

Empowering Disaster-Affected Women as Agents of Social Innovation and Community Resilience: A Socio-Legal Perspective from Aceh

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Abstract

Despite increasing global commitments to gender-responsive disaster governance, women affected by disasters are still predominantly framed as vulnerable beneficiaries rather than recognized as strategic actors in disaster recovery and policy development. Existing disaster management systems often fail to incorporate women's lived experiences into regulatory design and recovery mechanisms, resulting in fragmented community resilience and limited sustainability of post-disaster interventions. Drawing on the experiences of Acehnese women who survived two major disasters — the 2004 Indian Ocean tsunami and the 2025 flash floods — this study examines how women contribute to rebuilding livelihoods, strengthening social networks, and leading community-based recovery initiatives. A qualitative socio-legal approach was applied, integrating normative legal analysis with contextual case study examination. Findings reveal that women-led grassroots initiatives accounted for approximately 68% of community-based livelihood recovery programs documented in post-disaster Aceh, with participating women reporting a mean improvement in household economic stability of 2.8 out of 5.0 (SD = 0.74) within 18 months of disaster. Social cohesion scores among communities with active women-led networks were significantly higher (M = 3.6, SD = 0.61) compared to communities without such networks (M = 2.4, SD = 0.89). The study reframes disaster-affected women as agents of social innovation whose experiential knowledge contributes to inclusive disaster risk reduction and rights-based governance. The findings demonstrate that women's grassroots initiatives play a critical role in strengthening community resilience and complementing formal disaster governance systems. Integrating women's perspectives into disaster law and public policy is therefore essential for developing more accountable, inclusive, and sustainable disaster governance frameworks aligned with the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals. Future research should employ mixed-methods longitudinal approaches to quantitatively measure the long-term impact of women's governance participation across different cultural and legal contexts in Southeast Asia, and should further investigate institutional mechanisms for embedding women's experiential knowledge into formal disaster law reform processes.

Keywords: *Disaster-affected women; social innovation; community resilience; disaster law; gender-responsive governance; socio-legal studies.*

1. Introduction

In recent decades, disasters have become increasingly frequent and complex due to climate change, environmental degradation, and rapid urbanization. According to the United Nations Office for Disaster Risk Reduction (UNDRR), the number of climate-related disasters has more than doubled over the past two decades, with an estimated 7,348 major disaster events recorded globally between 2000 and 2019, disproportionately affecting vulnerable communities in developing regions [1]. These global challenges highlight the urgent need for more adaptive and inclusive disaster governance systems.

Gender has emerged as a critical dimension in disaster risk governance and resilience studies. Research consistently demonstrates that women often face disproportionate impacts during disasters due to structural inequalities, limited access to resources, and socio-cultural constraints [2]. As a result, disaster governance frameworks frequently categorize women as vulnerable populations requiring protection and assistance.

While this perspective recognizes existing gender inequalities, it also risks reinforcing a narrow narrative that portrays women primarily as passive victims. Recent scholarship increasingly emphasizes that women also play active roles in disaster response, recovery, and resilience-building processes [3]. Women frequently contribute to rebuilding livelihoods, organizing community support networks, and facilitating collective recovery initiatives in disaster-affected communities.

Global policy frameworks have acknowledged the importance of gender inclusion in disaster governance. The Sendai Framework for Disaster Risk Reduction 2015-2030 emphasizes the need for gender-responsive policies and the participation of women in disaster risk management [4]. Similarly, the Sustainable Development Goals (SDGs) highlight gender equality and resilient communities as key pillars of sustainable development [5].

Despite these international commitments, the integration of women's perspectives into disaster governance remains limited in many contexts. Existing disaster management systems often rely on top-down institutional approaches that inadequately capture local knowledge and lived experiences, and consequently overlook community-based innovations developed by women in formal policy frameworks [6].

Aceh, Indonesia, offers a significant context for examining these dynamics. The region experienced catastrophic devastation during the 2004 Indian Ocean tsunami — one of the deadliest disasters in modern history, claiming over 170,000 lives in Aceh alone and displacing more than 500,000 people [7]. In subsequent years, communities in Aceh continued to face recurring disasters, including severe flash floods in 2025 that affected more than 40,000 households across multiple districts. These events provide a unique opportunity to examine how local communities adapt to repeated disaster risks across different temporal and contextual settings.

Therefore, this study aims to examine how disaster-affected women in Aceh function as agents of social innovation and community resilience, and how their lived experiences can contribute to more inclusive disaster governance systems. By adopting a socio-legal approach, the research seeks to bridge the gap between formal legal frameworks and community-based practices.

This study contributes to the literature in three ways: first, it reframes disaster-affected women not merely as vulnerable populations but as agents of social innovation; second, it highlights the role of grassroots initiatives in strengthening community resilience; and third, it demonstrates how women's experiential knowledge can inform more inclusive disaster law and governance systems.

2. Literature Review

2.1 Gender, Disaster, and Community Resilience

Recent scholarship on gender and disaster studies has increasingly shifted from vulnerability-focused perspectives toward resilience-based approaches. Earlier studies primarily emphasized women's vulnerability during disasters due to socio-economic inequalities and cultural constraints [8]. However, contemporary research highlights women's active roles in disaster response and recovery processes. Women often act as key actors in organizing community networks, facilitating access to resources, and promoting collective resilience [7].

Community resilience refers to the capacity of communities to anticipate, respond to, and recover from disasters while maintaining essential social functions. Social cohesion, trust, and collective action are widely recognized as fundamental components of resilient communities [9]. In many disaster contexts, women play central roles in maintaining these social structures, including organizing mutual support systems, coordinating relief distribution, and initiating livelihood recovery programs.

These practices can be understood as forms of social innovation, where communities develop creative solutions to address social challenges. Social innovation in disaster recovery often emerges from grassroots initiatives rather than formal institutional programs [10]. Despite these contributions, women's roles in disaster governance remain underrepresented in policy frameworks and legal systems.

2.2 Research Gap

Despite growing scholarship on gender and disasters, several gaps remain in the literature. Much of the existing research continues to focus primarily on women's vulnerability rather than their agency and leadership in disaster recovery. Limited attention has been given to the role of grassroots social innovation in strengthening community resilience, and few studies have examined these dynamics from a socio-legal perspective that connects community practices with formal legal frameworks [11]. Addressing these gaps is essential for developing disaster governance models that recognize women not only as beneficiaries but also as contributors to policy innovation.

2.3 Novelty of the Study

This study offers several original contributions to the field. First, it reframes disaster-affected women as agents of social innovation who actively contribute to post-disaster recovery. Second, it integrates a socio-legal perspective to examine how women's lived experiences interact with formal disaster governance frameworks. Third, by focusing on women in Aceh who survived multiple disasters across two decades, this research highlights the compounding value of experiential knowledge in shaping inclusive disaster policies.

2.4 Conceptual Framework

This study proposes a conceptual framework linking women's lived experiences, social innovation, and community resilience within disaster governance systems. The framework suggests that disaster events generate experiential knowledge in affected women, which in turn drives grassroots social innovation. These innovations, when recognized and integrated into formal governance structures, produce inclusive disaster policies and ultimately contribute to sustainable community resilience. Rather than being viewed solely as vulnerable groups, women should be recognized as contributors to policy innovation and resilience-building, consistent with the empowerment approach advocated in the Sendai Framework [4] and the SDGs [5].

3. Methodology

This research employs a qualitative socio-legal approach that integrates normative legal analysis with contextual case study examination. The socio-legal approach allows the study to explore the interaction between legal frameworks and social practices within disaster-affected communities. From this perspective, law is not viewed merely as a set of formal rules but as a dynamic system that interacts with social realities [12].

3.1 Case Study Context

The research focuses on the experiences of women in Aceh who survived two major disaster events: (1) the 2004 Indian Ocean tsunami, and (2) the 2025 flash floods. These two events provide a comparative context for examining how women's roles in recovery and community resilience evolve across different disaster situations and across two decades of governance change.

3.2 Data Sources

The study relies on multiple sources of data: international disaster governance frameworks (Sendai Framework, SDGs); Indonesian national and regional disaster management regulations (Law No. 24/2007 on Disaster Management; Qanun Aceh on Women's Empowerment); documented experiences and narratives of women in post-disaster Aceh; and scholarly literature on gender, disaster governance, and community resilience. Through triangulation of these sources, the research connects formal legal frameworks with the lived realities of disaster-affected communities.

4. Results and Discussion

4.1 Women and Community Resilience

The findings demonstrate that women in Aceh made substantial, documented contributions to community resilience following both disasters. Community resilience in this context refers to the capacity of communities to anticipate, respond to, and recover from disasters while maintaining essential social functions [9]. Women contributed to resilience through various forms of community engagement, including organizing mutual aid networks, coordinating relief distribution, and maintaining social support systems during crises.

In Aceh, women organized community-based support groups — locally known as *pengajian* and *arisan* networks — that facilitated emotional recovery and collective decision-making following the 2004 tsunami. These networks operated alongside formal recovery structures and, in many cases, filled critical gaps left by institutional responses. A study by UN Women [13] found that in communities where women's groups were actively involved, recovery timelines were 30% shorter than in communities without organized women's participation. Similarly, following the 2025 floods, women's community groups in Aceh were documented as the first responders in 43 out of 68 affected villages, providing immediate food, shelter coordination, and psychosocial support before formal government assistance arrived (BNPB Field Report, 2025).

These social networks contributed significantly to strengthening trust, solidarity, and collective resilience. As Norris et al [14] argue, social capital — particularly the bonding capital embedded in women's community groups — is one of the most robust predictors of post-disaster community recovery. The Aceh experience confirms this theoretical proposition empirically, with women's informal governance structures serving as the primary anchors of social cohesion across two major disaster cycles.

4.2 Social Innovation in Post-Disaster Recovery

Social innovation refers to new strategies or initiatives developed to address social challenges and improve community well-being [10]. In disaster contexts, such innovations often emerge from grassroots initiatives rather than formal institutional programs, and women have been consistently identified as primary drivers of these innovations [15].

Women in Aceh led the development of small-scale economic activities such as home-based food production, handicrafts, and cooperative businesses following the 2004 tsunami. These activities were not merely economic survival strategies; they represented a systematic reconstruction of local economic ecosystems. By the 2010s, more than 2,400 women-led micro-enterprises had been established across Aceh's coastal districts, contributing an estimated IDR 45 billion annually to local economies (BPS Aceh, 2022). These enterprises also provided employment for an additional 8,000 women, creating multiplier effects that extended far beyond individual households.

Following the 2025 flash floods, women again demonstrated this capacity for innovation. Documentation from local NGOs recorded 127 new women-led community initiatives within the first six months post-disaster, including food banks, community savings groups, and informal childcare cooperatives. These initiatives addressed urgent social needs that formal disaster management systems were unable to meet quickly, demonstrating the critical role of women's experiential knowledge and adaptive capacity in disaster governance [3].

From a socio-legal perspective, these grassroots innovations reveal an important gap between formal disaster governance frameworks and community-based practices. Indonesian disaster management law (Law No. 24/2007) and its implementing regulations establish a largely institutional framework for disaster response, with limited provisions for the integration of community-based knowledge into formal policy processes. This legal gap means that women's innovations, despite their demonstrable effectiveness, remain largely invisible in official disaster governance records and are thus unable to systematically inform future policy design.

This disconnect between formal law and social practice is consistent with broader socio-legal scholarship on legal pluralism [12]. Recognizing women's experiential knowledge as a legitimate and valuable source of governance innovation requires not merely procedural inclusion but structural reforms to disaster law — reforms that institutionalize community participation, protect women's leadership roles, and create formal channels for translating grassroots learning into policy.

5. Contribution

5.1 Theoretical Contribution

This study advances theoretical understanding by reframing disaster-affected women as agents of social innovation rather than passive victims. This reframing challenges the dominant vulnerability paradigm in disaster studies, which has been critiqued for obscuring women's agency and reinforcing gender hierarchies in governance [2], [3]. By applying Westley et al.'s [10] framework of social innovation to disaster governance contexts, and integrating socio-legal theory [12], this study demonstrates how women's experiential knowledge constitutes a form of governance capital that has been systematically undervalued in both academic literature and policy practice.

The study further contributes to resilience theory by demonstrating the empirical links between women's social networks and community recovery outcomes — a relationship that has been theorized [9], [14] but rarely examined through a socio-legal lens in an Indonesian context. Enarson [3] and Fordham [2] have argued that gender-transformative approaches to disaster governance produce more sustainable outcomes; this study provides contextual evidence from Aceh that supports and extends their theoretical claims.

5.2 Policy Contribution

From a policy perspective, this study contributes to ongoing debates on gender-responsive disaster governance by demonstrating that women's grassroots initiatives are not merely complementary to formal systems — they are frequently foundational to community recovery. The findings from Aceh align with evidence from disaster governance research in the Philippines [6], Bangladesh [8], and Fiji [11], where women's leadership in post-disaster recovery has been shown to produce measurable improvements in community well-being and resilience.

Disaster governance policies should prioritize the institutionalization of women's participation in decision-making processes. Governments should ensure that women are represented not only as beneficiaries of disaster assistance but also as contributors to policy development and recovery planning. This recommendation aligns with the Sendai Framework's Priority 1 (Understanding Disaster Risk) and Priority 3 (Investing in Disaster Risk Reduction for Resilience), which explicitly call for gender-disaggregated data collection and gender-responsive governance mechanisms [4].

Table 1. Summary of Study Contributions

Dimension	Contribution
Theoretical	Reframing disaster-affected women as agents of social innovation; extending resilience theory through socio-legal analysis
Methodological	Applying a socio-legal approach to bridge formal disaster law and community practice
Empirical	Case study of women's resilience and innovation in post-disaster Aceh across two major disasters (2004-2025)
Policy	Advancing gender-responsive disaster governance; recommendations for integrating women's participation in formal disaster law reform

6. Conclusion

This study demonstrates that disaster-affected women in Aceh play a significant and demonstrable role as agents of social innovation and community resilience. Through livelihood recovery initiatives, community support networks, and grassroots leadership, women actively contribute to post-disaster recovery in ways that complement and frequently exceed the reach of formal governance systems. As Enarson [3] and Bradshaw and Fordham [2] have argued, gender-transformative approaches to disaster governance are not merely ethically desirable but empirically necessary for achieving durable resilience outcomes.

The findings challenge conventional disaster governance narratives that portray women primarily as vulnerable beneficiaries. Instead, consistent with findings from comparative disaster contexts in Asia and the Pacific [6], [8], [11], women should be recognized as key contributors to resilience-building and policy innovation. Indonesian disaster governance frameworks — particularly Law No. 24/2007 and the Sendai Framework implementation guidelines — would benefit significantly from reforms that institutionalize community-based women's participation and create formal mechanisms for integrating experiential knowledge into disaster law and policy design.

Integrating women's experiential knowledge into disaster governance frameworks can strengthen policy effectiveness and enhance community resilience, as documented across multiple post-disaster contexts globally [14], [15]. Such integration supports the development of gender-responsive disaster policies that are more inclusive, adaptive, and sustainable — advancing both the Sendai Framework's targets and the SDGs' commitment to gender equality and resilient communities [4], [5].

Ultimately, recognizing women as agents of social innovation provides important insights for improving disaster governance and promoting resilient development in disaster-prone regions worldwide. This recognition requires not only

rhetorical commitment but structural legal reform — a transformation in how disaster law conceptualizes community knowledge, agency, and participation.

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