



FROM SHELTER TO RECOVERY: REFRAMING POST-DISASTER HOUSING THROUGH PARTICIPATION, RESILIENCE AND SOCIO-CULTURAL RECOVERY

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ABSTRACT

Post-disaster housing is often evaluated through the number and speed of houses delivered, although housing loss simultaneously disrupts livelihoods, social networks, identity, access to services and community resilience. This review examines post-disaster housing as a socio-spatial recovery process rather than a purely physical reconstruction task. Drawing on disaster-recovery scholarship, participation theory, indigenous-knowledge research, resilience perspectives and the literature assembled in the present study, it synthesises five interdependent dimensions of recovery: physical safety, social continuity, economic recovery, cultural adequacy and institutional capacity. The review finds that participation is most effective when it influences decisions, while resilience depends on the interaction of housing, settlement systems, livelihoods, local knowledge and governance. A conceptual recovery framework is proposed in which risk-sensitive housing, community agency, livelihood continuity, cultural continuity and accountable institutions operate together. The framework offers a basis for evaluating whether housing reconstruction produces durable recovery rather than merely replacing damaged structures.

Keywords: *Community participation; Disaster recovery; Housing resilience; Livelihood recovery; Post-disaster housing; Socio-cultural resilience.*

INTRODUCTION

Post-disaster housing reconstruction is commonly presented as a physical response to damaged or destroyed buildings. However, housing performs multiple functions beyond enclosure: it provides security, privacy, social identity, a base for livelihood activities and a location within community networks. When a dwelling is lost, these functions can be disrupted simultaneously. The thesis literature reviewed for this study therefore treats housing as a socio-spatial system encompassing identity, livelihood security, cultural continuity and psychological stability.

The recovery literature increasingly challenges the assumption that reconstruction is complete when a house has been rebuilt. Kennedy et al. (2008) connect Build Back Better with safety, security, livelihoods, equity and links between transitional and permanent housing. Oliver-Smith (1991) similarly demonstrates that resettlement outcomes depend on site, layout, housing and popular input. These observations suggest that the quality of recovery depends on interactions between the dwelling and its wider settlement and institutional context.

Participation is central to this debate but is also contested. Participation can range from information provision to partnership and decision-making power (Arnstein 1969). Davidson et al. (2007) caution that participation is not inherently beneficial; its form, timing and institutional context matter. Recent reviews likewise identify barriers associated with actors, processes and governance in post-disaster housing participation (Rahmayanti & Rukmana 2024).

This paper develops a conceptual synthesis around a central proposition: resilient post-disaster housing should be evaluated by its capacity to restore and strengthen interconnected physical, social, economic, cultural and institutional systems. The paper therefore moves from the question 'Was housing reconstructed?' to 'Did housing reconstruction enable sustainable recovery?'

REVIEW METHOD

This paper uses a critical conceptual review. It draws first on the literature contained in the research literature underpinning this review on post-disaster housing, including material on sheltering, reconstruction, resilience, participation, indigenous knowledge, rehabilitation and resettlement. Peer-reviewed literature was then used to strengthen the conceptual synthesis around participation, Build Back Better, resettlement, cultural adequacy



and local knowledge. The evidence was organised into five analytical dimensions and examined for relationships rather than pooled effect sizes.

Table 1. Five-dimensional model of post-disaster housing recovery

Dimension	What recovery must restore	Indicative evaluation questions
Physical	Safety, adequate housing, services, accessibility and environmental performance.	Is the dwelling and settlement safe, usable and connected to essential services?
Social	Community networks, dignity, continuity and social support.	Does reconstruction preserve or rebuild social relationships and collective life?
Economic	Livelihood access, affordability and household recovery capacity.	Can households recover economically without housing becoming an additional burden?
Cultural	Identity, local practices, place attachment and indigenous knowledge.	Does the intervention fit local ways of living and recognise local knowledge?
Institutional	Participation, coordination, accountability and policy implementation.	Who decides, who is responsible, and how are community priorities incorporated?

HOUSING AS A SOCIO-SPATIAL RECOVERY SYSTEM

The distinction between shelter and housing provides a useful starting point. Shelter responds to immediate protection, whereas housing supports a broader set of everyday activities and social functions. The transition between these stages is not necessarily linear. Households may repair their existing homes, move to rental accommodation, construct transitional shelters, or progressively upgrade an initial core structure. Consequently, recovery pathways are shaped by household resources and institutional choices as much as by the physical condition of the dwelling.

This perspective changes how housing performance is measured. A technically sound house located far from employment, schools, healthcare, social networks or cultural institutions may produce a weak recovery outcome. Conversely, a modest but adaptable dwelling located within a functioning community and supported by reliable services may provide stronger recovery capacity. The settlement, therefore, becomes part of the housing intervention.

Oliver-Smith (1991) demonstrates the importance of site, layout, housing and popular input in resettlement. These dimensions remain relevant because relocation can alter livelihood patterns, social relationships and place attachment. Housing recovery should therefore be understood at household, neighbourhood and institutional scales simultaneously.

BUILD BACK BETTER AND THE MEANING OF RESILIENCE

Build Back Better is useful because it shifts attention from replacement towards risk reduction and improved recovery. Kennedy et al. (2008) show that its practical meaning includes safety, livelihoods, equity and the relationship between transitional settlement and permanent housing. Yet the phrase 'better' can become vague unless its performance dimensions are specified. A recovery framework requires explicit criteria.

Resilience is similarly multidimensional. In the context of housing, resilience includes resistance to hazards but also the capacity of households and settlements to absorb disruption, adapt to changing conditions and reorganise after disturbance. The thesis literature frames resilience through the interaction of environmental vulnerability, settlement systems and disaster governance. This suggests that resilience cannot be designed solely into a building; it emerges from relationships among buildings, infrastructure, ecosystems, institutions and communities.

COMMUNITY PARTICIPATION: FROM CONSULTATION TO AGENCY

Community participation is often described as a principle of sustainable reconstruction, but the depth of participation matters. Arnstein (1969) conceptualised participation as a ladder of citizen power. In disaster housing, the distinction is particularly important because urgent decisions are frequently centralised. Informing households about a predetermined housing scheme is different from allowing them to influence site selection, design, phasing, settlement layout or implementation.

Davidson et al. (2007) demonstrate that different forms of participation produce different consequences. Sadiqi et al. (2017) identify barriers including limited community capacity, institutional practices and professional



constraints. Rahmayanti and Rukmana (2024) further show that the literature remains concerned with the depth of participation and barriers to meaningful involvement. Participation should consequently be treated as a governance mechanism with defined decision points, not simply as a consultation event.

A practical participation model can operate at four levels: information, preference formation, co-design and shared implementation/monitoring. The appropriate level may differ by decision, but decisions affecting long-term settlement form, household adaptation and relocation should provide meaningful opportunities for affected communities to influence outcomes.

LIVELIHOODS, AFFORDABILITY AND ECONOMIC RECOVERY

Housing reconstruction can unintentionally weaken economic recovery when new locations disconnect residents from employment, tourism, agriculture, markets or social networks that support income. Kennedy et al. (2008) explicitly connect shelter and settlement with livelihoods, while the reviewed literature identifies livelihood disruption as a major dimension of displacement.

Affordability must also be understood over the recovery period. A subsidised dwelling can impose indirect costs through transportation, service charges, maintenance, adaptation or relocation. Likewise, a temporary unit that requires repeated movement can consume household resources. Housing assistance should therefore consider total recovery costs rather than construction expenditure alone.

CULTURAL CONTINUITY, PLACE ATTACHMENT AND LOCAL KNOWLEDGE

Disaster displacement can create a rupture between people and place. Cultural practices, social memory, religious activities and livelihood routines may depend on specific locations. Resettlement that ignores these relationships can generate resistance or weak adoption even when the new housing is technically adequate. Oliver-Smith (1991) highlights resistance and popular participation in resettlement, while the reviewed literature emphasises place attachment and cultural continuity as dimensions of recovery.

Indigenous and local knowledge can also contribute to risk reduction. Mercer et al. (2010) propose integrating indigenous and scientific knowledge through participatory processes. This does not imply that all traditional practices are automatically safe or transferable. Instead, local knowledge should be treated as evidence that can be documented, tested and combined with engineering and environmental knowledge. Such integration can strengthen contextual design while avoiding romanticisation of tradition.

The implication is that cultural continuity should be incorporated at the level of both house and settlement. Spatial arrangements, materials, shared spaces, domestic routines and community institutions can all contribute to the continuity of identity and social networks.

INSTITUTIONAL COORDINATION AND ACCOUNTABILITY

Post-disaster housing commonly involves multiple actors: disaster-management authorities, local government, planners, engineers, architects, NGOs, donors, contractors and affected households. Fragmentation between these actors can produce delays, inconsistent standards and gaps between temporary accommodation and permanent recovery. The thesis literature identifies institutional coordination and policy implementation as critical dimensions of recovery.

Effective governance therefore requires a clear allocation of responsibilities across the recovery pathway. One institution may manage immediate shelter, another may control land, another may provide compensation and another may oversee reconstruction. Without coordination, households can become responsible for navigating the gaps between agencies. A resilient housing system should provide a visible institutional pathway through which households can obtain information, participate in decisions, raise grievances and progress from one recovery stage to the next.

PROPOSED INTEGRATED POST-DISASTER HOUSING RECOVERY FRAMEWORK

Based on the synthesis, this paper proposes an integrated framework in which five dimensions interact rather than operate as separate checklists. Physical safety provides the foundation; social and cultural continuity provide legitimacy and usability; economic recovery enables households to sustain housing; and institutional capacity coordinates the process. Community participation operates across all dimensions as a mechanism for aligning decisions with local needs.



Table 2. Integrated framework for resilient post-disaster housing recovery

Recovery layer	Key components	Desired outcome
Risk-sensitive housing	Hazard assessment, structural safety, climate response, safe siting.	Reduced exposure and safer housing.
Community agency	Information, co-design, decision-making, feedback and monitoring.	Greater ownership, legitimacy and fit.
Socio-cultural continuity	Place attachment, cultural practices, social networks, local knowledge.	Continuity of identity and community life.
Livelihood recovery	Employment access, markets, services, affordability and household resources.	Reduced economic displacement and stronger recovery capacity.
Institutional integration	Clear roles, coordination, accountability, grievance mechanisms and long-term planning.	A coherent recovery pathway rather than fragmented interventions.
Adaptation and learning	Monitoring, incremental modification and lessons from implementation.	Capacity to adjust housing and settlement systems over time.

EVALUATING RECOVERY OUTCOMES

The framework can be operationalised through a balanced evaluation rather than a single housing-delivery indicator. Physical indicators may include safety, adequacy and service access. Social indicators may assess social-network continuity and perceived security. Economic indicators can examine livelihood access and housing-related financial burden. Cultural indicators may examine user satisfaction with spatial and cultural fit. Institutional indicators can measure participation, information access, responsiveness and coordination.

A particularly important distinction is between outputs and outcomes. Number of houses completed is an output. Improved safety, livelihood continuity, community stability and reduced future vulnerability are outcomes. A reconstruction programme may perform well on the first measure while underperforming on the second. Evaluation should therefore include both short-term delivery and medium- to long-term recovery trajectories.

A multi-scale model of recovery

The integrated framework can be strengthened by explicitly distinguishing three scales of intervention: the dwelling, the settlement and the institutional system. At dwelling scale, recovery concerns safety, privacy, domestic routines, comfort, storage and the ability to adapt. At settlement scale, the focus expands to mobility, infrastructure, public space, social networks, schools, healthcare, markets and employment. At institutional scale, land, finance, standards, participation, coordination, grievance mechanisms and transition planning determine whether households can move through recovery without becoming trapped between programmes. This multi-scale model prevents a common analytical error: treating the house as an isolated object. A safe dwelling located in an inaccessible settlement may produce a weak recovery outcome, while a modest dwelling embedded in a functioning community may provide stronger recovery capacity. Housing assessment should therefore examine the interactions among building performance, settlement connectivity and institutional support.

Table 3. Multi-scale model of post-disaster housing recovery

Scale	Core functions	Typical failure if neglected	Recovery implication
Dwelling	Safety, privacy, comfort, domestic and livelihood space	Unsafe or unsuitable housing; overcrowding; poor adaptability	Safe, adequate and adaptable housing
Settlement	Services, mobility, social networks, markets, public space	Isolation; service gaps; livelihood disruption	Site and settlement planned as one system
Institutional	Land, finance, standards, participation, coordination, grievances	Delays; unclear responsibility; fragmented pathways	Visible, accountable recovery pathway

Recovery pathway and temporal continuity

Recovery should be understood as a temporal process rather than a single construction event. Households may move from emergency shelter to temporary accommodation, return to partially repaired homes, use rental

housing, construct transitional arrangements or progressively complete a core dwelling. The appropriate pathway can change as information, finance, land and household circumstances change. Consequently, housing strategies should preserve options instead of prematurely fixing a single long-term outcome.



Figure 1. Post-disaster housing recovery pathways

Figure 1. Post-disaster housing recovery pathways. Housing recovery is better represented as a connected pathway than as a fixed sequence. Households may move between stages or bypass stages according to damage, resources, land, services and institutional decisions. Source: Conceptual synthesis based on the reviewed literature.

Integrated five-dimensional recovery architecture

The five dimensions identified in this review are mutually reinforcing. Physical safety is foundational, but social and cultural continuity determine whether the intervention becomes usable and accepted. Economic recovery determines whether households can sustain the housing arrangement, while institutional capacity coordinates the pathway. Participation and learning provide cross-cutting mechanisms that connect decisions to lived experience and enable adjustment when initial assumptions prove inadequate.



Figure 2. Integrated Framework for Sustainable Post-Disaster Housing Recovery

Figure 2. Integrated post-disaster housing recovery framework. Physical, social, economic, cultural and institutional dimensions interact, while community participation and learning operate across the system. Source: Conceptual synthesis of the reviewed literature.



Table 4. Five-dimensional recovery architecture: objectives, mechanisms and outcomes

Recovery dimension	Primary objective	Key mechanisms	Outcome
Physical	Reduce exposure and improve habitability	Hazard-sensitive siting; safe construction; services; climate response	Safer and usable housing
Social	Restore collective life and dignity	Community continuity; shared spaces; security; social support	Stable social networks
Economic	Support household recovery	Livelihood access; affordability; mobility; tenure	Reduced economic displacement
Cultural	Maintain identity and place relationships	Local practices; place attachment; local knowledge; contextual design	Cultural fit and belonging
Institutional	Coordinate and account for recovery	Clear roles; participation; grievance; monitoring	Coherent recovery pathway

Participation as a governance mechanism

Participation should be positioned within the decision architecture of recovery rather than added as a separate consultation activity. Information provision is necessary, but decisions about relocation, settlement form, household grouping, public space, adaptation and after-use have consequences that may persist for years. Meaningful participation therefore requires explicit decision points, accessible alternatives, technical translation and a mechanism through which community input can alter the final decision.

Participation as increasing decision influence

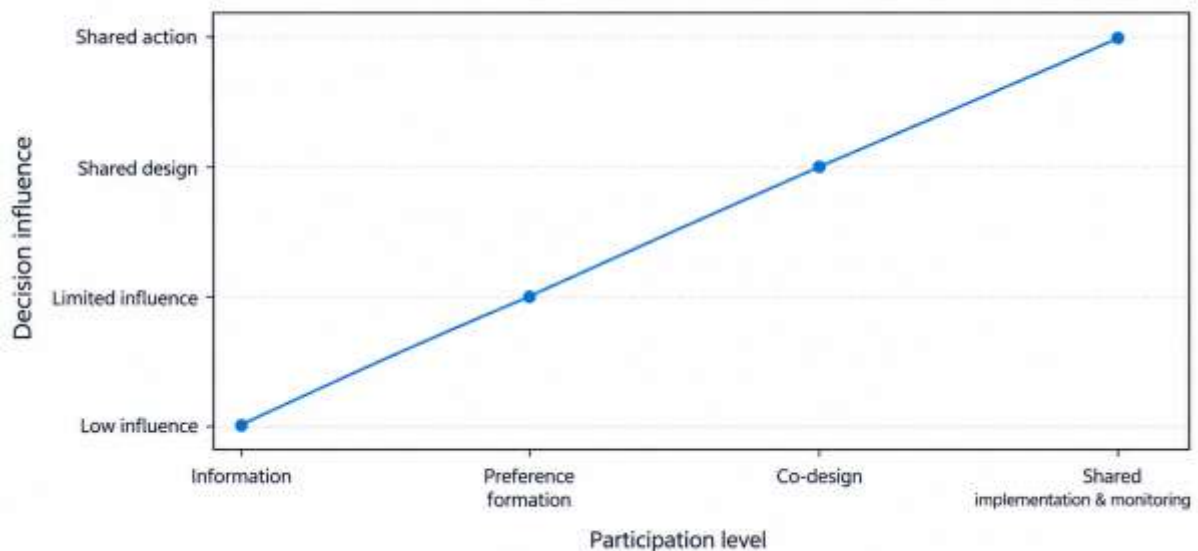


Figure 3. Participation as Increasing Decision Influence.

Figure 3. Participation becomes progressively more meaningful as decision influence increases. The four-level model distinguishes information provision from preference formation, co-design and shared implementation/monitoring. Source: Conceptual synthesis based on Arnstein (1969), Davidson et al. (2007) and Sadiqi et al. (2017).



Table 5. Participation decision architecture for post-disaster housing recovery

Decision	Recommended participation level	Rationale	Institutional requirement
Risk and entitlement information	Information	Households need clear knowledge of risks, assistance and options	Accessible communication
Household preferences	Preference formation	Captures family structure, privacy and livelihood requirements	Structured consultation and documentation
Site and settlement form	Co-design	Affects social grouping, access and livelihood continuity	Technical facilitation and transparent alternatives
Housing adaptation	Co-design	Allows safe variation as household needs change	Approved adaptation rules and technical support
Monitoring and after-use	Shared implementation/monitoring	Identifies defects, service gaps and transition problems	Feedback and grievance mechanisms

From delivery indicators to recovery outcomes

A balanced evaluation should distinguish inputs, delivery, outcomes and long-term resilience. The number of houses completed is an output; it does not by itself demonstrate improved safety, livelihood continuity or reduced vulnerability. Outcome evaluation should combine objective measures with household and stakeholder perceptions and should extend beyond handover to capture adaptation, maintenance, social continuity and economic recovery.



Figure 4. Output-to-Outcome Evaluation Framework for Post-Disaster Housing Recovery

Figure 4. Output-to-outcome evaluation model for post-disaster housing. Delivery indicators should be complemented by short-, medium- and long-term recovery outcomes. Source: Conceptual synthesis.



Table 6. Output and outcome indicators for evaluating post-disaster housing recovery

Domain	Delivery/output indicator	Outcome indicator	Potential evidence
Physical	Units completed; services installed	Safety; adequacy; reliable service access	Technical assessment; observation
Social	Households accommodated; meetings held	Network continuity; dignity; perceived security	Survey; interviews; social mapping
Economic	Subsidies or houses delivered	Livelihood continuity; manageable housing burden	Livelihood survey; travel-cost assessment
Cultural	Consultations; local materials or practices considered	Cultural fit; belonging; sustained use	Interviews; participatory mapping
Institutional	Committees and coordination meetings	Decision influence; responsiveness; grievance resolution	Process records; stakeholder interviews
Resilience	Risk measures and training delivered	Adaptive capacity; reduced future vulnerability	Post-occupancy review; longitudinal assessment

DISCUSSION

The integrated framework reinforces three arguments. First, housing is a platform for recovery rather than an endpoint. Second, resilience is relational: it depends on the interaction of dwelling, settlement, infrastructure, environment, livelihoods, institutions and community capabilities. Third, participation is most valuable when connected to actual decision-making and implementation.

This approach also helps reconcile apparently competing priorities. Speed and participation do not necessarily have to be opposites if participatory mechanisms are prepared before disasters occur. Standardisation and cultural adequacy can coexist when authorities standardise performance requirements and components while allowing contextual variation in layout, materials and use. Temporary and permanent housing can also be connected through progressive design and explicit transition planning.

For fragile and rapidly changing environments, this is especially important. The thesis identifies the need to integrate environmental risk assessment, resilient housing, social and cultural adaptation, sustainable rehabilitation and participatory policy. The conceptual framework developed here provides a broader structure within which those elements can be evaluated.

CONCLUSIONS

Post-disaster housing should not be reduced to the reconstruction of physical structures. Sustainable recovery requires safe housing that supports social continuity, livelihoods, cultural identity, community agency and accountable governance. The literature indicates that failures often arise when these dimensions are separated: technically adequate houses may be socially inappropriate; participatory programmes may lack institutional power; relocation may provide buildings while weakening livelihoods; and temporary accommodation may persist without a pathway to permanent recovery.

The paper therefore proposes an integrated recovery framework centred on five interacting dimensions—physical, social, economic, cultural and institutional—with participation operating across them. The framework can support future empirical testing through household surveys, stakeholder interviews, spatial assessment and comparative case analysis. Its principal contribution is a shift in evaluation from 'houses delivered' to 'recovery enabled', thereby positioning post-disaster housing as a central mechanism of long-term resilience.

REFERENCES

1. Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216–224. <https://doi.org/10.1080/01944366908977225>
2. Davidson, C. H., Johnson, C., Lizarralde, G., Dikmen, N., & Sliwinski, A. (2007). Truths and myths about community participation in post-disaster housing projects. *Habitat International*, 31(1), 100–115. <https://doi.org/10.1016/j.habitatint.2006.08.003>
3. Kennedy, J., Ashmore, J., Babister, E., & Kelman, I. (2008). The meaning of “build back better”: Evidence from post-tsunami Aceh and Sri Lanka. *Journal of Contingencies and Crisis Management*, 16(1), 24–36. <https://doi.org/10.1111/j.1468-5973.2008.00529.x>



4. Mercer, J., Kelman, I., Taranis, L., & Suchet-Pearson, S. (2010). Framework for integrating indigenous and scientific knowledge for disaster risk reduction. *Disasters*, 34(1), 214–239. <https://doi.org/10.1111/j.1467-7717.2009.01126.x>
5. Oliver-Smith, A. (1991). Successes and failures in post-disaster resettlement. *Disasters*, 15(1), 12–23. <https://doi.org/10.1111/j.1467-7717.1991.tb00423.x>
6. Rahmayanti, K. P., & Rukmana, D. (2024). Scoping review of the depth of participation and barriers to community participation in post-disaster housing reconstruction. *International Journal of Disaster Risk Reduction*, 104, 104375. <https://doi.org/10.1016/j.ijdr.2024.104375>
7. Sadiqi, Z., Trigunaryah, B., & Coffey, V. (2017). A framework for community participation in post-disaster housing reconstruction projects: A case of Afghanistan. *International Journal of Project Management*, 35(5), 900–912. <https://doi.org/10.1016/j.ijproman.2016.11.008>
8. Shaw, R., & Ahmed, I. (2010). *Designing post-disaster reconstruction processes: Harnessing human resources and expertise*. Earthscan.
9. Sphere Association. (2018). *The Sphere handbook: Humanitarian charter and minimum standards in humanitarian response*. <https://spherestandards.org/handbook-2018/>
10. Sukhwani, V., Napitupulu, H., Jingnan, D., Yamaji, M., & Shaw, R. (2021). Enhancing cultural adequacy in post-disaster temporary housing. *Progress in Disaster Science*, 11, 100186. <https://doi.org/10.1016/j.pdisas.2021.100186>
11. 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>

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