between disaster law, administrative law, and development planning instruments to improve regulatory coherence, including enhancing vertical coordination in Indonesia, reinforcing accountability in Malaysia, rebuilding legal-institutional foundations in Yemen, and maintaining preventive supranational integration in Portugal. The study is limited by its normative-comparative design without empirical validation, and future research should incorporate doctrinal judicial analysis and empirical governance data to test the applicability of the ILDG Model across different legal systems.

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