



Social Vulnerability and Disaster Governance in the 2026 Nepal Floods: A Sociological Case Study of Exposure, Infrastructure and Institutional Access

Shweta Tripathi

Senior Research Scholar , Department of Sociology, Banaras Hindu University

DOI : <https://doi.org/10.5281/zenodo.23054031>

ARTICLE DETAILS

Research Paper

Received: 15-07-2026

Accepted: 14-08-2026

Published: 25-09-2026

Keywords:

Nepal; floods; social vulnerability; disaster governance; institutional accessibility; occupational vulnerability; infrastructure

ABSTRACT

Policy implications: Disaster planning in mountain regions should treat transport and communication networks as part of protective capacity, include workplaces in vulnerability assessment, and evaluate response in terms of who and which places institutions actually reach. Findings: The analysis identifies infrastructure-mediated isolation, occupationally situated exposure, differentiated needs among displaced populations, and a recurring distinction between the existence of institutional capacity and its practical reach. Approach and methods: A qualitative single-case study draws on a bounded documentary corpus of government records, humanitarian assessments and established journalistic reporting covering the emergency and early-recovery period to 8 September 2026. Purpose: The article examines how social and spatial location shaped exposure and how damaged infrastructure affected access to warning, evacuation, rescue and relief. Motivation: Floods become disasters through the social organisation of exposure, unequal access to resources, and the capacity of institutions to reach affected populations. The 2026 Nepal floods provide a recent case in which mountain geography, damaged infrastructure and occupational location converged.

Practitioner Points

- Evaluation of disaster response should distinguish institutional capacity from institutional reach: the

Disclaimer: The opinions, interpretations, conclusions, recommendations, analyses, and statements expressed in this research article are solely those of the author(s) and do not reflect the views, policies, or positions of the Publisher, Chief Editor, Editors, Editorial Board, Reviewers, or their affiliated institutions. The author(s) are solely responsible for ensuring the originality, authenticity, and integrity of the manuscript and for ensuring that it is free from plagiarism, AI-generated content, copyright infringement, data falsification, and any other form of academic misconduct.

presence of personnel and equipment does not establish that protection was equally accessible.

- Vulnerability assessment should include occupational settings, especially tunnels, hydropower facilities and other workplaces where evacuation depends on specialised arrangements.
- Roads, bridges and communication networks should be assessed as social infrastructures of evacuation, rescue and relief, not only as physical assets exposed to damage.

1. Introduction

A flood is a physical event, but a disaster is socially organised. People encounter the same hazard from unequal positions: they live and work in different places, command different resources, depend on different infrastructures and stand in unequal relationships to public institutions. Sociology therefore directs attention away from the hazard alone and towards the social relations through which exposure, protection and loss are distributed. This position is well established in disaster studies, from the Pressure and Release tradition to later work on social vulnerability and the social production of risk (Wisner et al., 2004; Cutter et al., 2003; Tierney, 2014).

This sociological perspective is particularly important in Nepal. The country's Himalayan geography creates exposure to floods, landslides, earthquakes and cryospheric hazards, but geographical conditions alone do not explain disaster outcomes. Flood research in Sindhupalchok has shown that changing hazards interact with livelihood vulnerability and limitations in risk governance, including early warning and institutional responsibilities (Delalay et al., 2018). Research from the Koshi basin similarly shows that riverine vulnerability is shaped by historical, social, economic, political, geographical and ecological processes rather than exposure alone (Maharjan, 2023).

The severe flood of 26 August 2026 provides a contemporary case through which these relationships can be examined. A glacier and rock collapse in the high Himalayan border region generated a destructive flood through the Lhende Khola and Bhote Koshi–Trishuli system. Settlements, roads, bridges and hydropower facilities were heavily affected, and rescue operations later concentrated on hydropower tunnels where workers were believed to be trapped (Reuters, 2026c, 2026d). The event therefore involved more than direct exposure to floodwater. It disrupted the infrastructure and institutional connections through which people could move, communicate and receive assistance.

Existing Nepal research provides important foundations for interpreting such a case. Post-earthquake studies show that household recovery is influenced by resources available before



disaster (Liu et al., 2022), while social networks and institutional connections matter differently across phases of recovery (Panday et al., 2021). Research on humanitarian assistance further indicates that emergency support may reduce some immediate vulnerabilities without transforming their structural causes (Hülssiep et al., 2021). Nepalese disaster research has therefore moved beyond treating affected populations as socially uniform.

At the same time, disaster-governance scholarship shows that formal institutions do not automatically produce equal protection. Nepal's federalising governance system combines multiple centres of authority and interaction among citizens, bureaucracy and political leadership (Vij, 2023). Disaster-justice research also demonstrates that distribution alone is insufficient; recognition, representation and the values through which needs are defined matter for equitable recovery (Shrestha et al., 2019). Gender-focused research after the Gorkha earthquake similarly identifies gaps between formal commitments and inclusive participation in recovery governance (Thapa & Pathranarakul, 2019).

Recent research raises a further problem: institutional assessments do not make every form of vulnerability equally visible. Tan et al. (2024) found that Nepal's post-disaster needs assessment identified some groups associated with poorer recovery but overlooked other disadvantages and important health outcomes. Bishwakarma and Roongtawanreongsri (2026) likewise show that Dalit-specific adaptation needs can remain weakly represented even when policy recognises social vulnerability in general. These findings suggest that the institutional recognition of vulnerability is itself socially important.

Despite these developments, social vulnerability and disaster governance are still often approached from different analytical directions. Vulnerability studies commonly focus on the characteristics and resources that shape exposure and coping, while governance research more often examines institutions, coordination, policy and administrative capacity. Less attention has been given to the process through which social and spatial position affects people's practical relationship with institutions responsible for warning, evacuation, rescue and relief during the immediate phase of a rapidly unfolding Himalayan disaster.

This distinction matters because institutional capacity and institutional protection are not identical. A warning system may exist while communication failure prevents information from reaching a particular location. Rescue personnel may be mobilised while destroyed roads, difficult terrain or underground workplaces restrict access. Relief programmes may exist while



affected populations differ in their ability to obtain assistance. The relevant sociological question is therefore not only whether protective institutions are available, but whether differently situated populations can actually access their protection.

This study uses the term institutional accessibility to describe that practical relationship. Institutional accessibility refers to the ability of affected populations to benefit from disaster-management systems under real emergency conditions. It is distinguished from institutional availability, which refers to the formal existence of warning, rescue, relief or other protective capacity.

The study asks three questions: How did social, occupational and geographical conditions shape vulnerability during the 2026 Nepal floods? How did infrastructure disruption influence access to warning, evacuation, rescue and relief? What does the case reveal about the relationship between social vulnerability and disaster governance during a rapidly unfolding Himalayan disaster?

The central argument is that vulnerability during the 2026 Nepal floods developed through the interaction of social position, situated environmental exposure, infrastructure and institutional accessibility. The paper makes three related contributions. It examines how geographical remoteness can become institutional distance when infrastructure fails; it identifies situated occupational exposure as an important dimension of vulnerability; and it shows why the availability of disaster-management capacity should be distinguished from people's practical ability to access it. The Nepal case is therefore used not simply to document a recent catastrophe, but to investigate the wider sociological processes through which environmental hazards become socially differentiated disasters.

• Literature and Research Gap

Sociological research on disasters has increasingly moved away from understanding disasters mainly as extreme physical events. Environmental processes create hazards, but their social consequences depend on the conditions in which people live and work. Social vulnerability research has been central to this shift. Cutter et al. (2003), for example, demonstrated that vulnerability is socially and spatially differentiated and developed an index based on socioeconomic and demographic conditions. The importance of this work lies less in any single indicator than in its broader claim that exposure alone cannot explain unequal disaster outcomes.

Adger (2006) further clarifies vulnerability as susceptibility to harm arising from exposure to environmental and social stress together with limited capacity to adapt. This formulation is



useful here because it avoids reducing vulnerability to membership of a demographic category. It places social relations, resources and adaptive capacity within the explanation of why similar hazards generate different consequences.

Later scholarship has treated vulnerability more explicitly as a process rather than a fixed condition of particular groups. People commonly described as vulnerable do not necessarily experience the same disaster in the same way. Vulnerability depends on how social position interacts with environmental exposure, available resources, infrastructure and institutional conditions. This relational understanding is particularly relevant in mountain regions where physical accessibility, settlement patterns and public infrastructure can strongly affect emergency response.

Nepal-specific flood research demonstrates this interaction clearly. Delalay et al. (2018), studying Sindhupalchok District, found that flood risk reflected both changing hazard conditions and the vulnerability of local populations. Their study highlighted weaknesses in risk assessment and flood governance and recommended stronger early-warning systems, clearer institutional responsibilities and better use of risk assessment. The importance of the study for sociology is that flood risk was not treated as a purely hydrological problem: physical exposure interacted with livelihoods, assets and institutional arrangements.

Maharjan (2023) develops this argument in the Koshi River basin. The study shows that vulnerability among riverine communities is shaped by historical, social, economic, political, geographical and ecological processes operating across scales. Governance is not simply an external solution to vulnerability; decisions concerning river management, floodplains and political arrangements can contribute to the conditions under which vulnerability is produced. This shifts the analysis from a simple hazard-response model towards a relational understanding of vulnerability and governance.

The 2015 Gorkha earthquake generated a substantial body of research that further illustrates these relationships. Hülssieper et al. (2021) examined the effect of humanitarian assistance on social vulnerabilities using the Pressure and Release model. They found that assistance could address some manifestations of vulnerability at the local level without necessarily transforming underlying root causes. The distinction matters because successful emergency assistance should not automatically be interpreted as the removal of vulnerability.

Research on household recovery also shows that people enter disasters from unequal social starting points. Liu et al. (2022), using panel data from before and after the Nepal earthquakes, found that human and social capital were associated with post-earthquake income recovery. The study demonstrates that knowledge,



resources and networks available before a disaster can influence recovery afterwards. It therefore complicates any interpretation of recovery as a process beginning only after the hazard.

Social capital itself, however, should not be treated as automatically beneficial. Panday et al. (2021) examined remote communities in Sindhupalchok and Gorkha and showed that bonding, bridging and linking social capital mattered differently across phases of recovery. Communities varied in access to infrastructure and relief and recovery programmes, and the usefulness of social relationships depended on wider institutional connections. The sociological question is therefore not simply whether a community has social capital, but what kind of connections exist and how they operate within unequal institutional environments.

Governance research adds another layer to this discussion. Vij (2023) analyses Nepal's disaster governance after the 2015 earthquake and during federalisation. The study describes changing combinations of monocentric and polycentric governance, showing how citizens, bureaucratic institutions and political leadership interact across levels. This perspective matters because it prevents disaster governance from being reduced to a single national state actor. Institutional protection depends on relationships among multiple organisations with different responsibilities and capacities.

Questions of inclusion and recognition are equally important. Thapa and Pathranarakul (2019) examined gender inclusiveness in disaster risk governance after the Gorkha earthquake. Their findings identified barriers linked to patriarchal conditions, limited institutional capacity and weaknesses in policy implementation. The study demonstrates that formal commitments to inclusion do not necessarily create equal participation or equal recognition of needs.

Disaster-justice research makes this point more explicitly. Shrestha et al. (2019) argue that justice in Nepal's earthquake recovery cannot be reduced to equal distribution of rights and goods. Recognition, representation and the values through which needs are defined also shape outcomes. This is particularly relevant for disaster governance because institutions do not simply distribute resources; they also classify needs, identify priority groups and determine which experiences become administratively visible.

Recent work on post-disaster assessment provides empirical support for this problem. Tan et al. (2024) compared Nepal's Post Disaster Needs Assessment with household recovery outcomes four years after the earthquake. The assessment successfully identified some groups associated with poorer outcomes, including women and poorer households, but missed other disadvantages such as household debt and gave insufficient attention to some health outcomes. Vulnerability assessment is therefore not a neutral process that automatically captures all relevant inequalities.



Policy research on caste and climate adaptation reaches a similar conclusion from a different direction. Bishwakarma and Roongtawanreongsri (2026) found that Dalits remained weakly represented in Nepal's climate adaptation policy framing, despite broad recognition of social vulnerability. Landlessness, water insecurity and occupational vulnerability were among the needs that were inadequately represented. This demonstrates the difference between acknowledging vulnerability in general and recognising the specific social processes through which particular groups experience disadvantage.

These studies also warn against treating broad social categories as internally uniform. Gender, caste, class, migration and occupation may intersect, but the way they matter has to be established empirically within each disaster. Previous Nepal research provides strong reasons to examine these dimensions, yet it would be methodologically weak to assume that every inequality documented after the 2015 earthquake operated in exactly the same way during the 2026 flood.

A further issue concerns infrastructure. Much disaster research treats roads, bridges, electricity and communication systems as assets that can be damaged. Yet infrastructure also connects people to institutions. A functioning road allows evacuation, the movement of rescue personnel and delivery of relief. Communication systems carry warnings and enable requests for assistance. Health and energy infrastructure can support both everyday life and emergency response. Infrastructure therefore has a social and institutional role in addition to its material value.

This perspective is especially important for remote mountain regions. Physical remoteness does not necessarily create the same level of vulnerability in every situation. A remote settlement connected by functioning transport and communication may retain access to institutional protection. When those connections fail, physical distance can become institutional distance. The sociological significance of geography therefore depends partly on infrastructure and the practical reach of institutions.

Occupation presents a related gap. Disaster-vulnerability research frequently focuses on households and residential communities, while occupation is often treated mainly as an indicator of income or livelihood. Yet work also places people in particular physical environments. Tunnels, hydropower plants, construction sites and transport routes may create distinctive exposure and evacuation conditions. The location and organisation of work can therefore shape vulnerability independently of, although often in interaction with, socioeconomic status.

Across the literature, a clear development can be identified. Foundational social-vulnerability scholarship established that hazard impacts are socially differentiated. Nepal-specific research then showed how



livelihoods, household resources, social capital and geography influence vulnerability and recovery. River-governance research demonstrated that political and institutional decisions can participate in producing vulnerability. More recent research on gender, caste, justice and post-disaster assessment has shown that recognition and participation are themselves unequal.

Yet an important analytical connection remains insufficiently developed. Vulnerability research often examines the social conditions that make populations more exposed or less able to cope. Governance research examines institutional structures, coordination, preparedness and policy. Justice research examines recognition, representation and distribution. These bodies of scholarship overlap, but less attention has been given to how they come together through people's practical access to protective institutions during the immediate phase of an unfolding flood.

The gap addressed by this study is therefore not a general absence of research on vulnerable populations or disaster governance in Nepal. Existing scholarship is substantial in both areas. The more defensible gap concerns how social and situated vulnerability interacts with the practical accessibility of warning, evacuation, rescue and relief institutions during a rapidly unfolding Himalayan flood. The 2026 Nepal floods provide an appropriate case for examining this relationship because residential exposure, workplace exposure, infrastructure disruption and institutional response occurred simultaneously.

- **Analytical Framework**

This study uses a relational understanding of social vulnerability. Vulnerability is not treated as a fixed quality of particular groups but as a changing condition produced through relationships among social position, situated environmental exposure, infrastructure and disaster governance.

Categories such as women, poor households, workers or remote communities can identify possible sources of disadvantage, but they do not by themselves explain outcomes.

The first dimension is social position. This includes class, gender, caste and ethnicity, occupation, migration status, household resources and other forms of social differentiation. These factors may influence access to information, mobility, shelter and recovery resources. However, the study treats them as empirically relevant only where the case evidence supports their role.

The second dimension is situated environmental exposure. Exposure is understood not simply as residence in a flood-affected area but as the particular physical and social location from which a person encounters the hazard. This includes both residential and occupational locations. Occupation can indicate socioeconomic



position, but it can also place people in tunnels, hydropower facilities, construction areas or transport routes where evacuation and rescue conditions differ from those of residential settlements.

The third dimension is infrastructure and connectivity. Roads, bridges, electricity networks, communication systems and monitoring facilities connect populations with information, mobility and institutions. Damage to these systems can therefore produce consequences beyond material loss. The framework distinguishes physical remoteness from institutional distance: the practical separation that develops when affected populations become difficult for protective institutions to reach.

The fourth dimension is disaster governance. Nepal's governance system involves multiple levels and actors rather than a single centre of authority (Vij, 2023). Effective protection therefore depends not only on whether institutions exist but also on coordination and practical reach.

For the purposes of this case, institutional accessibility is used as an analytical term for the practical relationship between affected populations and organisations responsible for protection. Institutional availability refers to the existence of warning, rescue, health or relief capacity; accessibility refers to whether that capacity can be reached or can reach people under actual disaster conditions. The distinction is heuristic rather than a claim to a new general theory.

A related supporting concept is institutional recognition. Institutions must not only reach affected populations; they must also identify different forms of need. Tan et al. (2024) show that post-disaster assessments can recognise some vulnerabilities while overlooking others. Institutional

recognition therefore concerns whether a disadvantage becomes visible within the categories and information systems used in disaster response.

The framework links four sociological dimensions: social position, situated exposure, infrastructure and institutional access. Social position influences the resources and constraints with which people encounter a hazard; situated exposure identifies where that encounter occurs; infrastructure conditions mobility and communication; and institutional access concerns the practical reach of warning, evacuation, rescue and relief. These relations may change during the event itself.

The main analytical proposition is that unequal disaster outcomes are produced through interactions among social position, situated exposure, infrastructure and institutional accessibility. This framework allows the Nepal flood to be examined as more than an isolated environmental event and directs attention towards the processes through which vulnerability is produced, modified and potentially reduced during disaster.



2. Materials and Methods

This study adopted a qualitative single-case study design to examine social vulnerability, inequality and disaster governance during the 2026 Nepal floods. The case-study approach was selected because the purpose was not simply to describe the physical characteristics of the flood, but to examine how the hazard interacted with social conditions, workplaces, infrastructure and institutional response. The case was therefore used to investigate a wider sociological question: how do social and spatial conditions shape people's exposure to disaster and their practical access to warning, evacuation, rescue and relief?

The case centred on the severe flood of 26 August 2026 in the Bhote Koshi–Trishuli river system. Contemporary reporting identified a glacier and rock collapse in the high Himalayan border region as the initiating event, followed by destructive flows of water, ice, mud and debris through the river system (Reuters, 2026d). Rasuwa and Nuwakot were among the most affected Nepalese districts. Settlements and critical infrastructure were damaged, and hydropower facilities became major sites of rescue activity (Reuters, 2026c).

The case was bounded spatially, temporally and analytically. Spatially, the analysis concentrated mainly on Rasuwa and Nuwakot and the Bhote Koshi–Trishuli corridor. Evidence from downstream areas was included where it directly informed the institutional response or

consequences of the flood. Temporally, the case began on 26 August and used 8 September 2026 as the documentary cut-off. The study therefore captures the emergency and very early recovery period rather than long-term reconstruction. Analytically, it focuses on social position, situated exposure, infrastructure and institutional accessibility.

The empirical material was assembled through structured documentary research. The search prioritised official Nepalese government records, recognised humanitarian and international organisations, and established national and international journalism. Academic databases and peer-reviewed publications were used separately for theoretical and contextual interpretation. Search combinations included Nepal floods 2026, Rasuwa flood, Nuwakot flood, Bhote Koshi flood, Trishuli flood, displacement, warning, evacuation, rescue, relief, hydropower workers, infrastructure damage and disaster response.

Documents were included when they provided substantive evidence concerning affected populations, geographical or occupational exposure, displacement, infrastructure disruption, warning, evacuation, rescue, relief, institutional response or early recovery. Reports that merely repeated changing casualty totals without



additional analytical information, duplicated another source, or focused entirely on technical processes without relevance to the research questions were excluded from substantive analysis.

Different sources were used for different evidentiary purposes. Government and official disaster-management sources were prioritised for formal institutional actions and response. Humanitarian assessments were used particularly for displacement and population needs. Established journalism was used to complement these sources, especially for occupational exposure, direct testimony and specialised rescue operations. The International Organization for Migration's emergency tracking assessment, for example, covered fifteen assessed sites in Rasuwa, Nuwakot and Dhading between 27 and 31 August and provided evidence on affected and displaced households and specific health- and mobility-related needs (International Organization for Migration, 2026).

The documentary material was organised using a structured extraction framework recording date, source type, geographical area, population, type of exposure, infrastructure involved, identified vulnerability, institutional actor and institutional response. Evidence was also classified by stage of protection: warning, evacuation, rescue, relief and early recovery.

The analysis used qualitative thematic analysis. Thematic analysis provides a flexible method for identifying and interpreting patterns in qualitative material (Braun & Clarke, 2006). Deductive codes were drawn from the conceptual framework, including social position, situated exposure, infrastructure, institutional accessibility, warning, evacuation, rescue, relief and early recovery. Inductive coding was also used so that repeated patterns not fully anticipated by the framework could be identified.

The analysis focused on relationships rather than the frequency of isolated terms. Infrastructure damage became sociologically significant where it altered mobility, access to services or the ability of institutions to reach affected locations. Occupation became significant where workplace location or organisation affected exposure, evacuation or rescue. This approach was intended to prevent the conceptual framework from becoming a checklist of predetermined findings.

Source triangulation was used to strengthen credibility. Major factual claims were compared across official, humanitarian and independent journalistic sources where possible. Publication dates were retained because figures concerning deaths, missing persons and displacement changed rapidly as the emergency developed. Numerical information was therefore treated as time-specific rather than final.

The documentary design also creates limitations. What can be analysed depends partly on what institutions and journalists recorded. Some forms of vulnerability, particularly health, injury, disability and



displacement, were comparatively visible, while systematic evidence concerning caste, ethnicity, household economic position and some gendered experiences was more limited. Absence from documentary reporting was therefore not treated as evidence that an inequality was absent from the disaster.

The study did not involve direct interaction with human participants, but ethical care remained necessary because sources contained accounts of death, injury and displacement. Personal experiences were used only where they contributed directly to the analysis. The study also avoided treating affected populations only as passive victims and recognised agency and survival where the evidence allowed.

The purpose of the case is analytical rather than statistical generalisation. The study uses a clearly bounded event to examine how social position, workplace and geographical exposure, infrastructure and institutional accessibility interacted during an unfolding disaster. This design

provides the basis for asking how environmental hazards become socially differentiated through relationships among people, places and protective institutions.

For reproducibility, the documentary corpus should be retained as a screening log containing the source, publication date, geographical coverage, source category, inclusion or exclusion decision, reason for exclusion and analytical codes for every candidate document. Duplicate and syndicated reports should be linked to their earliest identifiable source. The final manuscript should report the exact number of records identified, duplicates removed, records excluded and unique documents analysed only after this log has been completed. The analysis reports source families and documentary series without counting cumulative updates or syndicated copies as independent evidence.

The unit of analysis is the unique documentary item rather than each webpage on which the same information appeared. This decision reduces the risk of treating syndicated or repeated reporting as independent confirmation. When a numerical claim changed over time, the analysis retained the date attached to the estimate and used the figure only for the period to which it referred.

The study treats documents as situated records rather than transparent representations of the disaster. Government reports reflect administrative categories and operational priorities; humanitarian assessments are shaped by mandates and assessment instruments; news reports privilege events judged reportable. Triangulation was therefore used not to erase differences between sources but to identify where independent records converged, where they diverged, and which social experiences remained poorly documented.

- **Documentary Corpus and Screening**



The final empirical corpus was organised at the level of the unique documentary item. The verified core corpus comprises the International Organization for Migration displacement snapshot covering 27–31 August 2026; the Health Emergency Operation Centre event collection, which lists 12 health-sector situation reports for the Rasuwa floods; the Government of Nepal Ministry of Foreign Affairs flood-update series available through the study cut-off; and independently produced Reuters reports used for claims concerning hydropower workplaces, rescue constraints and the scale of mobilisation. These source families were not treated as equivalent: each was used for the type of claim for which it had the strongest evidentiary position.

Screening proceeded in three stages. First, records were retained when they contained information relevant to at least one analytical domain: geographical or occupational exposure,

displacement, infrastructure disruption, warning, evacuation, rescue, relief, health response or early recovery. Second, duplicate, syndicated and near-duplicate items were removed from independent evidentiary counting. Third, rapidly changing numerical claims were retained only with their publication date and source context. The analysis therefore privileges convergence across independent source types rather than the number of webpages repeating the same statement.

The verified source base is strongest for infrastructure disruption, hydropower and tunnel exposure, displacement-related health and mobility needs, and the practical constraints affecting rescue and institutional reach. It is materially weaker for caste, ethnicity, household class and several dimensions of gender inequality. Those dimensions are consequently treated as questions raised by prior scholarship, not as demonstrated empirical findings of the 2026 case.

A reproducibility log was designed to record, for each candidate document, the source organisation, title, publication date, geographical coverage, source type, inclusion or exclusion decision, reason for exclusion and analytical codes. Because the official situation-report series contains cumulative information, the HEOC reports are treated as a longitudinal institutional series rather than as independent confirmations of the same claim. This reduces the risk of pseudo-replication in documentary analysis.

Source family	Verified coverage	Primary analytical use	Counting rule
---------------	-------------------	------------------------	---------------



IOM DTM	27–31 Aug 2026; 15 assessed sites	Affected/displaced households; health and mobility-related vulnerabilities	One assessment report
HEOC, Government of Nepal	12 situation reports in event collection	Health-sector response; affected facilities; emergency medical mobilisation	Longitudinal series, not 12 independent confirmations

Ministry of Foreign Affairs, Nepal	Flood updates through 8 Sep 2026	Official response chronology and continuing rescue/relief activity	Each dated update retained as part of one official series
Reuters	26 Aug–8 Sep 2026 reports used in manuscript	Independent reporting on infrastructure, hydropower workplaces, tunnel rescue and mobilisation	Unique Reuters reports only; no syndicated copies counted

3. Results

The documentary analysis identified four connected patterns: infrastructure-mediated isolation, situated occupational vulnerability, differentiated displacement needs and uneven practical accessibility of institutional protection. Together, these findings show that the flood affected not only people and places but also the connections through which populations could move, communicate and receive assistance.

The first pattern concerns geographical exposure and infrastructure. Settlements along the Bhote Koshi–Trishuli corridor were directly exposed, but infrastructure failure changed the consequences of location. Roads, bridges and energy systems were heavily damaged. Contemporary reporting described extensive



destruction along the route linking Nuwakot with the Rasuwagadhi border area and major disruption to transport and power infrastructure. The sociological significance of this damage lies in the fact that roads and bridges were also channels for evacuation, rescue personnel, equipment and relief.

The relationship observed in the case was therefore not simply remote location leading to greater vulnerability. A more accurate sequence was environmental exposure, infrastructure disruption, reduced connectivity and increased difficulty of institutional access. The flood could transform physical remoteness into institutional distance by weakening the connections between affected populations and organisations capable of providing assistance.

The second pattern concerns occupational exposure. Hydropower facilities became major sites of vulnerability and rescue. By 8 September, rescue operations were focused on workers believed to be trapped in several hydropower tunnel systems, while eleven hydropower projects were reported damaged (Reuters, 2026c). Two workers at the Upper Trishuli 3A project survived for nine days in an air-filled section of a flooded tunnel before rescue teams reached them (Reuters, 2026b).

These experiences demonstrate that occupation can organise environmental exposure through workplace location. The vulnerability of hydropower workers was not produced simply by their occupational label. Their work placed them in underground and river-side environments where evacuation was difficult and rescue required specialised equipment and technical capacity. The relationship can therefore be described as occupation, workplace location, environmental exposure, evacuation constraints and specialised rescue requirements.

For this case, the phrase occupationally situated vulnerability is used descriptively to draw attention to the conjunction of work, place and hazard. It does not designate a new category of persons. Its value lies in showing that occupational location may structure exposure and evacuation independently of household residence.

The third pattern concerns displacement and differentiated needs. The International Organization for Migration (2026) assessed fifteen sites across Rasuwa, Nuwakot and Dhading between 27 and 31 August. Within those assessed locations it estimated 4,288 affected households and 2,886 displaced households. The assessment also identified pregnant or lactating women, injured people, persons with disabilities and people with chronic or serious medical conditions.

These findings show why displacement cannot be treated as a socially uniform experience. People may be displaced by the same hazard while having different requirements for mobility, shelter, health services and



continuing care. Being displaced describes movement; displacement vulnerability concerns the conditions under which that movement is experienced.

The documentary evidence was uneven across social dimensions. Health, disability, injury and maternity-related needs were comparatively visible because humanitarian and health assessments specifically recorded them. Systematic evidence concerning caste, ethnicity, household wealth and some gendered inequalities was much weaker during the study period. This does not demonstrate that such inequalities were absent. Rather, it highlights a difference between experienced vulnerability and documented vulnerability.

The fourth pattern concerns institutional response and accessibility. The evidence shows substantial mobilisation rather than institutional absence. Nepalese security forces, health services, government agencies and international partners participated in search, rescue and relief. Reuters reported the deployment of more than 9,000 army personnel alongside heavy machinery, helicopters and excavators during the search effort (Reuters, 2026a).

Yet the presence of capacity did not make protection equally accessible. Tunnel rescue operations were restricted by debris, water, difficult terrain and the physical structure of the workplaces. The hydropower case therefore provides a clear example of the distinction between institutional availability and institutional accessibility. Rescue personnel and equipment existed, but environmental and infrastructural conditions shaped their practical reach.

The findings can be summarised as a relational sequence: social and occupational position influence situated exposure; infrastructure influences connectivity; connectivity affects institutional accessibility; and accessibility shapes the effectiveness of warning, evacuation, rescue and relief. The sequence is not mechanically one-directional. Institutional intervention can reduce vulnerability, while infrastructure failure and displacement can create new vulnerabilities during the event.

Within the limits of the documentary evidence, the strongest empirical findings concern geography, infrastructure, occupational exposure, displacement-related needs and institutional accessibility. Claims concerning caste, ethnicity, household class and wider gender inequality require further field-based evidence. The distinction matters because theoretically plausible inequalities should not be presented as empirically demonstrated findings without direct support from the case.

Across the four themes, evidence strength was not uniform. Infrastructure disruption and hydropower rescue constraints were supported by multiple dated sources, while displacement-related needs were supported by a structured humanitarian assessment. Evidence on caste, ethnicity, household class and broader gender



inequality was insufficiently systematic for case-level conclusions. The Results therefore distinguish demonstrated patterns from theoretically plausible but unverified inequalities.

The evidentiary hierarchy matters for interpretation. IOM figures are reported as assessment-specific estimates rather than national totals; HEOC situation reports are treated as a cumulative institutional series; government updates establish formal response activity; and Reuters is used as an independent source for conditions at workplaces and rescue sites. No single source type is used to infer social inequalities that it did not measure.

4. Discussion

The findings show that vulnerability during the 2026 Nepal floods developed through the interaction of environmental exposure, geographical and occupational location, infrastructure and institutional response. The case supports the sociological argument that hazard exposure does not automatically determine disaster outcomes, but it also develops this argument by showing how vulnerability can change during the emergency as infrastructure and institutional connections are disrupted.

The pattern is consistent with a long sociological tradition that locates disaster in the organisation of vulnerability rather than in the physical hazard alone (Wisner et al., 2004; Tierney, 2014). Yet the Nepal case adds a temporal point that is sometimes obscured when vulnerability is measured only before or after an event: social vulnerability can be reconfigured during the emergency itself. A damaged bridge, a flooded tunnel or a broken communication route may alter the relationship between an affected population and the institutions expected to protect it.

The first contribution concerns geography and connectivity. Maharjan's (2023) research in the Koshi basin shows that riverine vulnerability is produced through interacting geographical, political, economic and ecological processes. The 2026 case adds a short-term emergency dimension. Infrastructure was not only exposed to the flood; it also connected populations to safety and institutional assistance. A road therefore had both a material and a social function. Its destruction could simultaneously create economic loss, restrict evacuation and make institutional response more difficult.

This suggests that connectivity should be treated as part of vulnerability rather than only as a category of infrastructure damage. Two communities may experience similar physical exposure while maintaining different relationships with emergency institutions because one remains connected and another becomes isolated. The concept of institutional distance captures this process. It refers to the practical separation that



develops when infrastructure failure makes affected populations more difficult for protective institutions to reach.

The second contribution concerns work. The hydropower rescue operations show that occupation can shape vulnerability through the spatial organisation of employment. Disaster research often

considers occupation as a component of socioeconomic status or livelihood, but the Nepal case demonstrates that work also determines where people encounter hazards. Underground and river-side workplaces created evacuation and rescue conditions different from those of residential settlements.

An occupationally situated reading shifts attention from job title alone to the spatial organisation of work. This is relevant to hydropower, mining, construction, transport and tourism, where work may place people in environments with restricted exits, specialised rescue requirements or weak communication.

The third contribution concerns differentiated displacement. The case evidence identified people with disabilities, pregnant and lactating women, injured people and those requiring continuing medical care among affected populations. These categories do not simply create another list of vulnerable groups. They demonstrate that a common administrative category such as displaced population contains people with different mobility, health and care requirements.

This interpretation is consistent with Thapa and Pathranarakul's (2019) finding that gender-sensitive disaster governance requires attention to participation, recognition and implementation rather than formal inclusion alone. However, the current case also demonstrates the need for methodological caution. Previous Nepal research cannot be used to assume that the same gender, caste or class inequalities operated identically in 2026.

The uneven documentary visibility of different social conditions is itself important. Tan et al. (2024) show that post-disaster needs assessments can identify some forms of disadvantage while overlooking others. The 2026 evidence reveals a similar issue during the emergency phase: some needs were systematically recorded while other social inequalities were not. This creates a distinction between experienced vulnerability and institutionally visible vulnerability.

Institutional visibility is not proposed as a separate theory. It refers to whether existing disadvantages become visible within the categories and information systems used by disaster institutions. This matters both for governance and for documentary research. Researchers using institutional documents can reproduce the blind spots of those documents if they treat absence from records as absence from social reality.



The fourth and most important contribution concerns institutional accessibility. The evidence does not support a simple narrative of governance failure. Substantial resources were mobilised.

Nepal's governance context is better understood as involving multiple interacting institutional actors, as Vij (2023) demonstrates in his analysis of polycentric and monocentric disaster governance. The sociological question is therefore not whether institutions existed, but how their capacities translated into protection under actual disaster conditions.

Institutional availability and institutional accessibility are analytically distinct. Availability concerns the existence and mobilisation of warning systems, rescue personnel, health services, emergency equipment and relief. Accessibility concerns whether these resources can practically reach differently situated populations. The hydropower tunnels illustrate the distinction: rescue capacity was present, but debris, water and underground conditions shaped how that capacity could be used.

This distinction provides an analytical bridge between social-vulnerability and disaster-governance scholarship. Vulnerability studies ask why populations have different levels of exposure and resources. Governance studies ask how institutions are organised and how they respond. Institutional accessibility directs attention to the point at which these two processes meet: what happens when institutional capacity encounters socially and geographically differentiated populations.

It also changes how institutional effectiveness should be evaluated. A system may mobilise substantial resources while protection remains uneven because access differs across locations and populations. Conversely, difficulty reaching particular groups does not automatically demonstrate institutional inactivity. Analysis should distinguish capacity, mobilisation, accessibility and outcome.

The case indicates a dynamic model: social and structural position shape situated exposure; infrastructure shapes connectivity; institutional accessibility and recognition mediate the relationship between governance capacity and affected populations; and these interactions contribute to differentiated outcomes. The model is not a simple causal chain. Infrastructure failure can create new isolation, displacement can generate new needs, and successful institutional intervention can reduce vulnerability.

This interpretation develops existing Nepal scholarship without claiming to replace it. Delalay et al. (2018) established the importance of vulnerability and governance in Nepalese flood risk. Maharjan (2023) demonstrates how river governance can participate in producing vulnerability. Vij (2023) shows the importance of multi-actor institutional arrangements. Tan et al. (2024)



demonstrates that institutional assessments can recognise some vulnerabilities while missing others. The present case brings these insights together around the immediate emergency and the practical relationship between affected populations and protective institutions.

The paper offers three bounded contributions to the sociology of disaster. First, it shows how damaged infrastructure can enlarge the practical distance between affected populations and public institutions. Second, it demonstrates why occupational location should be analysed alongside residential location. Third, it uses institutional accessibility as a relational lens for examining the point at which governance capacity encounters socially and spatially differentiated populations.

These claims are deliberately modest. Access, recognition and unequal institutional relations are established concerns in disaster research. The contribution of this case lies in bringing them together around the emergency phase of a Himalayan flood and in showing how the practical reach of institutions can change as infrastructure and workplaces are disrupted.

The wider sociological shift is therefore from asking only who is vulnerable towards also asking how vulnerability is produced and changed during disaster. The first question remains necessary for identifying structural inequality. The second directs attention to processes: where people are situated, how infrastructure connects them to safety, which needs become institutionally visible and whether protective resources can actually reach them.

• **Implications for Disaster Policy and Practice**

The case suggests three practical priorities. First, continuity planning for mountain disasters should identify transport, communication and energy links whose failure would sharply increase institutional distance. Second, emergency planning should map high-risk workplaces alongside residential settlements and pre-plan specialised evacuation and rescue requirements. Third, response monitoring should measure not only resources mobilised but also who and which locations those resources actually reached. These measures would translate the paper's sociological argument into operational indicators without assuming that all forms of social inequality operate identically in every disaster.

5. Conclusion

The 2026 Nepal floods demonstrate why disasters need to be understood as both environmental and social processes. The flood produced severe physical destruction, but exposure alone did not



explain the experiences of affected populations. Vulnerability developed through interactions among geographical and occupational location, infrastructure, displacement-related needs and access to protective institutions.

Three contributions follow from the analysis. First, it shows that geographical exposure becomes more significant when infrastructure connecting affected populations with protection is disrupted. Damage to roads, bridges, electricity and communication systems is not only material loss; such infrastructure also supports mobility, information and institutional response. Institutional distance captures the way physical remoteness can become more consequential when these connections fail.

Second, the study identifies situated occupational vulnerability. The hydropower case demonstrates that occupation can influence disaster exposure through the location and organisation of work. Disaster-vulnerability assessment should therefore consider not only where people live but where they work and how workplace conditions shape evacuation and rescue requirements.

Third, the case highlights the distinction between institutional availability and institutional accessibility. The flood generated substantial institutional mobilisation, yet the availability of rescue personnel, equipment and emergency services did not automatically translate into equal access to protection. Terrain, infrastructure damage and specialised workplace environments influenced whether capacity could reach affected populations in practice.

The documentary evidence also raises a question of recognition. Health conditions, disability, injury and maternity-related needs were comparatively visible within emergency assessments, while systematic information concerning caste, ethnicity, household economic position and some gendered inequalities was more limited. This does not establish that these inequalities were absent. It demonstrates the need to distinguish experienced vulnerability from documented vulnerability.

The study is limited by its documentary design and its early cut-off date. It captures the emergency and very early recovery period rather than long-term reconstruction. Experiences not recorded by institutions, humanitarian organisations or journalists could not be directly examined, and some populations received more documentary attention than others. Future field-based and longitudinal research should therefore examine whether differences in institutional accessibility

during the emergency influence later recovery and should investigate caste, gender, class, migration and occupational inequalities empirically rather than assuming them.



As a single case study, the research does not seek statistical generalisation. Its contribution is analytical. The Nepal case shows that asking who is vulnerable is necessary but insufficient. Disaster sociology must also examine where vulnerability is produced, how it changes when infrastructure and social conditions change, and whether available institutions can actually reach people when protection is required.

The broader lesson is that environmental hazards become socially differentiated disasters through the interaction of social position, situated exposure, infrastructure and institutional accessibility. Bringing these relationships together strengthens the connection between social-vulnerability research and disaster-governance scholarship and provides an analytical framework that can be tested comparatively in other mountain regions and hazard-prone settings.

References

- Adger, W. N. (2006). Vulnerability. *Global Environmental Change*, 16(3), 268–281. <https://doi.org/10.1016/j.gloenvcha.2006.02.006>
- Bishwakarma, K. L., & Roongtawanreongsri, S. (2026). Examining climate change adaptation policies in Nepal: A qualitative content analysis through the Dalit lens. *Climate Policy*, 26(1), 120–135. <https://doi.org/10.1080/14693062.2025.2487525>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Cutter, S. L., Boruff, B. J., & Shirley, W. L. (2003). Social vulnerability to environmental hazards. *Social Science Quarterly*, 84(2), 242–261. <https://doi.org/10.1111/1540-6237.8402002>
- Delalay, M., Ziegler, A. D., Shrestha, M. S., Wasson, R. J., Sudmeier-Rieux, K., McAdoo, B. G., & Kochhar, I. (2018). Towards improved flood disaster governance in Nepal: A case study in Sindhupalchok District. *International Journal of Disaster Risk Reduction*, 31, 354–366. <https://doi.org/10.1016/j.ijdr.2018.05.025>
- Hülssiep, M., Thaler, T., & Fuchs, S. (2021). The impact of humanitarian assistance on post-disaster social vulnerabilities: Some early reflections on the Nepal earthquake in 2015. *Disasters*, 45(3), 577–603. <https://doi.org/10.1111/disa.12437>



- International Organization for Migration. (2026, September 3). Nepal—Flash floods—Displacement snapshot (27–31 August 2026). Displacement Tracking Matrix. <https://dtm.iom.int/reports/nepal-flash-floods-displacement-snapshot-27-31-august-2026>
- Liu, W., Gerber, E., Jung, S., & Agrawal, A. (2022). The role of human and social capital in earthquake recovery in Nepal. *Nature Sustainability*, 5, 167–173. <https://doi.org/10.1038/s41893-021-00805-4>
- Maharjan, K. (2023). Transboundary river governance and climate vulnerability: Community perspectives in Nepal's Koshi river basin. *Geographical Research*, 61(4), 512–524. <https://doi.org/10.1111/1745-5871.12598>
- Panday, S., Rushton, S., Karki, J., Balen, J., & Barnes, A. J. E. (2021). The role of social capital in disaster resilience in remote communities after the 2015 Nepal earthquake. *International Journal of Disaster Risk Reduction*, 55, 102112. <https://doi.org/10.1016/j.ijdrr.2021.102112>
- Reuters. (2026a, September 2). How are search operations progressing in Nepal, a week after deadly flash flood? <https://www.reuters.com/business/environment/how-are-search-operations-progressing-nepal-week-after-deadly-flash-flood-2026-09-02/>
- Reuters. (2026b, September 8). How two men survived nine days in a Nepal flood tunnel. <https://www.reuters.com/world/asia-pacific/exclusive-how-two-men-survived-nine-days-nepal-flood-tunnel-2026-09-08/>
- Reuters. (2026c, September 8). Nepal rescue focused on workers trapped in three tunnels. <https://www.reuters.com/business/environment/nepal-rescue-focused-on-workers-trapped-three-tunnels-2026-09-08/>
- Reuters. (2026d, August 27). What triggered the catastrophic flood on the Nepal-Tibet border? <https://www.reuters.com/business/environment/what-triggered-catastrophic-flood-nepal-tibet-border-2026-08-26/>
- Shrestha, K. K., Bhattarai, B., Ojha, H. R., & Bajracharya, A. (2019). Disaster justice in Nepal's earthquake recovery. *International Journal of Disaster Risk Reduction*, 33, 207–216. <https://doi.org/10.1016/j.ijdrr.2018.10.006>
- Tan, S. B., McCaughey, J. W., Loos, S., Maharjan, N., Tadepalli, S., Khan, F., & Lallemant, D. (2024). Seen and unseen vulnerabilities: Evaluating recovery from the 2015 Nepal earthquake to inform



more equitable post-disaster needs assessments. *International Journal of Disaster Risk Reduction*, 115, 105021. <https://doi.org/10.1016/j.ijdr.2024.105021>

Thapa, V., & Pathranarakul, P. (2019). Gender inclusiveness in disaster risk governance for sustainable recovery of 2015 Gorkha Earthquake, Nepal. *International Journal of Disaster Risk Reduction*, 34, 209–219. <https://doi.org/10.1016/j.ijdr.2018.11.019>

Tierney, K. (2014). *The social roots of risk: Producing disasters, promoting resilience*. Stanford University Press. <https://doi.org/10.1515/9780804791403>

Vij, S. (2023). Polycentric disaster governance in a federalising Nepal: Interplay between people, bureaucracy and political leadership. *Policy Sciences*, 56(4), 755–776. <https://doi.org/10.1007/s11077-023-09510-9>

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. (2004). *At risk: Natural hazards, people's vulnerability and disasters* (2nd ed.). Routledge.