International Journal of Social Welfare and Family Law

E-ISSN: 3047-7727
P-ISSN: 3047-4841

Research Article

Disaster Management in Earthquake-Prone Countries: Lessons from the Public Administration Systems of Japan and the Philippines

Wahyudi Mokobombang[1*], Nurasia Natsir[2]

[1]Sekolah Tinggi Ilmu Administrasi Yappi, Makassar, South Sulawesi, Indonesia
[2] Institut Ilmu Kesehatan Pelamonia Makassar, South Sulawesi, Indonesia
*Corresponding Author: wahyudi.mokobombang81@gmail.com

Abstract: This study examines disaster management strategies in earthquake-prone countries, with a comparative focus on Japan and the Philippines as case studies for lessons applicable to public administration systems worldwide. Using a qualitative comparative analysis approach, the research evaluates institutional frameworks, policy instruments, community engagement mechanisms, and intergovernmental coordination systems deployed in both countries. Japan's highly centralized yet locally adaptive Disaster Management Basic Act framework is contrasted with the Philippines' decentralized National Disaster Risk Reduction and Management (NDRRM) system. Findings reveal that effective disaster management hinges on five critical pillars: strong legal frameworks, inter-agency coordination, investment in early warning systems, community resilience programs, and post-disaster recovery governance. The study further identifies that public trust, administrative capacity, and fiscal decentralization significantly influence disaster response outcomes. Lessons drawn from both countries offer practical recommendations for developing nations seeking to strengthen their disaster governance architectures. This research contributes to the growing body of knowledge on comparative public administration and disaster risk reduction, underscoring the imperative of integrated, adaptive, and community-centered governance frameworks in seismically active regions.

Keywords: Disaster Management; Earthquake; Japan; Philippines; Public Administration.

1. Introduction

Earthquakes represent one of the most destructive natural hazards confronting human civilization, with the capacity to collapse infrastructure, displace populations, and reverse decades of developmental progress within moments. The seismically active Pacific Ring of Fire, stretching across the Asia-Pacific region, places millions of people in high-risk zones annually. Among the nations situated along this geologically volatile belt, Japan and the Philippines stand as two contrasting yet instructive exemplars of public administration systems designed to manage seismic disasters.

Japan, as one of the world's most earthquake-prone nations, has developed over decades a sophisticated multi-tiered disaster management architecture rooted in strong legislative foundations, robust infrastructure investment, and high levels of public preparedness (Mori et al., 2011). The devastating Great Hanshin Earthquake of 1995 and the Great East Japan Earthquake and Tsunami of 2011 served as critical inflection points that prompted fundamental reforms in the country's disaster governance systems (Cabinet Office of Japan, 2015). In contrast, the Philippines, an archipelago nation also situated on the Pacific Ring of Fire and frequently struck by major earthquakes, has pursued disaster risk reduction through a more decentralized governance model, enshrined in Republic Act No. 10121, the Philippine Disaster Risk Reduction and Management Act of 2010 (National Disaster Risk Reduction and Management Council [NDRRMC], 2011).

Received: January 19, 2026
Revised: February 28, 2026
Accepted: March 24, 2026
Published: May 26, 2026
Curr. Ver.: May 26, 2026

Despite significant differences in governance philosophy, economic resources, and institutional capacity, both nations offer valuable lessons for public administrators in earthquake-prone developing countries seeking to build more resilient disaster management systems. Comparative public administration, as a scholarly discipline, provides the analytical tools to identify transferable institutional lessons across different political and cultural contexts (Farazmand, 2014). This study employs this comparative lens to analyze the disaster management frameworks of Japan and the Philippines, with the ultimate aim of generating actionable policy insights.

The objectives of this study are: (1) to analyze the institutional and legal frameworks governing earthquake disaster management in Japan and the Philippines; (2) to evaluate the effectiveness of selected policy instruments and governance mechanisms in each country; (3) to identify key lessons and best practices applicable to other earthquake-prone nations; and (4) to propose policy recommendations for strengthening public administration systems in the context of seismic disaster risk reduction.

2. Literature Review

The theoretical foundation of disaster management is grounded in the intersection of public administration, risk governance, and emergency management scholarship. Tierney (2012) defines disaster management as a complex sociotechnical system involving preparedness, response, recovery, and mitigation activities coordinated across multiple governmental and non-governmental actors. This multi-phase framework, commonly known as the disaster management cycle, serves as the primary organizing concept for national disaster governance systems worldwide.

Disaster Risk Reduction and Public Administration

The Sendai Framework for Disaster Risk Reduction 2015–2030, adopted under the auspices of the United Nations Office for Disaster Risk Reduction (UNDRR, 2015), represents the most authoritative contemporary global framework for disaster governance. It establishes four priority areas: understanding disaster risk, strengthening disaster risk governance, investing in disaster risk reduction for resilience, and enhancing preparedness for effective response. Both Japan and the Philippines are signatories to this framework and have integrated its principles into their national disaster governance systems.

From a public administration perspective, Nakagawa and Shaw (2004) argue that the effectiveness of disaster management systems is fundamentally a function of institutional design, inter-organizational coordination, and administrative capacity. They emphasize that social capital, community cohesion, and local governance quality are as important as technological infrastructure in determining disaster outcomes. This perspective aligns with the broader new public governance literature, which foregrounds collaborative, network-based approaches to managing complex public problems (Osborne, 2010).

Comfort, Boin, and Demchak (2010) identify "adaptive governance" as a critical attribute of effective disaster management systems. Adaptive governance refers to the capacity of public institutions to learn from past disasters, revise existing protocols, and innovate new approaches in response to evolving risk landscapes. Japan's iterative reform of its disaster management legislation following major seismic events is a prime illustration of adaptive governance in practice. Similarly, Aldrich (2012) demonstrates through post-Kobe and post-Tohoku analyses that social capital and community networks are decisive factors in determining recovery speed and equity outcomes.

Comparative Disaster Management: Japan and the Philippines

Japan's disaster management system is widely regarded as among the most advanced globally. Established through the Disaster Countermeasures Basic Act of 1961, subsequently amended following the Hanshin and Tohoku disasters, the Japanese system operates through a hierarchical structure connecting national, prefectural, and municipal governments, supported by dedicated disaster management councils at each level (Kaneko, 2012). The Japanese model emphasizes prevention and preparedness, with significant budgetary allocations to seismic retrofitting, tsunami early warning systems, and community-level disaster preparedness drills (Mori et al., 2011).

The Philippines presents a contrasting governance model. As an archipelago of more than 7,600 islands with highly variable institutional capacities across local government units, the Philippines has pursued a decentralized disaster risk reduction architecture. Republic Act No. 10121, enacted in 2010, replaced the older civil defense-centric framework with a comprehensive DRRM system emphasizing local government unit (LGU) autonomy,

community-based disaster preparedness, and multi-stakeholder participation (Gaillard & Mercer, 2013). Despite these institutional advances, the Philippines continues to face persistent challenges related to local government capacity gaps, resource inequalities across regions, and coordination failures during major disasters (Bankoff, 2003).

Several comparative studies have examined disaster management systems in Asia-Pacific contexts. Shaw and Goda (2004) highlight how Japan's community-based disaster risk management programs have significantly enhanced local resilience. Uy, Shaw, and Takeuchi (2011) examine the role of local government units in Philippine disaster risk management, noting both achievements and persistent gaps in implementation. Lassa, Surjan, Caballero-Anthony, and Fisher (2019) provide a broader regional analysis of disaster governance in Southeast Asia, identifying institutional fragmentation and capacity disparities as major systemic challenges.

Theoretical Framework

This study employs the Institutional Analysis and Development (IAD) Framework developed by Ostrom (2005) as its primary theoretical lens. The IAD framework provides a structured approach to analyzing how institutions—defined as the rules, norms, and strategies that shape human interaction—influence collective outcomes. In the context of disaster management, the IAD framework helps illuminate how different institutional configurations in Japan and the Philippines shape disaster preparedness, response, and recovery outcomes. The framework's emphasis on the interaction between actors, action arenas, and institutional rules makes it particularly well-suited to comparative institutional analysis across different national contexts (Ostrom, 2005; Farazmand, 2014).

3. Materials and Method

This research employs a qualitative comparative case study methodology. The comparative case study approach is appropriate for this research because it enables in-depth analysis of institutional arrangements in specific national contexts while facilitating systematic cross-case comparison (Yin, 2018). Japan and the Philippines were selected as case studies based on four criteria: (1) both are located in high seismic activity zones; (2) both have developed formal national disaster management systems; (3) they represent contrasting governance philosophies (centralized vs. decentralized); and (4) both offer extensive documentary evidence for analysis.

Data Collection

Data for this study were collected through systematic documentary analysis. Primary sources included national legislation (Japan's Disaster Countermeasures Basic Act and the Philippines' Republic Act No. 10121), official government disaster management plans, annual disaster reports from the Cabinet Office of Japan and the NDRRMC, and reports from international organizations including the UNDRR, World Bank, and Asian Development Bank. Secondary sources comprised peer-reviewed journal articles, book chapters, and conference proceedings. A total of 87 documents were systematically reviewed using thematic content analysis.

Data Analysis

Data were analyzed using comparative thematic analysis following the framework proposed by Braun and Clarke (2006), adapted for comparative cross-national policy research. Four analytical dimensions were applied: (1) legal and institutional frameworks; (2) intergovernmental and multi-actor coordination mechanisms; (3) community engagement and local governance; and (4) post-disaster recovery and adaptive learning. Within each dimension, findings from Japan and the Philippines were systematically compared and contrasted to identify patterns, divergences, and transferable lessons.

4. Results and Discussion

Legal and Institutional Frameworks

Japan's disaster management legal architecture is anchored by the Disaster Countermeasures Basic Act of 1961, which has been amended numerous times following major disasters. This law establishes the Central Disaster Management Council, chaired by the Prime Minister, as the apex coordinating body. The legal framework mandates the formulation of the Basic Disaster Management Plan and requires prefectural and municipal governments to develop their own disaster management plans in alignment with the national framework. The 2011 Tohoku disaster led to further legislative reforms, including the enactment of the Large-Scale Disaster Recovery Special Measures Act of 2013 and

strengthening of Business Continuity Planning (BCP) requirements for critical infrastructure (Cabinet Office of Japan, 2015).

In the Philippines, Republic Act No. 10121 of 2010 established a comprehensive DRRM framework that represented a fundamental paradigm shift from a civil defense-centric to a risk reduction-oriented approach. The law created the NDRRMC as the highest policy-making body, with corresponding Local DRRMCs at provincial, city, and municipal levels. A key innovation was the mandatory allocation of five percent of local government budgets to DRRM activities. However, implementation studies consistently reveal significant disparities in local capacity and resource availability, with many lower-income municipalities struggling to operationalize the law's requirements (Uy et al., 2011).

Comparatively, Japan's more prescriptive and centrally guided legal framework provides greater consistency in implementation across its territorial units, while the Philippines' decentralized model offers greater flexibility but at the cost of implementation consistency. The Japanese approach benefits from a long institutional history and substantial public investment, while the Philippine model, though conceptually sound, faces persistent capacity constraints at the local level.

Intergovernmental Coordination and Multi-Stakeholder Mechanisms

Japan's disaster management system features well-established vertical coordination mechanisms between national, prefectural, and municipal governments, complemented by horizontal coordination across ministries and agencies. The Cabinet Office's Disaster Management Division serves as the central coordinating hub, facilitating information sharing, resource deployment, and joint training exercises. The Japan Meteorological Agency (JMA) plays a pivotal role in operating the country's world-class earthquake early warning system, which provides automatic alerts to the public within seconds of detecting seismic activity (Hoshiba et al., 2011).

The experience of the 2011 Tohoku disaster revealed both the strengths of Japan's coordination system and its limitations, particularly in managing the unprecedented simultaneous occurrence of earthquake, tsunami, and nuclear emergency. Subsequent reforms strengthened inter-ministry coordination protocols and the role of the Prime Minister's Office in crisis command (Djalante et al., 2013). The Philippine NDRRMC's multi-agency composition, which includes all relevant national government agencies alongside civil society and private sector representatives, reflects a comprehensive multi-stakeholder governance philosophy. However, coordination challenges persist in rapidly escalating disaster situations (Lassa et al., 2019).

Community Engagement and Local Governance

One of Japan's most celebrated disaster management assets is its strong culture of community preparedness, institutionalized through the Jishu-Bosai Organizations (self-governing disaster prevention organizations) present in virtually every neighborhood across the country. These organizations, supported by municipal governments, conduct regular evacuation drills, maintain community emergency supply stockpiles, and provide critical social support networks for vulnerable populations during disasters (Nakagawa & Shaw, 2004). The annually observed "Disaster Prevention Day" on September 1 reflects the depth of disaster risk culture embedded in Japanese society.

The Philippines has made significant strides in community-based disaster risk management (CBDRM) through programs such as the Grassroots Participatory Budgeting and Community-Based Monitoring Systems. The Office of Civil Defense (OCD) and the NDRRMC have promoted barangay-level (village-level) disaster risk reduction councils as the primary interface between communities and the formal DRRM system. Research by Gaillard and Mercer (2013) highlights how indigenous and local knowledge systems have been increasingly integrated into Philippine CBDRM programs, enhancing their cultural relevance and effectiveness. Nevertheless, the quality and resourcing of community-level preparedness varies enormously across the archipelago's more than 42,000 barangays.

Post-Disaster Recovery and Adaptive Governance

Japan's post-disaster recovery governance has evolved significantly through lessons learned from major disasters. The recovery process following the 2011 Tohoku disaster demonstrated Japan's long-term commitment to comprehensive reconstruction and "building back better" principles (Aldrich, 2012). The Reconstruction Agency, established in 2012, provided a dedicated institutional mechanism for coordinating the multi-year recovery effort across the affected Tohoku prefectures. Repeated application of adaptive learning through legislative reform has been a defining feature of Japan's disaster governance trajectory.

The Philippines' recovery experience from the 2013 Bohol earthquake and Super Typhoon Haiyan revealed both the resilience of Filipino communities and persistent institutional challenges in post-disaster recovery governance. The establishment of the Office of the Presidential Assistant for Rehabilitation and Recovery (OPARR) following Haiyan represented an adaptive institutional innovation, though critics noted limited coordination with the existing NDRRMC structure (Lasco & Mayuga, 2014). These experiences underscore the importance of pre-established recovery governance frameworks that can be activated rapidly following major disasters.

5. Comparative Analysis and Key Lessons

The comparative analysis of Japan and the Philippines' disaster management systems yields five critical lessons for public administration in earthquake-prone countries.

First, strong and adaptive legal frameworks are foundational. Both Japan and the Philippines demonstrate that explicit legislative mandates for disaster risk reduction—backed by dedicated institutional structures and budgetary allocations—are essential preconditions for effective disaster governance. The iterative amendment of Japan's Disaster Countermeasures Basic Act in response to each major disaster exemplifies adaptive governance in practice (Kaneko, 2012).

Second, investment in early warning systems and infrastructure is non-negotiable. Japan's earthquake early warning system, operated by the JMA, has demonstrably reduced casualties by providing seconds to minutes of advance warning. The Philippines' investment in its seismic monitoring network through PHIVOLCS reflects similar ambitions, though coverage gaps remain in remote areas (Solidum, 2008).

Third, balancing centralization and decentralization is crucial. Japan's centrally guided but locally implemented model ensures consistency while allowing contextual adaptation. The Philippines' decentralized model offers greater community ownership but requires sustained capacity-building investments at the local government level to be effective. Neither model is universally superior; the optimal balance depends on each country's fiscal capacity, governance culture, and institutional history.

Fourth, community resilience is a strategic asset, not a supplementary activity. Japan's Jishu-Bosai Organizations and the Philippines' barangay-level DRRM councils both demonstrate that community-level institutions, when properly supported, substantially extend the reach and effectiveness of formal disaster management systems. Social capital, mutual aid networks, and community disaster risk knowledge are resources that public administrators must nurture systematically (Aldrich, 2012; Nakagawa & Shaw, 2004).

Fifth, post-disaster recovery governance requires pre-established institutional frameworks. Both countries' experiences underscore that recovery governance should not be improvised in the wake of disaster. Pre-designated recovery agencies, pre-agreed coordination protocols, and pre-allocated recovery financing mechanisms significantly accelerate the recovery process and reduce the governance vacuum that often follows major disasters (Aldrich, 2012; Lasco & Mayuga, 2014).

6. Conclusion

This comparative study of disaster management systems in Japan and the Philippines reveals that effective earthquake disaster governance is not a product of any single institutional design but rather the result of sustained investment across multiple governance dimensions: legal frameworks, institutional capacity, inter-agency coordination, community resilience, and adaptive learning. Japan's experience demonstrates the transformative power of iterative legislative reform and long-term infrastructure investment, while the Philippines' experience illustrates both the promise and the challenges of decentralized, community-centered disaster governance.

For earthquake-prone developing countries, the key policy imperative is to build disaster governance systems that are simultaneously robust and adaptive—capable of delivering consistent, well-coordinated responses while remaining flexible enough to learn from each disaster experience and evolve accordingly. Public administrators must champion cross-sectoral collaboration, invest in local government capacity, embed disaster risk awareness in everyday governance, and ensure that post-disaster recovery frameworks are established well before disasters strike.

Future research should examine the role of digital technologies and artificial intelligence in enhancing disaster early warning and response coordination, as well as the governance

implications of climate change-induced increases in multi-hazard disaster risks. Longitudinal comparative studies tracking institutional reforms over time would also contribute valuable insights to the field of comparative disaster public administration.

References

Aldrich, D. P. (2012). *Building resilience: Social capital in post-disaster recovery*. University of Chicago Press. https://doi.org/10.7208/chicago/9780226012896.001.0001

Bankoff, G. (2003). *Cultures of disaster: Society and natural hazard in the Philippines*. Routledge. https://doi.org/10.4324/9780203221891

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Cabinet Office of Japan. (2015). *Disaster management in Japan*. Government of Japan. https://www.bousai.go.jp/1info/pdf/saigaipanf_e.pdf

Comfort, L. K., Boin, A., & Demchak, C. C. (Eds.). (2010). *Designing resilience: Preparing for extreme events*. University of Pittsburgh Press. https://doi.org/10.2307/j.ctt5hjqm1

Djalante, R., Holley, C., Thomalla, F., & Carnegie, M. (2013). Pathways for adaptive and integrated disaster resilience. *Natural Hazards, 69*(3), 2105–2135. https://doi.org/10.1007/s11069-013-0797-5

Farazmand, A. (2014). Crisis and emergency management: Theory and practice. In A. Farazmand (Ed.), *Crisis and emergency management: Theory and practice* (pp. 1–24). CRC Press. https://doi.org/10.1201/b17218

Gaillard, J. C., & Mercer, J. (2013). From knowledge to action: Bridging gaps in disaster risk reduction. *Progress in Human Geography, 37*(1), 93–114. https://doi.org/10.1177/0309132512446717

Hoshiba, M., Ozaki, M., Nagano, O., & Yabe, S. (2011). Toward real-time prediction of seismic intensity without magnitude and location. *Earth, Planets and Space, 63*(5), 579–584. https://doi.org/10.5047/eps.2011.02.014

Kaneko, Y. (2012). Japan's disaster management system: Lessons from the 2011 East Japan earthquake. *Asian Journal of Environment and Disaster Management, 4*(2), 127–142. https://doi.org/10.3850/S179392402012000283

Lasco, G., & Mayuga, J. (2014). Governing disaster: An analysis of the post-Haiyan recovery governance in the Philippines. *Jamba: Journal of Disaster Risk Studies, 6*(1), 1–10. https://doi.org/10.4102/jamba.v6i1.111

Lassa, J. A., Surjan, A., Caballero-Anthony, M., & Fisher, R. (2019). Assessing national institutional capacities for disaster risk reduction. *International Journal of Disaster Risk Reduction, 34*, 202–218. https://doi.org/10.1016/j.ijdrr.2018.11.023

Mori, N., Takahashi, T., Yasuda, T., & Yanagisawa, H. (2011). Survey of 2011 Tohoku earthquake tsunami inundation and run-up. *Geophysical Research Letters, 38*(7). https://doi.org/10.1029/2011GL049210

Nakagawa, Y., & Shaw, R. (2004). Social capital: A missing link to disaster recovery. *International Journal of Mass Emergencies and Disasters, 22*(1), 5–34.

National Disaster Risk Reduction and Management Council. (2011). *National disaster risk reduction and management plan 2011–2028*. https://www.ndrrmc.gov.ph

Osborne, S. P. (2010). *The new public governance? Emerging perspectives on the theory and practice of public governance*. Routledge. https://doi.org/10.4324/9780203861684

Ostrom, E. (2005). *Understanding institutional diversity*. Princeton University Press. https://doi.org/10.1515/9781400831739

Shaw, R., & Goda, K. (2004). From disaster to sustainable civil society: The Kobe experience. *Disasters, 28*(1), 16–40. https://doi.org/10.1111/j.0361-3666.2004.00241.x

Solidum, R. U. (2008). Earthquake hazard assessment in the Philippines. *Journal of Disaster Research, 3*(3), 157–164. https://doi.org/10.20965/jdr.2008.p0157

Tierney, K. (2012). Disaster governance: Social, political, and economic dimensions. *Annual Review of Environment and Resources, 37*, 341–363. https://doi.org/10.1146/annurev-environ-020911-095618

United Nations Office for Disaster Risk Reduction. (2015). *Sendai framework for disaster risk reduction 2015–2030*. https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

Uy, N., Shaw, R., & Takeuchi, Y. (2011). Advancing local disaster risk reduction: Lessons from CBDRM in the Philippines. *International Journal of Disaster Risk Science, 2*(3), 11–22. https://doi.org/10.1007/s13753-011-0011-x

Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications.