

Evaluating the effectiveness of Nepal's Disaster Management Policies in protecting life and Property

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Abstract

This article critically evaluates the effectiveness of Nepal's disaster management policies in safeguarding life and property, with a focus on the alignment of these policies with international human rights standards. Using a qualitative doctrinal approach, the study analyzes legal documents, government reports, and case studies of recent disasters, particularly the 2015 Gorkha earthquake. It highlights the evolution of Nepal's disaster management framework, notably the Disaster Risk Reduction and Management Act 2017, which shifted the country from a reactive to a proactive approach. Key areas assessed include early warning systems, emergency response coordination, and post-disaster rehabilitation, alongside protection for vulnerable populations. The study identifies gaps in policy implementation and enforcement, particularly at local levels, and suggests improvements to enhance resilience. It emphasizes the importance of integrating human rights into disaster management and offers recommendations for strengthening Nepal's disaster preparedness, response, and recovery mechanisms to better protect life, property, and rights amidst increasing disaster risks due to climate change.

Key Words: Disaster, Disaster Management Policy, Human Right, Life, Property.

Background

On 12 July 2024 in Chitwan along the Narayanghat-Mugling highway, about 100km (60 miles) from the capital Kathmandu, a massive landslide swept away two buses. (Wong, 2024) 60 peoples died in the tragic incident. A total of 38 fatal landslides has been recorded in 2024 till 17 July, which have killed 135 people in total. (Petley, 2024) A powerful 7.8-magnitude earthquake struck Nepal in 2015, killing nearly 9,000 people and destroying more than 600,000 houses. (European Union, 2022) The frequency and intensity of these disasters are increasing due to climate change, further threatening lives and infrastructure.

Nepal is one of the most disaster-prone countries on the planet. The nation is a significant concern because it has unique geographic and climatic conditions that make it vulnerable to natural

disasters. Climate change exacerbates these risks caused by earthquakes, floods, landslides, glacier lake outburst floods (GLOFs), and so forth.

Nepal's diverse geo-climatic system, characterized by heavy monsoons, steep terrain, and remoteness, significantly contributes to its susceptibility to natural disasters. (World Bank, n.d.) The country experiences annual torrential rains that trigger landslides and floods, particularly during the monsoon season.

Many communities in Nepal are already marginalized and impoverished, making them more susceptible to the impacts of natural hazards. Vulnerability mapping indicates that a significant portion of the population lives in areas with moderate to high social vulnerability, particularly in the western mountain districts. (Aksha, Juran, Resler & Zhang, 2019)

So, it is imperative implementing comprehensive disaster risk reduction strategies helps to minimize the likelihood and impact of disasters. Disaster management policies that prioritize human rights can significantly improve the protection of vulnerable populations. Integrating disaster management into broader development strategies helps build resilience against future hazards. (UNDP, 2009) Ensuring access to resources, information, and support during disasters is essential for safeguarding the rights to life and property.

Understanding Nepal's vulnerability to natural disasters and the importance of effective disaster management is critical for protecting lives and property.

Methodology

The methodology for this paper involves a qualitative doctrinal analysis of Nepal's disaster management policies through a review of legal documents, government reports, and case studies of recent disasters. secondary data from academic literature will be used to assess the effectiveness of these policies in protecting life and property, with a focus on their alignment with international human rights standards.

Introduction

Disasters are disruptions. It is a natural catastrophe that causes great damage or loss of life. This is why it needs to be tackled very safely and cautiously. Therefore, Disaster management becomes one of the prime concerns of not just individual but also the state. Disaster management needs to be implemented as a comprehensive and continuous activity, not as a periodic reaction to individual disaster circumstances (Asian Development Bank, 2008). disaster management entails how one "prepare for, respond to and learn from the effects of major failures caused by disaster".

Nepal, a country uniquely situated in the seismically active Himalayan region, faces significant vulnerabilities to natural disasters. Its diverse topography and climatic variations make it prone to earthquakes, floods, landslides, and other hazards, which frequently result in substantial loss of life and property. Human rights are the standards that recognize and protect the dignity of all human being Therefore, Disaster management in a disaster-prone country is a pillar of realizing the human rights. A resilience and robust framework must be well enacted, not just limited to black letter of law but to every rural village of the nation.

The constitution of Nepal in article 16 and article 25 have guaranteed right to live with dignity and right to property respectively. This article seeks to examine how efficient is Nepal's Disaster Management policies in protecting life and property of the individual and suggest necessary recommendations and changes in the policy.

International Human Rights Frameworks in Disaster Management

The protection of human rights during disasters is anchored in several key international legal instruments. The Universal Declaration of Human Rights (UDHR), adopted in 1948, sets the foundation by affirming in Article 3 that “Everyone has the right to life, liberty, and security of person”. This right is particularly relevant in the context of disasters, where the preservation of life and safety becomes a primary concern. The International Covenant on Civil and Political Rights (ICCPR), which came into force in 1976, further solidifies this principle, specifically under Article 6, which states that “Every human being has the inherent right to life” and that this right should be protected by law. The ICCPR obliges states to take necessary measures to protect lives, which implicitly includes disaster preparedness and response.

In addition to these foundational texts, the Sendai Framework for Disaster Risk Reduction 2015-2030, adopted at the Third UN World Conference on Disaster Risk Reduction, emphasizes the need to “prevent new and reduce existing disaster risk” as a means of protecting people and their assets. This framework, while not legally binding, serves as a guideline for states to enhance their disaster risk management systems, integrating human rights considerations by prioritizing the safety and dignity of individuals, especially the most vulnerable populations.

Globally, best practices in disaster management have increasingly recognized the importance of integrating human rights into Disaster Risk Reduction (DRR). The Hyogo Framework for Action (HFA) 2005-2015, the predecessor to the Sendai Framework, laid the groundwork by urging countries to develop strategies that emphasize the protection of people, property, and livelihoods. The HFA called for the systematic incorporation of risk reduction approaches into the implementation of emergency preparedness, response, and recovery programs.

The Sendai Framework builds on this by advocating for an “all-of-society engagement,” which includes a human rights-based approach to disaster risk management. This involves ensuring that disaster management policies are inclusive, non-discriminatory, and equitable. The framework emphasizes the protection of not only physical lives and property but also the socio-economic rights of individuals, highlighting the need for comprehensive policies that consider the long-term recovery and well-being of affected populations.

Disaster Management Policies in South Asian Countries

India

India's disaster management framework, defined by the Disaster Management Act, 2005, integrates national, state, and district authorities under the National Disaster Management Authority (NDMA). Advanced early warning systems managed by the Indian Meteorological Department (IMD), alongside community initiatives like *Aapda Mitra*, ensure preparedness and mitigation. India's post-disaster response is supported by insurance schemes, public-private partnerships, and efficient recovery mechanisms, making it a regional leader in disaster management.

Bangladesh

Bangladesh's disaster management is spearheaded by the Ministry of Disaster Management and Relief (MoDMR) and the Standing Orders on Disaster (SOD). The country's Cyclone Preparedness Programme (CPP) is a global model for early warning and evacuation, significantly reducing fatalities during cyclones. Strong community engagement through local committees and volunteers enhances resilience, particularly in flood-prone areas. Bangladesh's emphasis on resilient infrastructure in post-disaster recovery sets an example for the region.

Sri Lanka

Sri Lanka's disaster management system is led by the Disaster Management Centre (DMC) under the Disaster Management Act, 2005. The policy emphasizes multi-hazard preparedness, community-based approaches, and climate adaptation. Early warning systems, particularly for tsunamis, have improved significantly after the 2004 Indian Ocean tsunami. However, challenges such as limited funding and inter-agency coordination persist, affecting the effectiveness of disaster response and recovery efforts.

Maldives

The Maldives, highly vulnerable to climate change and sea-level rise, has developed its National Disaster Management Act, 2006, emphasizing risk reduction and community-based

adaptation. Early warning systems for tsunamis and storms are effective, but the country faces challenges due to its dispersed geography. Collaboration with international partners for climate-resilient infrastructure has been crucial in mitigating disaster risks.

National Disaster Management Policies in Nepal

Nepal's disaster management framework has evolved significantly, particularly after the devastating 2015 Gorkha earthquake.

The Disaster Risk Reduction and Management Act, 2017

The Disaster Risk Reduction and Management Act, 2017, is a landmark legislation that replaced the outdated Natural Calamity Relief Act, 1982. The new Act reflects a shift from a reactive to a proactive disaster management approach, emphasizing preparedness, risk reduction, and resilience building. It mandates the creation of disaster management structures at the national, provincial, and local levels, aiming for a more coordinated and decentralized response.

Disaster Risk Reduction and Management Act, 2017 in its preamble mentions its objective as to protect human lives and properties of the public, private and individual, to preserve natural and cultural heritage, and to keep physical infrastructures safe from natural and non-natural disasters by effectively coordinating and managing all activities on reduction of disaster risk and management. The Key provisions of the act in protection of Life and property are:

- Establishment of Statutory bodies and committees:
 1. National Council for Disaster Risk Reduction and Management (section 3): The council is a 12 membered council whose ex-officio chairperson is the Prime Minister. The main function of the council as per section 5 is to lay down national policy and programs on disaster management and provide necessary directions to the Executive Committee and the Authority in relation to policy and plan on disaster management.
 2. Executive Committee (section 6): for the purposes of implementing policies and plans laid down by the Council.
 3. Expert Committee (section 9): to formulate policies, plans and programs on disaster management and to provide suggestions to conduct study and research on disasters.
 4. National Disaster Risk Reduction and Management Authority (section 10): to effectively carryout and manage disaster management activities.
 5. Provincial Disaster Management Council (section 13a)

6. Provincial Disaster Management Committee (section 14)
 7. Provincial Disaster Management Committee (section 16)
 8. Local Disaster Management Committee (section 17)
- Disaster Management Fund (section 22): A separate fund to be called a Disaster Management Fund shall be established at the central level. The fund comprises of Money from Government, amount donated or gifted by any organization or individual etc.
 - Declaration of Disaster Threatening Area (section 32): The government can declare a disaster threatening area by notification in the Nepal Gazette, where situation created due to the disaster has not come under control for a certain duration.
 - Minimum Standards for Relief Distribution (section 39(2)(a)): Accommodation, food, drinking water, health and sanitation to be provided to the disaster affected people while staying in temporary shelters should be provided.

Disaster Risk Reduction and Management Rules, 2076 (2019)

Disaster Risk Reduction and Management Rules, 2076 (2019) is the framework made by the Nepal government. a major legal framework that directs the entire disaster management process within the nation. It encompasses various elements, including both natural and non-natural disasters, District and Provincial Disaster Management Committees, disaster risk reduction, recovery, response, overall disaster management, business establishments, public entities, security agencies, and Local Disaster Management Committees.

The Disaster Risk Reduction and Management Rules, 2076 (2019) outline specific regulations to operationalize the Disaster Risk Reduction and Management Act, 2074. These rules define the functions, duties, and powers of disaster management committees at federal, provincial, district, and local levels. They emphasize practical measures such as establishing emergency response mechanisms, ensuring adherence to building codes, and mobilizing local communities and volunteers for disaster preparedness. The regulations also mandate maintaining disaster management funds at various levels to support immediate relief and long-term recovery efforts, with provisions for transparency and accountability in fund usage.

The regulations focus on integrating disaster risk reduction into development planning by setting standards for infrastructure resilience and public safety. They promote capacity building through training programs and awareness campaigns for government staff, volunteers, and local communities. The rules also detail procedures for requisitioning property, distributing relief,

and preserving critical documents lost during disasters. By aligning disaster management with local governance and stakeholder collaboration, the regulations aim to enhance Nepal's disaster preparedness and recovery capabilities effectively.

The National Disaster Risk Reduction and Management Strategic Plan of Action 2018-2030

The National Disaster Risk Reduction Strategic Action Plan (2018-2030) of Nepal outlines a comprehensive strategy to minimize disaster risks and enhance the nation's resilience to natural and human-induced hazards. Nepal faces significant disaster risks due to its geographical and socio-economic conditions. Recognizing these challenges, the Government of Nepal has aligned its disaster management strategies with international frameworks such as the Sendai Framework for Disaster Risk Reduction.

The National Disaster Risk Reduction and Management Strategic Plan of Action 2018-2030 further operationalizes the 2017 Act by setting out specific goals and objectives for reducing disaster risks and enhancing resilience. This plan aligns with the Sendai Framework's priorities and underscores the importance of safeguarding human rights, particularly in ensuring that disaster management efforts do not disproportionately impact vulnerable groups such as women, children, the elderly, and people with disabilities.

Objectives:

- Strengthen institutional frameworks for disaster risk reduction (DRR).
- Enhance disaster preparedness, response, and recovery capabilities.
- Foster coordination among federal, provincial, and local governments.
- Promote public awareness and community participation.

Key Areas of Focus:

1. Risk Assessment and Early Warning Systems: Improve disaster forecasting and early warning mechanisms.
2. Capacity Building: Enhance the skills and preparedness of stakeholders at all levels.
3. Institutional Strengthening: Establish robust disaster management committees and task forces.
4. Public Awareness: The National Disaster Risk Reduction and Management Strategic

Plan of Action 2018-2030 in Chapter 4 has included to conduct education and outreach programs on disaster preparedness.

5. Infrastructure Resilience: Promote the construction of disaster-resilient infrastructure.

Implementation Mechanisms: The action plan emphasizes multi-stakeholder collaboration, involving government agencies, NGOs, community organizations, and international partners. Specific roles and responsibilities are assigned to national, provincial, and local governments.

Monitoring and Evaluation: A systematic framework has been designed to monitor progress and evaluate the effectiveness of DRR initiatives, ensuring alignment with national and international objectives. It is affirmed in chapter 9 of The National Disaster Risk Reduction and Management Strategic Plan of Action 2018-2030.

The plan is part of Nepal's broader commitment to sustainable development, addressing climate change adaptation and disaster resilience holistically. It serves as a blueprint for reducing vulnerabilities and enhancing disaster management systems in the country.

Despite these advancements, critiques of Nepal's disaster management policies often point to implementation challenges. For example, studies have noted that while the legal framework is robust on paper, gaps remain in its practical application, particularly at the local level where resources and capacities are often limited. (Sharma & Poudyal, 2019) Additionally, there is concern that the integration of human rights principles into disaster management remains insufficient, with more attention needed to ensure that the rights of marginalized communities are adequately protected during disaster responses. (Maharjan, Bista & Dahal, 2020)

Link between Disaster Management and Human Rights

The relationship between disaster management and human rights is complex and multifaceted. Disasters can exacerbate existing vulnerabilities and inequalities, making it essential that disaster management policies are designed and implemented with a strong human rights perspective. The United Nations Office for Disaster Risk Reduction (UNDRR) highlights that effective disaster management is not only about protecting lives and property but also about ensuring that all individuals can access the support they need in times of crisis without discrimination.

In the context of Nepal, this linkage is particularly important given the country's diverse population and the varying levels of vulnerability across different communities. Research indicates that marginalized groups, including indigenous peoples, low-caste communities, and rural populations, are often disproportionately affected by disasters and may face barriers in accessing

relief and recovery resources. (Bajracharya & Acharya, 2019) Ensuring that disaster management policies are inclusive and rights-based is therefore crucial to reducing these disparities and promoting equitable recovery.

The literature also suggests that there is a need for stronger legal mechanisms to hold the government accountable for upholding human rights during disaster responses. While Nepal's current policies provide a framework for protecting human rights, their effectiveness largely depends on the political will and capacity to enforce these provisions. (Adhikari, 2020) Strengthening community-based disaster risk management (CBDRM) approaches has been identified as a key strategy for enhancing resilience and ensuring that the voices of vulnerable populations are heard in the policymaking process. (Gautam, 2020)

The previous disaster has shown marginalized groups have been facing serious discrimination leading to their human rights violation. Women, marginalized group, PWDs, children and senior citizens often struggle to access emergency shelters, relief supplies, and medical care. Despite the constitutional guarantees of equality and non-discrimination, these groups face systemic barriers in accessing disaster relief and recovery resources, highlighting critical human rights concerns in disaster management policies.

Case Study

A) 2015 Gorkha Earthquake

Background and Overview

The 2015 Gorkha earthquake, which struck Nepal on April 25, 2015, was a catastrophic event with a magnitude of 7.8, causing widespread devastation across the country. Over 9,000 people lost their lives, and hundreds of thousands of homes were destroyed or damaged. The earthquake also triggered avalanches, landslides, and aftershocks that exacerbated the disaster's impact. The event highlighted both the strengths and weaknesses of Nepal's disaster management policies, particularly in protecting life and property.

Application of Disaster Management Policies

At the time of the earthquake, Nepal's disaster management framework was primarily guided by the Natural Calamity (Relief) Act of 1982. The Act focused on emergency relief and post-disaster response, but it lacked comprehensive provisions for disaster risk reduction, early warning systems, and long-term recovery planning.

The Gorkha earthquake occurred without any prior warning, as Nepal lacked an effective early warning system for seismic events. The government's emergency response to the earthquake was hampered by logistical challenges, including damaged infrastructure, blocked roads, and limited communication channels. While the National Emergency Operations Center (NEOC) was activated immediately, coordination between various agencies was often disjointed. There were reports of inadequate provision of basic necessities in emergency shelters.

The post-disaster rehabilitation and reconstruction efforts were slow and fraught with challenges. The establishment of the National Reconstruction Authority (NRA) in December 2015 was a step toward coordinating recovery efforts, but bureaucratic delays and corruption issues hindered the pace of reconstruction. Many survivors remained in temporary shelters for years, and the reconstruction of homes and infrastructure was often inconsistent in quality, with some areas still awaiting full recovery.

Effectiveness in Protecting Life and Property

The 2015 Gorkha earthquake exposed the inadequacies of Nepal's disaster management policies, particularly in terms of preparedness, emergency response, and protection of vulnerable populations. The high death toll and extensive property damage underscored the need for a more robust disaster risk reduction framework, which was later addressed through the enactment of the Disaster Risk Reduction and Management Act, 2074. While the immediate response saved many lives, the overall effectiveness of the policies in place at the time was limited, leading to significant human and material losses.

B) 2017 Terai Floods

Background and Overview

The 2017 Terai floods occurred after continuous heavy rainfall in August, affecting 35 districts (Global Facility for Disaster Reduction and Recovery [GFDRR] & UNDP, 2017) across Nepal. The floods claimed over 160 lives, displaced tens of thousands, and damaged over 190,000 houses. Large swaths of agricultural land were inundated, causing extensive damage to crops and livestock. Infrastructure, including roads, bridges, and schools, was also severely affected. The disaster disproportionately impacted vulnerable populations in the southern plains, exacerbating existing socio-economic disparities.

Application of Disaster Management Policies

The floods occurred under the transitional phase of Nepal's federal restructuring, which created challenges in disaster response and coordination. Although the government activated

emergency operations and collaborated with humanitarian agencies, the lack of preparedness and early warning systems hampered the effectiveness of relief efforts. Emergency shelters were quickly established, but inadequate facilities and resources created difficulties for displaced families. Post-disaster recovery focused on rebuilding infrastructure and distributing compensation, but delays and insufficient resources hindered progress.

Effectiveness in Protecting Life and Property

The 2017 Terai floods exposed gaps in disaster preparedness, particularly in flood-prone regions. While immediate rescue operations saved lives, the overall response was hindered by logistical challenges and a lack of pre-disaster planning. The floods emphasized the need for effective early warning systems, better land-use planning, and investments in flood-resilient infrastructure. Lessons learned contributed to shaping Nepal's disaster risk reduction policies, including better integration of local governments in disaster management.

C) 2024 Monsoon Flood and landslide

Background and Overview

The monsoon of 2024, triggered by record monsoon rainfall and landslide was very devastating, resulting in 246 lives lost, 15 individuals missing, and over 17,000 people rescued. Tragically, about 3,000 homes have been damaged or destroyed, along with over 100 kilometers of roads and more than 50 bridges rendered unusable. (Volunteers Initiative Nepal, 2024) Landslides in the hilly regions and waterlogging in the Terai plains worsened the situation, leading to food shortages and outbreaks of waterborne diseases. This disaster once again underscored the urgent need to strengthen Nepal's disaster management policies and institutional frameworks.

Application of Disaster Management Policies

Nepal has enacted the Disaster Risk Reduction and Management Act, 2074 during this phase. This Act established a more structured framework emphasizing disaster preparedness, risk reduction, and resilience-building.

Effectiveness in Protecting Life and Property

The Department of Hydrology and Meteorology issued flood warnings (DHM, 2024), but limited dissemination of information, especially to remote communities, hindered timely evacuation. Despite the activation of provincial and local disaster management committees, a lack of inter-agency coordination led to delays in rescue and relief efforts. National Disaster Risk

Reduction and Management Authority (NDRRMA) do not look to be efficiently carrying it's duty as per mandated. Even the rescue efforts were disorganized which posed challenges.

Analysis

Evaluating the Effectiveness of Nepal's Disaster Management Policies in protecting Life

The Disaster Risk Reduction and Management Act, 2074, emphasizes the development of early warning systems to alert communities at risk. Evaluating the effectiveness of these systems involves assessing their reach, timeliness, and the public's understanding and response to warnings. For example, in the case of the 2015 Gorkha earthquake, the lack of an effective early warning system contributed to significant loss of life. However, since the enactment of the 2074 Act, there have been improvements in early warning mechanisms, especially for floods and landslides, which have helped in reducing casualties. The effectiveness can be measured by comparing mortality rates in disasters before and after the implementation of these systems.

The Act mandates a coordinated emergency response to save lives during disasters. The effectiveness of these operations can be evaluated by looking at the speed and efficiency of rescue efforts, availability of trained personnel, and the adequacy of resources such as medical aid, shelters, and food. During the 2015 earthquake, response times were slow, and many remote areas received delayed assistance, leading to avoidable loss of life. Recent floods and landslides have shown some improvement in response times, but challenges remain, particularly in remote and inaccessible areas. Effectiveness is also reflected in the reduction of deaths due to swift evacuations and timely medical interventions.

The Act places special emphasis on protecting vulnerable groups such as women, children, the elderly, and people with disabilities. Evaluating effectiveness in this area involves examining whether these groups received priority in rescue operations, whether their needs were adequately met in emergency shelters, and whether there were specific measures in place to protect them from harm. In recent years, there has been some progress in recognizing and addressing the needs of these groups, but gaps remain, particularly in ensuring their access to timely and appropriate care during disasters. The success of these measures can be seen in reduced mortality rates among vulnerable populations during recent disasters.

Evaluating the Effectiveness of Nepal's Disaster Management Policies in Protecting Property

The Act requires regular disaster risk assessments and the creation of hazard maps to identify areas at high risk of disasters. The effectiveness of these assessments and maps in protecting

property can be evaluated by analyzing whether they have been effectively used to guide land-use planning, construction standards, and disaster preparedness initiatives. For example, in areas where hazard mapping has been properly implemented, there should be a noticeable reduction in property damage during disasters. However, in many cases, the implementation of these assessments and the enforcement of related building codes have been inconsistent, leading to significant property losses during disasters.

The enforcement of building codes and land use regulations is crucial for protecting property during disasters, especially in earthquake-prone areas like Nepal. The effectiveness of these regulations can be measured by the extent to which they have been adopted and enforced in urban and rural areas. After the 2015 earthquake, there was a push to improve building standards, but the effectiveness of these efforts has been mixed. In some areas, new constructions adhere to earthquake-resistant designs, reducing property damage during seismic events. However, in other areas, non-compliance with building codes remains a significant problem, resulting in substantial property damage during disasters.

The Act also focuses on the rehabilitation and reconstruction of properties after disasters. Evaluating the effectiveness in this area involves assessing the speed and quality of rebuilding efforts, the availability of financial assistance for reconstruction, and whether the rebuilt infrastructure is more resilient to future disasters. The reconstruction efforts following the 2015 earthquake were slow and often plagued by delays, leading to prolonged displacement and vulnerability. However, lessons learned from that experience have informed more recent efforts, leading to some improvements in the speed and quality of reconstruction in subsequent disasters. The success of these initiatives is reflected in the resilience of properties rebuilt after the earthquake, which have withstood subsequent disasters with less damage.

Conclusion

Nepal's disaster management policies have evolved significantly since the 2015 Gorkha earthquake, reflecting a shift towards more proactive and comprehensive approaches. The Disaster Risk Reduction and Management Act, 2074, represents a significant advancement in addressing disaster risks and enhancing resilience. However, the effectiveness of these policies in protecting life and property remains a work in progress.

The analysis reveals that while improvements have been made in certain areas, challenges persist in implementing and enforcing disaster management policies effectively. Key issues

include inadequate early warning systems, inconsistent enforcement of building codes, and gaps in addressing the needs of vulnerable populations. The 2015 Gorkha earthquake underscored the need for a more robust and inclusive disaster management framework, and subsequent efforts have shown progress, but further reforms are necessary.

Integrating human rights considerations into disaster management is crucial for ensuring that all individuals, particularly the most vulnerable, receive adequate protection and support during crises. By adopting a rights-based approach and addressing the identified gaps, Nepal can enhance its disaster management policies and better safeguard lives and property against future disasters.

The recommendations provided aim to address these gaps and build on the lessons learned from past disasters. Implementing these recommendations will help Nepal develop a more resilient and equitable disaster management system, ultimately contributing to the protection of human rights and the reduction of disaster risks for all communities.

Recommendations

Early Warning Systems should be strengthened. The development and deployment of early warning systems for all types of natural disasters, including earthquakes, floods, and landslides are needed to be enhanced. Ensure that these systems are well-integrated with community-based communication networks to reach remote areas effectively. Regular drills and public education programs should be conducted to improve awareness and response.

The Coordination and Resource Allocation still remains a core challenge in the disaster time which need to be improved. A clear protocol for coordination among national, provincial, and local disaster management bodies to streamline emergency response efforts should be established. Invest in infrastructure that facilitates efficient resource distribution and communication during crises, and ensure that disaster management agencies are adequately funded and equipped.

A strict building standards regulations and land use regulations to ensure that new constructions are resilient to natural disasters. A regular inspections and penalties for non-compliance to ensure adherence to safety standards should be implemented. Public awareness campaigns about the importance of disaster-resistant construction practices should be promoted.

Expanding disaster risk reduction initiatives is essential, requiring investment in comprehensive programs such as hazard mapping, risk assessments, and community-based risk reduction efforts. By utilizing hazard maps, authorities can guide land use planning and implement targeted interventions in high-risk areas to minimize potential damage.

Improving disaster insurance and compensation mechanisms is critical for enhancing resilience. Affordable disaster insurance options should be developed and promoted for individuals and businesses, while the compensation process must be streamlined to provide timely and sufficient financial support to affected populations. Greater transparency and accountability in the distribution of compensation are also necessary.

Post-disaster rehabilitation and reconstruction should prioritize building back better through robust strategies. Reconstruction efforts must involve input from affected communities and adhere to higher safety standards. Effective monitoring and evaluation of these projects are crucial to assess their success and long-term impact.

A Real-time monitoring system to evaluate disaster response effectiveness:

A real-time monitoring system for evaluating disaster response effectiveness is essential to enhance Nepal's disaster management capabilities. One key component would be a Geographic Information System (GIS)-based platform, which could track disaster events and infrastructure damage in real-time. This system would visualize data on the extent of the disaster, locations of shelters, and the distribution of aid, thus aiding in more effective decision-making and resource allocation. Additionally, integrating mobile and web-based applications for community reporting would empower citizens to submit incident reports, request aid, and provide feedback directly to authorities. This real-time data would be complemented by predictive analytics, which would use AI to optimize resource distribution and forecast needs, further improving the response efforts.

Furthermore, a centralized dashboard would be essential for coordinating all agencies involved in the disaster response, displaying real-time data on shelter occupancy, the progress of rescue operations, and the status of aid distribution. Real-time tracking of relief logistics using GPS-enabled technology and drones would ensure timely delivery of supplies. The system should also incorporate feedback from social media to capture public sentiment, allowing for quick adjustments to response strategies. By integrating these various technologies, Nepal could create a more agile, coordinated, and effective disaster management system, improving both short-term recovery and long-term resilience to future disasters.

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