

INSTITUTIONAL RESILIENCE AND POLICY GAPS: A CRITICAL ANALYSIS OF POST-DISASTER RECOVERY GOVERNANCE IN MANDI DISTRICT, HIMACHAL PRADESH

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Abstract

The Indian Himalayan region presents significant challenges for effective disaster governance, characterised by intrinsic geo-fragility and escalating anthropogenic pressures. This paper critically analyses the institutional resilience and policy deficiencies within post-disaster recovery governance in Mandi District, Himachal Pradesh (HP). Employing the established 4R (Resource, Reason, Roadmap, Respond) conceptual framework, the analysis reveals a systemic failure within the institutional structure to transition from costly, reactive relief toward proactive, adaptive recovery. Key findings indicate deep policy gaps, including chronic underinvestment in preventative measures, a profound deficit in institutional learning evidenced by the catastrophic recurrence of predictable hazards such as the Kotrupi landslide, and highly fragmented inter-agency coordination. These operational shortcomings are compounded by the pre-existing urban-rural infrastructural divide and a lack of real-time data integration, resulting in a state of administrative pseudo-accountability. The paper concludes that Mandi's governance structure exhibits functional fragility, and proposes urgent recommendations for decentralising authority to Gram Panchayats, mandating adaptive planning based on longitudinal hazard data, and structurally rebalancing recovery financing to prioritise mitigation and holistic long-term socio-economic and psychosocial support.

Keywords: Institutional Resilience, Post-Disaster Recovery, Structural Inequality, 4R Framework.

1. Introduction:

The Indian Himalayan region (IHR) is globally recognised as a challenging theatre for effective disaster governance, defined by inherent geo-fragility, accelerating climate variability, and pervasive anthropogenic pressures (Kumar et al., 2020; Sharma & Verma, 2025). Within this high-risk ecological and social landscape, Mandi District in Himachal Pradesh (HP) serves as a potent case study for investigating the structural limitations and persistent policy deficiencies that characterise post-disaster recovery frameworks in India. This scholarly paper undertakes a critical analysis of the institutional resilience exhibited by governing bodies in Mandi following significant and recurrent hazard events. It posits that deep, systemic

policy gaps significantly hinder the essential institutional transition from reactive disaster relief to proactive, adaptive, and sustainable long-term recovery (Sharma & Verma, 2025).

1.1 Contextualising Systemic Risk and Vulnerability in the Western Himalayas

Mandi District is geographically situated between Northern latitude and East longitudes, placing it centrally within a highly vulnerable zone of the Western Himalayas (District Administration Mandi, 2024b). The region is intrinsically prone to multi-hazards, including recurrent landslides, flash floods, mudflows, and high seismic risk (Kumar et al., 2020; Government of India, 2005). The underlying vulnerability of District Mandi is compounded by rapidly changing

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demographics, environmental degradation, and poorly managed urban expansion into areas identified as high-risk zones (District Administration Mandi, 2024b). Furthermore, the long-term trends of reported climate warming and climate change are likely to escalate the devastating impact and frequency of these hazards in the future, increasing the urgency for robust, adaptive governance (District Administration Mandi, 2024b; Kumar et al., 2020).

The dominant socio-economic profile of the region is agrarian, with the workforce heavily reliant on crop cultivation and animal husbandry (Meena et al., 2016). Agrarian households typically maintain small average land holdings and livestock populations (Meena et al., 2016). This economic structure means that the impact of a disaster—particularly large-scale events such as floods and landslides—directly threatens primary livelihoods and food security (Meena et al., 2016). Consequently, the efficacy of post-disaster recovery governance is uniquely dependent upon the timely and strategic restoration of critical natural resources and agricultural capital (Sinha et al., 2021).

1.2 Defining and Measuring Institutional Resilience and the Policy Gap

The central analytical concept of this paper is institutional resilience. Academically, institutional resilience is defined as the capacity of institutional settings to not only maintain their essential core functions and restore operational capabilities following a shock, but also, critically, to adapt to new situations when confronted by pressures, shocks, or unstable factors (Gupta, 2022). This definition necessitates that institutions transcend the goal of merely returning to a pre-disaster state, a process termed restoration, and instead develop the forward-looking capacity to anticipate, mitigate, and prevent future losses (Gupta, 2022).

The legislative foundation for disaster governance in India is the Disaster Management (DM) Act of 2005. This comprehensive legal framework mandates institutions, from the National Disaster Management Authority (NDMA) to District Disaster Management

Authorities (DDMAs), to execute a full spectrum of disaster risk reduction (DRR) programmes, including preparedness, mitigation, response, and long-term rehabilitation (United Nations, 2016). The policy gap under scrutiny herein refers to the systemic and persistent failure to translate this robust legislative and institutional mandate into consistently effective, adaptive, and sustainable operational outcomes at the district level (Sharma & Verma, 2025). Evidence of this gap includes deficiencies in inter-agency coordination, poor data integration for damage assessment, chronic under-financing of prevention, and inadequate strategies for long-term socio-economic recovery (Sharma & Verma, 2025; UNDRR, 2024).

1.3 Rationale for the Mandi District Case Study

Mandi District is not treated as an isolated geographical anomaly, but rather as an acute microcosm of the governance challenges prevalent across the fragile Himalayan ecosystem. The district's susceptibility to catastrophic, recurrent events such as the massive Kotrupi landslide provides compelling empirical evidence of institutional non-learning and adaptive failure. The repetitive nature of these predictable hazards demonstrates a systemic failure to implement effective preventative and corrective measures following previous shocks. This suggests that administrative bodies possess the legal authority (the mandate) but lack the requisite functional capacity to break the cycle of risk accumulation. The district possesses a formal, established institutional structure, including the District Control Room and 12 Sub-Divisional offices, which, when juxtaposed with the documented deficiencies in preparedness and coordination makes Mandi an ideal location for assessing the critical dissonance between policy presence and measurable, practical performance.

2. Theoretical and Conceptual Frameworks:

To rigorously assess the functional and adaptive capacity of Mandi's disaster governance system, this analysis adopts conceptual frameworks that foreground measurable adaptation, continuous learning, and multi-dimensional recovery outcomes.

2.1 The Dimensions of Institutional Resilience:

The concept of resilience has rapidly advanced in fields concerned with natural hazards, climate change, and disaster studies (Klein et al., 2003). It is fundamentally concerned with the capacity to prepare for anticipated hazards, adapt to continually changing environmental conditions, and efficiently withstand and recover from disruptions (Cutter et al., 2022). For institutional settings, resilience necessitates that governing bodies must not only maintain core administrative functions but must also demonstrate the capability to adapt their structures and protocols to new pressures (Gupta, 2022). This adaptive capacity is intrinsically linked to the requirement for continuous progress monitoring using reliable, evidentiary-based practices and informed decision-making mechanisms (Platt et al., 2020). Effective policy implementation requires that institutions rely on validated, measurable indicators to ensure their readiness for effective use by policymakers and frontline practitioners (Cutter et al., 2022). Without established, tested metrics, institutional performance cannot be accurately quantified, assessed, or systematically improved, leading to a state of pseudo-accountability.

2.2 The 4R Framework for Resilience Management Analysis

To diagnose the precise points of institutional failure in Mandi, the analysis employs the '4R package' conceptual framework, which systematically organises institutional capability into four interconnected sectors: Resource, Reason, Roadmap, and Respond. This comprehensive framework provides a structured lens for understanding why recovery efforts have historically failed to produce sustainable, long-term outcomes (O'Rourke, 2022).

2.2.1 Resource

This component encapsulates the tangible and intangible assets necessary to navigate the entire disaster cycle, specifically financial capital, human capacity, and infrastructural robustness (O'Rourke, 2022). Optimal resource allocation requires identifying and protecting resources with the strongest potential to shield communities against both physical and

psychosocial losses, which is proven to lead to better post-disaster outcomes (Gali et al., 2021). A pronounced failure in the Resource component is evidenced when domestic public finances are chronically skewed towards emergency response and short-term reconstruction, rather than being invested strategically in prevention, mitigation, and long-term economic rehabilitation (UNDRR, 2024; Sharma & Verma, 2025).

2.2.2 Reason (Knowledge and Learning)

Reason refers to the institutional capacity for informed, adaptive decision-making and continuous organisational learning (O'Rourke, 2022). Functionally, this includes the ability to systematically use disaster-loss data to raise public awareness, to validate specific metrics for accurate performance assessment, and to implement protocols based on evidentiary-based practices (Platt et al., 2020; Cutter et al., 2022). Institutional success in the Himalayan context hinges on the capability to learn conclusively from past catastrophic failures and adapt administrative and mitigation protocols accordingly (Kumar et al., 2020).

2.2.3 Roadmap (Strategic Planning)

The Roadmap component defines the strategic planning apparatus, mitigation programmes, and specific interventions required to systematically reduce systemic risk and guide a sustainable recovery (O'Rourke, 2022). This involves the development and mandatory implementation of national standards for carrying out all DRR programmes, encompassing everything from foundational data collection and robust analysis to integrated planning and continuous monitoring (United Nations, 2016). Central to this is the application of adaptive, risk-informed land-use planning and the enforcement of resilient engineering controls (Platt et al., 2020; District Administration Mandi, 2024).

2.2.4 Respond (Operational Action)

Respond focuses on the speed, efficiency, and efficacy of the immediate response effort (O'Rourke, 2022). Key elements include seamless inter-agency coordination, the rapid, targeted deployment of human

and material resources, and the execution of initial relief efforts (Sharma & Verma, 2025). This capacity is consistently and acutely tested by the significant geographical constraints and infrastructural deficits that define high-mountain regions like Mandi (Chand & Sharma, 2023).

A critical observation is the profound dissonance between the policy's intent and its measurable performance. While the DM Act 2005 mandates the development of national standards in DRR programmes, including data collection and analysis (United Nations, 2016), empirical analysis indicates that DDMA's frequently lack current disaster response protocols and that overall data integration remains structurally weak (Sharma & Verma, 2025). Consequently, governing institutions possess the legal authority (Reason as legislative intent), but they demonstrably lack the operational knowledge validated metrics, functional real-time data platforms, and tested indicators to accurately assess progress or failure (Cutter et al., 2022). This functional deficit precipitates a dangerous state of 'pseudo-

accountability,' wherein institutions formally comply with legislative mandates yet fail to demonstrate the functional resilience required to safeguard communities.

2.3 The Bottom-Up Imperative and Community Resilience

Disaster management theory consistently maintains that genuine and durable resilience must be driven from the bottom-up, necessitating engagement with the 'whole community' and strengthening locally based mechanisms (Platt et al., 2020). This crucial approach includes empowering local administrative bodies, such as the Gram Panchayats, to assume responsibility for disaster risk and to adopt and enforce land-use planning and building codes (Platt et al., 2020). When central institutional structures fail to build adequate community capacity, response effectiveness is severely diminished, leading to increased reliance on local self-help, volunteer efforts, and informal networks during critical crisis situations (Chand & Sharma, 2023). Table 1 provides a synthetic application of the 4R framework to the observed governance gaps in Mandi District.

Table 1 : Application of the 4R Framework to Institutional Resilience Analysis in Mandi District, HP

4R Component	Ideal Institutional Capability (Theoretical Benchmarks)	Observed Gap in Mandi Governance	Key Implication for Resilience
Resource	Adequate, strategic, and timely allocation for long-term recovery and prevention.	Chronic underinvestment in prevention and mitigation; funding primarily focused on costly, reactive emergency relief.	Maintains a cycle of risk; shifts from proactive risk reduction to unsustainable, reactive expense.
Reason (Knowledge)	Evidentiary-based practices, robust indicator validation, and continuous institutional learning.	Repeated failure to act on known hazard recurrence; limited data integration; lack of updated protocols.	Inability to adapt protocols or implement necessary, systemic, corrective mitigation measures.
Roadmap (Planning)	Updated, decentralised disaster response protocols, integrated land-use strategies, and rigorous mitigation programming.	DDMA's often lack current protocols; central dependence undermines remote area planning; planning is sectoral, not comprehensive.	Response mechanism fragility; predictable geographical risks are persistently inadequately planned for, compounding vulnerability.
Respond (Action)	Seamless inter-agency coordination and rapid deployment capacity, overcoming logistical barriers.	Fragmented decision-making; communication breakdowns delaying resource deployment; physical barriers stalling official aid.	Prolonged suffering, increased secondary losses, and forced community reliance on localised self-help mechanisms.

3. Mandi's Hazard-scape and the Failure of Institutional Learning

The recurrent nature of catastrophic events within Mandi District furnishes substantial empirical evidence that the adaptive component of institutional resilience; organisational learning; is structurally and functionally deficient (Kumar et al., 2020).

3.1 Mandi's Complex Vulnerability Profile

Geologically, the Himalayan mountain range is characterised by high susceptibility to seismic activities, landslides, and flash floods (Kumar et al., 2020; Government of India, 2005). Mandi District, as a high-altitude area, faces acute exposure to these geologically related hazards, including significant soil erosion, dam bursts, and landslides (Government of India, 2005). These inherent natural threats are systemically intensified by escalating human activities, notably unplanned and aggressive urbanisation and pervasive environmental degradation, which critically increase slope instability and accelerate risk accumulation across the district (District Administration Mandi, 2024b; Kumar et al., 2020). The region's agrarian economic structure implies that flood events, which a large majority of farmers (78.6%) perceive primarily as natural phenomena (Meena et al., 2016), directly translate into immediate and widespread economic distress, manifested as reduced household income and increased unemployment (Meena et al., 2016).

3.2 The Evidence of Recurrence: The Kotrupi Landslide (2017)

The massive landslide that devastated the area near Kotrupi, Mandi district, on the night of 12 August 2017, serves as the starkest illustration of the region's exposure to known, yet unmitigated, hazards (Kumar et al., 2020). The event was catastrophic, eroding a stretch of over 300 metres of National Highway (NH)-154 and tragically leading to the deaths of over 50 individuals, with more than 40 persons reported missing (Kumar et al., 2020).

Critically, the Kotrupi event was not an unprecedented occurrence; it represented the catastrophic, unaddressed reactivation of a hazard zone that was

well-known to the local populace and visible in long-term satellite imagery (Kumar et al., 2020). Major slope failures and reactivations had been previously and repeatedly documented in August 1977, August 1997, and August 2007 (Kumar et al., 2020). The documentation suggests that the 2007 occurrence was reportedly a minor event that “did not affect much” and was subsequently ignored by planning institutions, only to reactivate with devastating force a decade later (Kumar et al., 2020).

The documented, cyclical nature of the Kotrupi disaster spanning four decades conclusively demonstrates a profound failure of institutional memory, preventative action, and adaptive planning. A resilient institution would assimilate this longitudinal loss data to implement sustained mitigation, monitoring, and corrective engineering (Platt et al., 2020). The failure to act decisively on this known, recurring history of instability constitutes a clear and definitive breakdown of the Reason and Roadmap components of the 4R framework (O'Rourke, 2022). It indicates a governance approach that handles each disaster as a singular, random event, rather than integrating past loss data to implement comprehensive, corrective mitigation, such as continuous geological and geotechnical stability monitoring (Kumar et al., 2020). This pattern of non-learning effectively guarantees the reoccurrence of predictable geographical risks, leading to avoidable loss of life and infrastructure (Chand & Sharma, 2023).

3.3 The Disparity between Urban Focus and Rural Exposure

Institutional resilience must guarantee equitable service and infrastructural delivery across the entire district (Himachal Pradesh Government, 2023b). In Mandi, a structural disparity in infrastructure provision exists, which systematically exacerbates rural vulnerability. While urban centres, such as Mandi town, benefit from government-operated sewer systems serving approximately 70% of the population, rural areas overwhelmingly depend on less resilient, often unmanaged, infrastructure like septic tanks (Himachal Pradesh Government, 2023b).

This disproportionate concentration of infrastructure

investment in urban resilience means that when major climate-related or geological disasters strike, the resulting destruction of infrastructure and disruption of essential services disproportionately affects already underserved rural populations (Himachal Pradesh Government, 2023b; Himachal Pradesh Government, 2023). The destruction of vital public buildings, including administrative offices, healthcare facilities, and educational centres, further compounds the challenge by delaying governance and resource allocation, creating acute vulnerability for remote communities (Himachal Pradesh Government, 2023).

4. A Critical Analysis of Operational Gaps in Recovery Governance

Operational failures during the immediate response and initial recovery phases in Mandi are directly traceable to inherent weaknesses within the Respond and Reason components of the governance structure, exposing institutional fragility across multiple administrative tiers (Sharma & Verma, 2025).

4.1 Fragmentation and Delays in Inter-Agency Response (The Respond Deficit)

Despite the mandated establishment of formal institutional mechanisms, such as the Himachal Pradesh State Disaster Management Authority (HPSDMA) and the State Emergency Operation Centre (SEOC), administrative capacity is routinely overwhelmed when confronted with large-scale, complex crises (Sharma & Verma, 2025). Analysis indicates that systemic delays in effective response stem fundamentally from weak inter-agency coordination and fragmented decision-making across the state, national, and local administrative levels (Sharma & Verma, 2025). Communication breakdowns between these agencies severely hamper the rapid and targeted deployment of resources required during the critical immediate response phase (Sharma & Verma, 2025). This systematic failure to coordinate demonstrates a clear functional breakdown of the Respond capability, leading to significant loss of life and property (O'Rourke, 2022; Chand & Sharma, 2023).

4.2 The Crippling Effect of Geographical

Constraints on Institutional Reach

The rugged terrain and inherent physical challenges of Mandi's mountain geography are a fixed variable, yet the inability of governance structures to overcome chronic access issues transforms this geographical challenge into an institutional failure (District Administration Mandi, 2024b). Inadequate infrastructure, particularly the poor quality of existing roads and the lack of road connectivity to numerous remote villages, often stalls or completely blocks the movement of essential heavy machinery and government aid (Chand & Sharma, 2023).

Consequently, many remote residents are left physically isolated and reliant entirely on community self-help and volunteer efforts until official aid can physically penetrate the affected zone (Chand & Sharma, 2023). The failure to proactively invest in resilient infrastructurespecifically augmenting the capacity for resilient road design and construction, potentially involving local academic expertise such as the Indian Institute of Technology (IIT) Mandi (Himachal Pradesh Government, 2023)is an institutional deficiency. This reliance on local capacity is not a triumph of effective 'bottom-up' empowerment but, rather, a tangible sign of systemic institutional withdrawal from geographically challenged and high-risk areas (Chand & Sharma, 2023).

4.3 Data Deficits and the Lack of Evidence-Based Recovery (The Reason Deficit)

Effective post-disaster recovery is fundamentally predicated on timely, informed decision-making rooted in verifiable evidence (Platt et al., 2020). In Mandi, the consistent absence of functional, real-time data platforms for comprehensive damage assessment and the limited integration of data across agencies prevent institutions from executing the targeted, resource-efficient responses that are necessary for complex mountain emergencies (Sharma & Verma, 2025).

This deficit compromises institutional ability in two crucial ways. Firstly, it hinders immediate and equitable resource allocation, as institutions cannot accurately gauge the precise scale, nature, and location of losses in a timely manner (Sharma & Verma, 2025).

Secondly, it prevents institutions from fulfilling the critical necessity of evidentiary-based practices (Platt et al., 2020). Studies focusing on resilience measurement consistently stress the importance of conducting validation studies and rigorously testing indicators to ensure their quality and relevance for use among practitioners and policymakers (Cutter et al., 2022). When foundational data integration is structurally poor (Sharma & Verma, 2025), DDMAAs are forced to operate in an information vacuum, rendering it impossible to validate resilience indicators or track genuine, sustained progress in recovery, thereby perpetuating the operational deficit.

4.4 The Institutional Failure at the Grassroots Level

The ultimate operational effectiveness of the overall disaster governance framework is determined at the local administrative level, particularly by District Disaster Management Authorities and Gram Panchayats. DDMAAs in Himachal Pradesh frequently suffer from a lack of updated disaster response protocols, insufficient communication infrastructure, and inadequately trained personnel (Sharma & Verma, 2025).

The failure extends downwards to the Gram Panchayats which should function as the most critical interface between the state and the community. Especially in remote and ecologically sensitive zones, Panchayats are chronically underprepared to disseminate critical hazard information or engage proactively in preventative planning (Sharma & Verma, 2025). This systematic under-preparation reveals a failure by the state to effectively build local community capacity and engage the whole community in resilience practices, which is a fundamental requirement for effective bottom-up governance and risk ownership (Platt et al., 2020; Meena et al., 2016). When local capacity is structurally insufficient, the entire response mechanism becomes highly fragile, inevitably leading to greater losses of life and accelerated damage to both public and private infrastructure (Chand & Sharma, 2023).

5. Policy Deficiencies in Long-Term Socio-Economic Rehabilitation

The most enduring and complex policy gaps emerge not in the immediate response but during the long-term post-reconstruction and rehabilitation phases. These gaps primarily relate to financial strategy, livelihood restoration, and addressing underlying structural inequalities, collectively undermining the community's ability to achieve full, sustainable psychosocial and economic recovery.

5.1 Chronic Underinvestment in Prevention: The Resource Gap

A pervasive global trend of financial mismanagement in disaster funding, which is mirrored at the state level in India, severely compromises long-term resilience (UNDRR, 2024). Analysis of international development assistance for disaster-related aid between 2005 and 2017 revealed a startling financial imbalance: approximately \$9.60 out of every \$10 allocated was spent on emergency response, short-term reconstruction, and relief, while less than 4% was invested into essential disaster prevention, mitigation, and preparedness measures (UNDRR, 2024). This structural underinvestment in preventative measures means that domestic public finances earmarked for risk prevention are often less than 1% of national budgets in certain countries (UNDRR, 2024).

This systemic financial bias ensures that vulnerable districts like Mandi remain perpetually trapped in a costly, reactive cycle. Institutional resilience is thus incorrectly perceived by policymakers as a politically risky cost rather than a vital, cost-effective investment, primarily because the long-term benefits of prevention are less visible than the swift (though expensive) political response to a manifest crisis (UNDRR, 2024). This entrenched failure of resource allocation constitutes a fundamental and self-defeating weakness in the Resource component of the 4R framework (O'Rourke, 2022).

5.2 Inadequate Focus on Livelihood Restoration and Economic Recovery

For Mandi's predominantly agrarian society, the failure of recovery strategies to adequately focus on long-term economic rehabilitation and agricultural support creates protracted vulnerability (Sharma & Verma,

2025). Following major flood events, farmers reported universal agreement that the disaster caused unemployment (100% agreement) and a majority (55%) strongly believed that the floods reduced household income (Meena et al., 2016).

Effective post-disaster recovery must holistically address resource loss, which necessarily includes the restoration of the shared natural resources that fundamentally underpin local agrarian economies (Sinha et al., 2021; Gali et al., 2021). When long-term economic rehabilitation is neglected, the affected community cannot achieve a full, sustainable recovery towards pre-disaster conditions (Sinha et al., 2021). This failure is compounded by the destruction of community assets and critical infrastructure like healthcare and education facilities which are essential for administrative stability and communal activities, delaying service restoration (Himachal Pradesh Government, 2023).

5.3 The Critical Psychosocial Dimension of Recovery and Resource Loss

Institutional policy often narrowly measures recovery success purely in terms of physical infrastructure reconstruction, habitually ignoring the critical psychosocial dimensions of community life (Gali et al., 2021). Long-term appraisals of community recovery demonstrate that subjective elements such as perceived social ties, the belief that neighbours are willing to help each other, and the perceived restoration of shared natural resources are pivotal determinants of whether residents view their community as genuinely recovered (Sinha et al., 2021).

Disasters cause profound psychosocial resource loss, which is often unquantified by formal institutions (Gali et al., 2021). If recovery strategies fail to direct funding toward community-level programmes and neglect to preserve shared environmental assets (such as agricultural land or forest areas used for fodder storage) (Meena et al., 2016; Sinha et al., 2021), the community's overall resilience and sense of security is severely degraded, regardless of how quickly physical roads or bridges are repaired (Sinha et al., 2021). Future studies and policy development must therefore

explicitly identify resources with the strongest potential to protect against psychosocial loss, ensuring that recovery planning is genuinely holistic and multi-dimensional (Gali et al., 2021).

5.4 Structural Inequality and the Quest for Justice in Recovery

Policy failures are rarely random; they are often shaped by, and perpetuate, underlying structural inequalities (Jha & Singh, 2021). The destruction of public facilities, including vital administrative offices, inherently delays governance and the equitable allocation of resources, creating conditions where vulnerable and marginalised groups face compounded challenges in accessing timely aid (Himachal Pradesh Government, 2023).

A critical perspective suggests that when DDMAAs struggle with fundamental issues of coordination and data integration (Sharma & Verma, 2025), the distribution of relief and aid becomes structurally prone to inequity (Jha & Singh, 2021). The governance structure risks becoming a site of persistent injustice where affected communities face significant challenges in operationalising justice and externalising their rights claims (Jha & Singh, 2021). This structural deficit exists despite a surprisingly high level of initial public confidence; approximately 87% of surveyed farmers believed the state government was adequately prepared for disaster management (Meena et al., 2016). The considerable gap between this high public expectation and the consistently demonstrated low operational capacity during an actual crisis suggests that institutional processes fail to address the complex social relations and structural disadvantages that determine who receives aid, and who is ultimately left to rely on fragile, localised self-help (Jha & Singh, 2021).

6. Discussion: Synthesising Institutional Fragility and the Requirements for Adaptive Governance

The critical analysis of post-disaster recovery governance in Mandi District reveals that the system is plagued by a structural disconnect between robustly mandated policy objectives and fragile operational realities. The existing institutional setting, while

compliant with the legislative requirements of the DM Act 2005, lacks the fundamental functional and adaptive resilience necessary to effectively manage the complex, recurrent, and cascading hazards of the Himalayan environment (Gupta, 2022).

6.1 The Synthesis of 4R Failures in Mandi

The systemic breakdown of resilience is comprehensively synthesised across the 4R components. The recurring catastrophic failure at Kotrupi, with its known, documented history spanning 40 years (Kumar et al., 2020), is the clearest manifestation of a fundamental failure in institutional Reason (knowledge integration) and Roadmap (corrective mitigation planning). This repeated pattern demonstrates conclusively that institutions failed to adapt their strategic approach based on verifiable, longitudinal hazard data (Kumar et al., 2020).

This strategic deficit is critically compounded by profound operational fragility. The pervasive weak inter-agency coordination, frequent communication breakdowns, and fragmented decision-making across all tiers constitute a severe Respond deficit (Sharma & Verma, 2025). When these operational failings are combined with the chronic financial imbalance the Resource failure which incorrectly prioritises costly reconstruction over strategic prevention (UNDRR, 2024), the governance system becomes locked into a self-defeating vicious cycle of risk accumulation. Mandi's institutions exhibit deep-seated fragility, defined by a systemic inability to maintain core functions and adapt under stress (Gupta, 2022).

6.2 Bridging the Urban-Rural Divide in Policy Implementation

Effective and equitable recovery governance must explicitly address the underlying structural inequalities that intensify vulnerability, particularly the persistent infrastructural and resource divide between established urban centres and geographically remote rural areas (Himachal Pradesh Government, 2023b; Jha & Singh, 2021). The geographical reality of Mandi, with its inherent complex access issues, rugged terrain, and multi-hazard exposure, demands a tailored and highly decentralised institutional approach (District

Administration Mandi, 2024b; Chand & Sharma, 2023).

Future institutional strengthening must transcend conventional administrative planning. It requires integrating specialised engineering and geological expertise, potentially engaging local academic institutions like IIT Mandi, to develop and implement resilient engineering controls for critical infrastructure, such as roads and bridges (Himachal Pradesh Government, 2023). This site-specific approach transforms the geographical constraint into a function of informed policy, moving away from generalised vulnerability assessments toward adaptive, location-specific mitigation strategies (District Administration Mandi, 2024).

6.3 Necessity of Institutional Accountability and Transparency

The prevailing high level of public confidence in the state's disaster preparedness (Meena et al., 2016) places a significant moral and administrative burden of responsibility on DDMA and HPSDMA to deliver functional accountability. To effectively transition from pseudo-accountability to genuine, adaptive resilience, institutions must adopt rigorous, validated methodologies for quantifying and measuring resilience indicators (Cutter et al., 2022). This involves establishing mandatory, real-time data platforms for comprehensive damage assessment (Sharma & Verma, 2025) and using verified loss data to systematically foster awareness and commitment among all stakeholders, which is required for evidence-based decision-making (Platt et al., 2020). Accountability necessitates not merely the presence of a legal framework, but the mandated transparency and continuous reporting of performance metrics against pre-defined resilience indicators.

7. Conclusion and Recommendations for Enhanced Resilience

Post-disaster recovery governance in Mandi District, Himachal Pradesh, is severely constrained by persistent policy gaps and demonstrable institutional limitations. While the framework, legislated by the DM Act 2005, exists legally, it falters operationally due to systemic

failures in inter-agency coordination, perverse resource allocation, and a profound lack of adaptive learning capacity. The inability to prevent the recurrence of known, documented hazards, coupled with deep structural disparities in infrastructural service delivery, confirms that the current governance model fosters institutional fragility rather than the necessary adaptive resilience required for the Himalayan context.

Based on this critical analysis of the 4R framework failures and policy deficiencies in socio-economic rehabilitation, the following evidence-based recommendations are proposed to systematically enhance institutional resilience in Mandi District and across the wider Western Himalayan region:

7.1 Radical Decentralisation and Empowerment of Local Governance

The institutional framework must be systematically decentralised and financially resourced to effectively address site-specific local vulnerabilities. It is strongly recommended that financial autonomy, technical infrastructure, and specialised training programmes be significantly increased for Gram Panchayats. These local administrative bodies must be elevated to function as the primary, resourced agents for localised resilience planning, equipped with the technical capacity to disseminate hazard preparedness literature, enforce building codes, and execute adaptive land-use planning, thereby fulfilling the imperative for bottom-up resilience and risk ownership.

7.2 Adaptive Planning Based on Longitudinal Hazard Data

To definitively overcome the profound deficit in institutional learning, DDMAAs must be mandated to establish permanent, multi-agency, and geologically-informed monitoring systems for all documented high-risk sites, such as the Kotrupi landslide complex. This planning must integrate advanced remote sensing technologies and specialised technical expertise to ensure a definitive transition from reactive emergency response to proactive, sustained mitigation and structural stabilisation. This approach should explicitly include the implementation of robust risk mitigation strategies, focusing on engineering controls and the use of advanced technologies to minimise the likelihood and impact of identified hazards, correcting the failure

in the Reason and Roadmap components.

7.3 Rebalancing Strategic Recovery Financing

Policy mechanisms must be structurally adopted to substantially increase the proportion of the state budget explicitly allocated to disaster prevention, long-term mitigation, and socio-economic rehabilitation. Following the strategic principles of DRR, strategic investment must aggressively move funding away from chronic emergency relief toward interventions that systematically reduce future risk and enhance livelihood stability (UNDRR, 2024). This structural rebalancing is absolutely essential for strengthening the Resource component and achieving sustainable, cost-effective risk reduction across the district.

7.4 Integrated Data Platforms and Holistic Psychosocial Support

Institutions must develop and implement mandatory, shared, real-time data platforms for comprehensive damage assessment, resource loss tracking, and vulnerability mapping to facilitate timely and targeted decision-making during and immediately following a crisis. Furthermore, recovery strategies must be fundamentally broadened to institutionalise dedicated psychosocial support programmes alongside economic interventions. Specifically, policy must strategically focus on the preservation and rapid restoration of agricultural livelihoods and communal natural resources, thereby protecting against psychosocial resource loss and fostering the subjective aspects of recovery that are vital for long-term community resilience.

7.5 Directions for Future Research

Future academic inquiry should focus on the rigorous validation of quantitative indicators necessary for accurately measuring institutional resilience among Himalayan DDMAAs, possibly employing Structural Equation Modelling (SEM) to test the predictive power of various governance metrics, as suggested by contemporary resilience literature. Additionally, a longitudinal economic analysis comparing the recurring costs of reactive reconstruction and relief against the strategic, one-time investment required for resilient infrastructure and proactive mitigation in Himachal Pradesh would provide critical, evidence-

based support for policymakers aiming to structurally rebalance state financing models.

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