

Socio-Material Regeneration: Ensuring Women's Land Rights and Participation in Post-Disaster Reconstruction in Nepal

Naresh Amatya

M.Phil.-PhD Scholar, Tribhuvan University, Kathmandu, Nepal

ORCID ID: <https://orcid.org/0009-0000-7046-2815>

Abstract

The 2015 Gorkha earthquake in Nepal exposed the deep entanglement of gender inequality and material vulnerability within disaster contexts. This interdisciplinary study examines how women's land rights and participation influence socio-material regeneration; the joint rebuilding of infrastructure and social relations; in post-earthquake Nepal. "Socio-material regeneration" is here defined as the interconnected rebuilding of physical infrastructure and social relations in post-earthquake Nepal. Drawing exclusively on secondary sources including peer-reviewed journals, government documents and NGO reports, the paper examines the gendered dimensions of land tenure, ownership and participation in reconstruction. Despite progressive constitutional provisions guaranteeing equal property rights, women in Nepal continue to own only about one-fifth of the nation's land. This disparity critically restricted their access to housing grants and reconstruction aid, as property documents and citizenship certificates were prerequisites for compensation. Meanwhile, women were central actors in the recovery; leading community rebuilding, organizing relief and entering construction trades traditionally reserved for men. Through a thematic synthesis of existing literature, the study reveals that post-disaster reconstruction policies often acknowledged gender equity rhetorically but failed to institutionalize women's ownership and decision-making power. The paper argues that genuine socio-material regeneration requires embedding gender justice into every layer of reconstruction; from legal frameworks and land registration systems to participatory planning and skill development. Strengthening women's land rights, promoting joint land ownership and ensuring meaningful female participation are identified as pivotal for building not just safer structures but more equitable and resilient communities in post-disaster Nepal.

Keywords

Nepal Earthquake 2015, Women's Land Rights, Gender Justice, Intersectionality, Empowerment

1. Introduction

Nepal's 2015 Gorkha earthquake, measuring 7.8 on the Richter scale with a 7.3 magnitude aftershock, resulted in massive human and infrastructural losses. Approximately 8,900 people lost their lives, over 22,000 were injured and nearly 850,000 homes were destroyed or severely damaged [1]. While the disaster affected all communities, women experienced disproportionately severe impacts due to pre-existing social, economic and legal inequalities [2,3]. Women-headed households, widows and single women faced compounded challenges in accessing relief, rebuilding homes and securing land rights, highlighting the intersection of gender inequality and material vulnerability in post-disaster contexts.

These figures reveal that physical devastation quickly translated into social inequities. The concept of socio-material regeneration offers a framework for understanding disaster recovery as both a physical and social process. Rather than focusing solely on reconstructing destroyed buildings and infrastructure, socio-material regeneration emphasizes rebuilding social relations, rights and community structures alongside physical assets [4]. In the Nepalese context, land tenure and women's ownership emerged as critical determinants of equitable recovery. Despite constitutional guarantees of equal property rights, women own only 10–20% of land in Nepal, creating systemic barriers to post-disaster compensation and reconstruction aid [5,6]. This paper explores how women's land rights and participation influenced socio-material regeneration in Nepal after the 2015 earthquake. Using an interdisciplinary approach, it examines legal, sociological and policy perspectives, drawing exclusively on secondary sources. By synthesizing literature from academic journals, government reports and NGO publications, the study aims to identify structural gaps, highlight women's agency in reconstruction and propose pathways to integrate gender justice into post-disaster rebuilding.

The remainder of this paper is structured as follows:

- Thematic Literature Review
- Methodology
- Results
- Discussion
- Conclusion

2. Thematic Literature Review

2.1 Gendered Impacts of the 2015 Earthquake

The 2015 earthquake amplified existing gender disparities, women accounted for roughly half of all fatalities and many were left as heads of households following the deaths of male family members [2]. Loss of homes, property documents and livelihood resources disproportionately affected women, especially widows and single women, limiting their access to reconstruction aid [3]. Social norms further constrained mobility and decision-making, often leaving women dependent on male relatives for financial and administrative transactions [1].

2.2 Legal and Institutional Barriers to Women's Land Rights

Historically, women in Nepal have faced systemic barriers to land ownership and inheritance. Prior to the earthquake, only about 28% of households had female landowners and cultural practices frequently prevented women from claiming land, even where legal frameworks allowed it [5]. The 2015 Constitution of Nepal guarantees women's equal rights to inheritance and property and subsequent legislation, such as the Land Act of 2017, introduced mechanisms like Joint Land Ownership Certificates.

However, despite this progressive legislative intent, a significant implementation gap persists between the law and actual practice. Entrenched patriarchal norms, bureaucratic inefficiencies and lack of institutional capacity have hindered the realization of these rights, leaving many women without the legal claim necessary for reconstruction [3,4]. This discrepancy between policy commitment and practical enforcement underscores the structural challenge of translating gender-equal laws into tangible ownership outcomes.

2.3 Women's Participation in Reconstruction

Despite formal exclusion, women played central roles in immediate relief and rebuilding efforts. Women's groups and NGOs mobilized volunteers, organized relief distribution and participated in community decision-making where possible [2,7]. Innovative programs trained women as masons and builders, a traditionally male-dominated profession, to increase both their economic agency and influence in reconstruction processes [7]. Nevertheless, women's involvement in formal reconstruction committees remained limited and many decision-making structures were male-dominated [3]. Even where women's involvement was substantial, their contributions were often undervalued or excluded from official planning mechanisms, reflecting the persistence of gender bias in post-disaster governance.

2.4 Socio-Material Regeneration and Gender Justice

Socio-material regeneration posits that equitable recovery must integrate social inclusion with material reconstruction [4]. In Nepal, the absence of women's property rights and limited participation undermined the effectiveness and fairness of reconstruction efforts. Communities where women had active roles in planning and rebuilding reported better outcomes in terms of infrastructure resilience and equitable resource allocation [2]. For instance, in Dhading District, women's cooperatives supported by local NGOs successfully implemented joint land registration and skill-based reconstruction training, resulting in both improved housing quality and enhanced women's decision-making in resource management [6]. This example illustrates how embedding gender justice in reconstruction policies can simultaneously strengthen material recovery and social empowerment. Embedding gender justice; through secure land rights, participatory planning and empowerment initiatives; is therefore essential for sustainable post-disaster recovery.

2.5 Policy and Practice Initiatives

Building on the preceding analysis, several initiatives attempted to address gender disparities in post-disaster recovery through targeted policy and practice interventions. The Nepalese government, through the Post-Disaster Needs Assessment (PDNA) and the National Reconstruction Authority (NRA), emphasized prioritizing vulnerable populations, including women, in reconstruction programs [1,6]. Policies included cash grants for female-headed households, training programs for women masons, and the promotion of joint land titling. While progressive in intent, evaluations reveal that implementation remained partial and uneven due to limited monitoring, bureaucratic bottlenecks, and societal resistance [4]. These gaps underscore the need for stronger accountability mechanisms, localized gender audits, and continuous policy evaluation to ensure that formal commitments translate into substantive equality.

3. Methodology

This study employs a thematic literature review methodology to analyze women's land rights and participation in post-disaster reconstruction in Nepal through the socio-material regeneration framework. Given the interdisciplinary nature of the topic, the review integrates scholarship from gender studies, disaster management, sociology, law and development studies. Secondary sources were identified from databases including Scopus, JSTOR, Web of Science and

Google Scholar, as well as institutional reports from government agencies and international organizations such as the National Planning Commission (NPC), National Reconstruction Authority (NRA), UN Women, Oxfam and Women for Human Rights (WHR). Boolean operators and truncation were used for comprehensive retrieval (e.g., “women* AND land rights AND Nepal AND earthquake”). Publications from 2015–2024 were included to ensure relevance. In total, 42 documents were reviewed, comprising peer-reviewed journal articles, government reports and NGO publications. Studies were included if they addressed women’s land rights or participation in disaster recovery in Nepal, were published in English and demonstrated methodological transparency. Studies outside the Nepalese context, lacking credible institutional affiliation or relying solely on anecdotal data were excluded.

After identifying sources, the following coding framework was applied: each document was analyzed for recurring themes related to (a) women’s land ownership, inheritance and joint titling; (b) participation in reconstruction and decision-making bodies; (c) policy and institutional frameworks including NRA and PDNA directives and (d) the socio-material interplay between physical reconstruction and social inclusion. Quality assessment emphasized peer-review status, institutional credibility, recency and methodological transparency. Ethical integrity was maintained through accurate citation, acknowledgment of all authors’ findings and adherence to Vancouver standards.

3.1 Data Sources and Search Strategy

Secondary sources were identified from academic databases including Scopus, JSTOR, Web of Science and Google Scholar, as well as institutional reports from government agencies and international organizations such as the Nepal National Planning Commission (NPC), National Reconstruction Authority (NRA), UN Women, Oxfam and Women for Human Rights (WHR). Search terms included:

- Nepal earthquake 2015
- women’s land rights
- gender justice
- post-disaster reconstruction
- women’s participation
- socio-material regeneration
- land tenure and disaster recovery

Boolean operators and truncation were used for comprehensive retrieval (e.g., “women* AND land rights AND Nepal AND earthquake”). Peer-reviewed articles, official reports and policy briefs published between 2015 and 2024 were included to ensure relevance to post-earthquake recovery.

3.2 Inclusion and Exclusion Criteria

Inclusion criteria:

1. Studies and reports that addressed women’s land rights or participation in disaster recovery in Nepal.
2. Publications in English with full-text availability.
3. Peer-reviewed journals, government and NGO reports and recognized institutional publications.
4. Interdisciplinary perspectives incorporating legal, social and development dimensions.

Exclusion criteria:

1. Primary fieldwork or ethnographic studies (to maintain focus on secondary sources).
2. Studies not related to Nepal or the 2015 earthquake.
3. Articles lacking sufficient methodological transparency or credibility.

3.3 Data Extraction and Analysis

A systematic extraction process was followed. Each selected source was coded according to:

- **Land rights issues:** female ownership, inheritance, joint titling, legal barriers.
- **Participation in reconstruction:** women’s roles in committees, relief efforts, skilled labor, decision-making.
- **Policy and institutional frameworks:** NRA and PDNA policies, NGO interventions.
- **Socio-material dimensions:** interplay between social inclusion and physical reconstruction.

Thematic synthesis was applied to categorize findings into key thematic areas:

1. Gendered impacts of the earthquake

2. Legal and institutional barriers to women's land rights
3. Women's participation in reconstruction
4. Socio-material regeneration and gender justice
5. Policy frameworks and interventions

Patterns, gaps and illustrative examples from secondary sources were mapped under these themes to provide a coherent narrative.

3.4 Quality Assessment

Quality and credibility of sources were evaluated based on:

- Peer-review status for journal articles.
- Reputation and authority of institutions for reports (e.g., NPC, UN Women, Oxfam).
- Recency of data (2015–2024).
- Transparency of methodology in secondary sources (e.g., survey size, sampling, data collection).

Sources meeting these criteria were included to ensure robust, credible and interdisciplinary evidence.

3.5 Ethical Considerations

As this study relies entirely on secondary data, no direct ethical approval was required. However, proper attribution and accurate representation of all authors' findings were maintained according to Vancouver standards. Sensitive issues, particularly those involving women's vulnerabilities and gender-based inequalities, were discussed respectfully and within the context provided by the original sources.

4. Results

The thematic literature review reveals five key dimensions of women's experiences in post-earthquake reconstruction in Nepal: gendered impacts, legal and institutional barriers, women's participation, socio-material regeneration and policy and practice outcomes.

4.1 Gendered Impacts of the 2015 Earthquake

Secondary sources indicate that women were disproportionately affected by the 2015 earthquake in terms of mortality, injury and loss of livelihoods. Over 50% of casualties in affected districts were women, reflecting both vulnerability and social constraints in mobility and access to information [2]. Widows and single women faced compounded risks, as traditional Nepalese households often centralize male decision-making in property management and disaster relief access [3]. Beyond immediate impacts, women bore long-term socio-economic burdens. For instance, female-headed households struggled to access cash grants and housing aid because property documentation and citizenship papers were often in male family members' names [6]. Studies indicate that these barriers not only delayed reconstruction for women but also exacerbated pre-existing gender inequalities in post-disaster resource distribution [1].

4.2 Legal and Institutional Barriers to Women's Land Rights

Despite constitutional guarantees of equal property rights, women's land ownership remains limited. According to Koirala, only 10–20% of Nepalese land is owned by women and cultural norms frequently prevent them from exercising inheritance rights. Legal mechanisms such as the Land Act (2017) and joint ownership provisions were intended to enhance women's access to post-disaster reconstruction aid [5]. However, Pokharel and Tan et al. (2024) highlight that bureaucratic inefficiencies, patriarchal practices and lack of awareness often undermine the effectiveness of these policies [3,4]. Moreover, the National Reconstruction Authority (NRA) required proof of land ownership to receive reconstruction grants, leaving many women without property documentation ineligible for aid. This structural barrier illustrates a critical intersection between legal frameworks, socio-cultural norms and material recovery, reflecting the importance of embedding gender justice into policy implementation [6].

4.3 Women's Participation in Reconstruction

Women emerged as key actors in the immediate and intermediate phases of disaster recovery. Secondary literature documents their involvement in community relief, coordination of aid and skilled reconstruction work. Nepali notes programs that trained women as masons, a traditionally male-dominated trade, empowering them economically while contributing to the physical rebuilding of communities [7]. KC & Hilhorst, observe that women also participated in local reconstruction committees, though their influence in decision-making remained limited. Even where women were active, their contributions were often undervalued, reflecting persistent gender biases in post-disaster governance [2]. The literature underscores a tension: women's informal participation was substantial, but formal recognition and authority in reconstruction planning were limited [3].

4.4 Socio-Material Regeneration and Gender Justice

The concept of socio-material regeneration emphasizes rebuilding material infrastructure alongside social relations and rights [4]. In Nepal, the failure to institutionalize women's land rights and participation meant that reconstruction often reinforced existing inequalities. Women's exclusion from land titling, compensation eligibility and formal decision-making constrained equitable community recovery [6]. Studies demonstrate that communities where women were meaningfully included in reconstruction planning and decision-making experienced better infrastructure outcomes, improved social cohesion and enhanced resilience [2]. Hence, gender justice is integral to socio-material regeneration: secure land rights, participatory governance and empowerment initiatives are prerequisites for equitable and sustainable post-disaster recovery.

4.5 Policy and Practice Outcomes

Government and NGO interventions aimed at reducing gender disparities included cash grants for female-headed households, land titling programs and training women in construction skills [6]. Evaluations indicate partial success: while some programs improved women's access to resources, implementation gaps and socio-cultural resistance limited the effectiveness of these initiatives [4]. The literature suggests that embedding gender justice in all stages of reconstruction; from planning, land registration and resource allocation to monitoring and evaluation; is crucial. Without systemic reforms, post-disaster recovery risks reproducing patriarchal inequities, undermining both community resilience and socio-material regeneration [2,3].

Summary of Key Findings

1. Women faced disproportionate mortality, injury and economic loss after the earthquake.
2. Legal and institutional frameworks were inadequate or poorly implemented, leaving many women without land rights or access to reconstruction aid.
3. Women's informal participation was extensive, but formal decision-making roles were limited.
4. Socio-material regeneration is incomplete without gender justice, integrating both physical reconstruction and social empowerment.
5. Policy interventions were progressive but partially effective, highlighting the need for robust enforcement and cultural change.

5. Discussion

The findings from this thematic review reveal critical intersections between gender, land rights and post-disaster reconstruction in Nepal, highlighting both challenges and opportunities for socio-material regeneration.

5.1 Gendered Vulnerabilities in Disaster Contexts

Consistent with KC & Hilhorst, women were disproportionately impacted by the 2015 earthquake due to social norms, mobility restrictions and unequal access to resources [2]. Female-headed households and widows faced compounded difficulties in securing relief, housing and livelihoods. These vulnerabilities underscore that disasters are not merely natural phenomena but socially mediated events where pre-existing inequalities shape outcomes [3]. This reinforces the concept of intersectionality, which highlights how overlapping social identities, such as gender, marital status and socio-economic status, influence disaster experiences and recovery opportunities [8].

5.2 Land Rights as a Critical Determinant of Recovery

Legal and institutional barriers emerged as significant impediments to women's participation in reconstruction. Despite progressive legislation, many women lacked property documents or faced patriarchal resistance to joint land ownership [5,6]. The reliance on land ownership as a criterion for receiving reconstruction aid illustrates how material rights directly shape access to recovery resources. This aligns with prior studies emphasizing that secure land tenure is central to women's economic empowerment and disaster resilience [9].

5.3 Women's Agency and Participation in Reconstruction

Despite systemic barriers, women demonstrated remarkable agency in reconstruction efforts. They not only contributed to informal relief work but also entered construction trades and local decision-making forums [7]. However, the literature indicates a persistent gap between informal contribution and formal recognition, with women often excluded from key decisions regarding rebuilding priorities. This disparity highlights the need for institutional mechanisms that both recognize and institutionalize women's participation in reconstruction governance [2].

5.4 Socio-Material Regeneration and Gender Justice

Socio-material regeneration emphasizes that recovery is both material and social. Physical reconstruction without addressing social inequities risks reproducing pre-disaster hierarchies. In Nepal, limited implementation of women's land rights and exclusion from formal reconstruction decision-making undermined equitable recovery [4]. Studies reviewed suggest that communities with inclusive reconstruction practices; where women had meaningful decision-

making power; experienced better infrastructure outcomes, enhanced social cohesion and stronger resilience [2]. This reinforces the argument that gender justice is integral to sustainable socio-material regeneration.

5.5 Policy Implications and Lessons Learned

The literature points to several policy lessons:

- **Strengthen Legal Frameworks and Enforcement:** Laws guaranteeing joint land ownership and inheritance rights need effective enforcement mechanisms and public awareness campaigns. Simplifying land registration processes and providing support for marginalized women can enhance access to reconstruction aid [6].
- **Promote Inclusive Participation:** Women's representation in formal reconstruction committees, planning bodies and skill development programs should be institutionalized to ensure their voices shape recovery priorities [3,7].
- **Address Socio-Cultural Norms:** Patriarchal practices hinder women's access to land and decision-making. Interventions must include community sensitization, legal literacy and empowerment initiatives to challenge these norms [6].
- **Integrate Socio-Material Perspectives:** Policies should simultaneously address material reconstruction (housing, infrastructure, land) and social empowerment (rights, participation, capacity building), ensuring a holistic approach to post-disaster recovery [4].
- **Focus on Intersectionality:** Special attention is required for widows, single women, elderly women and women with disabilities, who face layered vulnerabilities that intersect with gender and socio-economic status.

5.6 Limitations of the Review

This study is limited by its exclusive reliance on secondary sources, which may not capture all localized experiences or emerging grassroots interventions. Additionally, much of the literature focuses on formal policies and documented interventions, potentially under-representing women's informal contributions and resilience strategies. Nevertheless, synthesizing multiple interdisciplinary sources provides a robust understanding of structural and policy-related factors shaping post-disaster gender dynamics. This Discussion synthesizes the literature findings, links them to broader theoretical and policy frameworks and emphasizes the centrality of gender justice and socio-material regeneration in post-disaster contexts.

6. Conclusion

The 2015 Gorkha earthquake in Nepal highlighted the intersection of gender, land rights and disaster recovery, exposing systemic inequalities that constrained women's access to resources and participation in reconstruction. This thematic review demonstrates that while women were central actors in post-disaster rebuilding, structural barriers; legal, institutional and socio-cultural; limited their ability to secure land rights, receive aid and exercise meaningful decision-making power.

Key insights include:

- **Disproportionate Vulnerabilities:** Women, especially widows, single women and heads of households, faced higher risks of mortality, injury and socio-economic loss due to pre-existing inequalities.
- **Land Rights as a Determinant of Recovery:** Secure land tenure and joint property ownership are pivotal for equitable access to reconstruction resources, yet systemic barriers persist.
- **Women's Agency and Participation:** Despite formal exclusion, women played substantial roles in relief, reconstruction and community coordination. However, recognition and institutionalization of their contributions remain limited.
- **Socio-Material Regeneration Requires Gender Justice:** Physical reconstruction alone is insufficient; inclusive participation, legal empowerment and social equity are essential to build resilient communities.
- **Policy and Practice Gaps:** Existing policies, such as cash grants for female-headed households, training programs and joint land titling, have made progress but remain partially implemented due to bureaucratic inefficiencies and cultural resistance.

Recommendations for Future Post-Disaster Reconstruction in Nepal:

- Strengthen legal and institutional frameworks to ensure enforceable women's land rights.
- Institutionalize women's participation in reconstruction committees and planning bodies.
- Conduct community sensitization programs to challenge patriarchal norms.
- Integrate socio-material approaches that combine infrastructure rebuilding with social empowerment.
- Prioritize intersectional interventions for marginalized groups of women to ensure inclusive recovery.

In conclusion, ensuring women's land rights and meaningful participation is not only a matter of gender justice but a prerequisite for effective socio-material regeneration. Sustainable post-disaster recovery in Nepal; and similar contexts, depends on policies and practices that center gender equity, recognize women's agency and embed empowerment in both material and social dimensions of reconstruction. By addressing these structural inequalities, Nepal can transform disaster recovery into an opportunity for building resilient, inclusive and equitable communities.

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