Resilient for Tenure Security in the Face of Climate Change: A Case from Nepal

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Keywords: climate change; land management; tenure security; climate resilient

SUMMARY

The United Nations (UN), in 2015, acknowledged the need of a robust and forward-looking response to the pressing threat of climate change, based in the latest scientific knowledge. Insufficient scientific knowledge is one of the challenges in responding the impact of climate change in land issues. It makes it hard to effectively and progressively address the impact of climate change on land management. To be more specific, it is crucial to address the issue of land tenure insecurity, intimately linked with climate vulnerability. Insecure land tenure can diminish incentives for sound land management, leading to environmental degradation (UN-HABITAT, 2019). The Intergovernmental Panel on Climate Change (IPCC, 2022) acknowledges that insecure land tenure affects the ability of individuals, communities, and organizations to enact changes to land use that could strengthen adaptation and mitigation efforts. It further stresses that limited recognition of customary access and land ownership can increase vulnerability and reduce adaptive capacity. Thus, there is a need of acquiring scientific knowledge and management strategy to effectively respond to the impact of climate change on land management, with a specific focus on ensuring tenure security for all. In this context, this desktop research has been carried out to explore the situation of resilient for tenure security in the face to climate change in Nepal.

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1. INTRODUCTION

1.1 Background

Land is the fundamental resource upon which all life and human activities depend. It is the ultimate resource for human beings without which life on earth cannot be sustained (UN/ECE 1996), as it is the integral to human habitation and livelihoods, providing food and resources, including a source of identity and cultural meaning (IPCC 2019). Hence, it can be affirmed that there is a deep connection between humans and the land.

The relationship between humans and land is referred to as land tenure. To be more specific, land tenure is a legally or customarily defined relationship between human being and land. It is a set of rules to define the process of allocating property rights to land, granting access to rights to use, control and transfer, and assigning responsibilities and restraints related to land among societies. In simple terms, land tenure systems determine who can use what resources for how long, and under what conditions. Land Tenure may consist of overriding interests or overlapping interest or complementary interest or competing interest, and can be categorized as private, communal, open access and state (FAO 2002).

It is important to ensure security of tenure as it underpins economic stability, social cohesion, poverty reduction, human rights, and environmental sustainability. Secured tenure provides individuals and families confidence that their land and housing rights are legally recognized and protected. In essence, ensuring tenure security is essential for creating thriving and equitable societies where individuals can confidently invest in their futures and contribute to sustainable development. It is important because, inadequate and insecure tenure rights increase vulnerability (FAO 2012), reduce incentives to undertake good land management, causing environmental degradation (UNHABITAT 2019), and affects the ability of people, communities and organisations to make changes to land that can advance adaptation and mitigation (IPCC 2022). UNHABITAT (2019) considers the most important of the cross-cutting issues that affect tenure security including human mobility, gender inequality, food and water security, indigenous and tribal peoples, impacts on ecological integrity, and conflict over land and natural resources and describes climate change as one of the most important factors influencing most of these issues. UNHABITAT (2019) further recognises that insecure tenure is a major influence on existing

vulnerabilities with land pressures likely to intensify in the face of contemporary human and climate-change drivers. In addition, tenure systems are under growing pressure to safeguard food security amidst diminishing land availability, with climate change emerging as a significant contributing factor.(FAO 2012)

Climate change is referred as long-term shifts in temperatures and weather patterns. These shifts may be natural or human, such as through variations in the solar cycle, or human created, such as burning fossil fuels like coal, oil and gas used for transportation or industries, and causing emissions of carbon dioxide, such as by clearing land and forest, and emission of methane, such as from landfills for garbage (UN 2023). Climate change is challenging the sustainability of land, forest, and water management, as it can cause disruptions to ecosystems, alter weather patterns, and exacerbate existing environmental problems. Specifically, climate change has significant impact on land by causing it to be degraded or disappear threatening the tenure security of affected people. Despite the continued efforts from the global community to mitigate climate change impacts, its effects on land persist and are not experienced equally across the globe (Castro and Kuntz 2022). Sustainable Development Goal (SDG) No. 13 (SDG-13) urges to *"take urgent action to combat climate change and its impacts"* (SDG, 2015). It is urgent because *"no one from the entire civilization remains untouched with the real and undeniable threat from climate change* (UN 2023)The evidence from Melamchi flood case, a highly affected area due to climate change induced disaster, as illustrated in the following section, suggests that climate change can bring about catastrophic situations if we fail to act immediately. Most important thing we have to consider is the tenure security, as inadequate and insecure tenure rights increase vulnerability, hunger and poverty, potentially fueling conflict and environmental degradation (FAO 2012).

In recent years, considering the fact that it can affect a diverse set of issues at multiple scales, tenure security has grabbed the attention of climate scientists. Tenure security is foundational for many global agendas including the SDGs and the Paris Agreement, and hence it should be an explicit component of policies and programs related to climate resilience(Holland 2022). Climate resilience is the organizational or community-based ability of responding to the active threats of climate change. It requires organizational and community capacity to embed practices and programs to respond the threats in effective manner (Alibašić 2020).

In this study, resilience for tenure security in the face of climate change is defined as the presence of a comprehensive set of guidelines and strategies established by the government to tackle the challenges posed by the impact of climate change on tenure security. These measures not only facilitate communities in responding to, mitigating, and adapting to the threats or impacts of climate change but also empower them to do so effectively.

1.2 Motivation

UN (2015) recognises the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge. Even though "there has been much research and literature on 'whole of landscape' approaches to adaptation to climate change"(UNHABITAT 2019), however, research on the impact of climate change in tenure security is still missing. For example, Unger (2019) and Khezri (2018) have recommended further research on how tenure security can be ensured from the climate vulnerability. This need is also supported by the IPCC (2019) report, which suggests we need further study to understand how land and climate change are connected. This will help us to see how different ways of tenure security can affect our efforts to deal with climate change. We also need to know how our actions to tackle climate change might affect land tenure security and land justice. Additionally, UNHABITAT (2019) acknowledges the need for further research into protecting the land tenure rights of women, indigenous and tribal communities, as well as forest dwellers to reduce vulnerability and support adaptation. It further stresses the importance of further study on supporting restitution for significant number of displaced persons globally, and informal settlers particularly in the context of Nepal. Similarly, as a future research area, Khezri (2018) has recommended to focus on tenure security issues in the legal as well as international framework. Furthermore, Unger (2019) explores incompatibility between legal and policy framework in order to adequately address climate changes issues. This background has motivated to conduct research in this area and this study has been produced as an initial step of the research.

The aim of this paper is to explore the situation of resilient for tenure security in the face of climate change in Nepal.

1.3 Materials and Methods

This paper has been developed through desktop research based on a case study. A number of relevant literatures, scientific as well as grey, on land tenure, climate change, legal frameworks and practical aspects have been reviewed to build a theoretical background for this study. Simultaneously, to acquire *an empirical inquiry to investigate a contemporary phenomenon within its real-life context* (Yin 1994) and to gain an in-depth understanding of a phenomenon and its context (Cavaye 1996), in relation to resilience for tenure security in the face of climate change in Nepal, a case, with the information from secondary sources, has been selected as outlined in the section 3 of this paper.

2. NEPAL IN THE FACE OF CLIMATE CHANGE

2.1 Impact of Climate Change

Nepal is prone to multiple hazards that occur due to diverse topography and climatic conditions, and highly exposed to a range of water related hazards, which has severe impact in the communities. According to (MoFE 2018) and (GoN 2021) more than 80 percent of property loss resulting from disasters is attributed to climate hazards, particularly floods, landslides and glacial lake outburst floods. The country is projected to face a loss of 2.2% of it's annual gross domestic product (GDP) by 2050, with it's energy, agriculture, water resources, forestry, biodiversity and health sectors being identified as the most at risk to climate change (WB 2021). As a result, climate change is posing a significant risk to land tenure security in the country.

2.2 Inadequate Policy and Legal Frameworks for Addressing Land Tenure in the Context of Climate Change

In Nepal, while there are policies and laws recognizing the significance of addressing climate change, the matter of land tenure security has largely been overlooked. Even the Land Use Policy, 2015 and National Land Policy, 2018 lack provisions to address the impact of climate change on land tenure security. There are some measures in these policies that could contribute to addressing the issue to some extent if implemented effectively. For example, the National Land Policy, 2018 has provisions ensuring potential disaster-prone or vulnerable zones are delineated in land use maps and plans (policy action number 3.3.1). Settlements within these zones are to be relocated to safer locations (policy action number 3.3.2), and vulnerable areas are to be protected (policy action number 3.3.3) (GoN 2018) . Similarly, the Land Use Policy, 2015 aims to devise land use plans (LUPs) to mitigate the impact of climate change. The same policy includes a strategy of adopting the principle of sustainable development to maintain balance between land, environment and development during developmental activities (GoN 2015).

The Budget Speech for the Fiscal Year 2023-2024 has a dedicated section (serial number 380-385) on climate change, promoting green economy in the country, and stressing the mainstreaming of activities related to climate change mitigation and adaptation. However, it undermines the issue of tenure security (MoF 2023).

MoHA (2018) states that mainstreaming Climate Change Adaptation and Disaster Risk Reduction into the overall development process, by integrating assessment of climatic and other risks, has not been achieved. It is necessary to integrate and effectively implement policies, institutional arrangements and legal frameworks related to Climate Change Adaptation and Disaster Risk Reduction so that limited resources can be well utilised. The framework of MoFAGA (2021) includes various indicators for municipalities to ensure environmentally friendly governance, ranging from enhancing awareness in the local community to developing land use plan for climate smart agriculture. Other major indicators include the identification and mapping of risk sensitive zones, restrictions on physical constructions in these zones, preparation and implementation of risk sensitive land use plans, ensuring environmentally friendly constructions, conducting environment impact assessment of projects, capacity building, enhancing awareness at the local level, formation

and functioning of committees to address climate change issues, and mandating local participation, among others. However, these indicators are hardly practiced at local level. Except for the formation of risk sensitive land use plan, this framework does not address any land tenure issue.

The Government's Disaster Risk Reduction National Strategic Action Plan 2018-2030 includes provisions of developing Local Adaptation Plan of Actions to Climate Change (LAPA) and National Adaptation Plan of Actions to Climate Change (NAPA) (MoHA 2018). However, these plans have not taken the land tenure issues into account. The National Climate Change Policy has been enacted to provide policy guidance to various levels and thematic areas towards developing a resilient society by reducing the risk of climate change impacts (MoHA 2019), but without recognizing the need of tenure security.

The enactment of the Land Use Regulation in 2022 introduced a provision for formulating land use plans in Nepal. Prior to this, there was no provision for land use planning, except within policy documents. As of now, none of the municipalities have implemented the plan or most of them even have not formulated the plan including the Federal Land Use Plan and Provincial Land Use Plan. Additionally, while there is a provision for risk-sensitive land use planning, efforts towards its implementation are lacking. Rapid urbanization is occurring without consideration of disaster impacts, and there is haphazard construction of roads in rural areas, disregarding potential risks. Government institutions and local communities lack capacity in terms of technology, human resources, and investment. Furthermore, there is a lack of awareness, ignorance, or carelessness regarding the potential impact of climate change.

Similarly, land laws lack provisions to address the impact of climate change on land tenure security. Climate-induced disasters, such as floods and landslides, often result in land loss or pose threats to land tenure security. There are no provisions of compensation in the event of land and property loss due to such disaster. Instead, as per the Article 20 of the Land Revenue Act, 1977, the lost property can be voided from land records upon the landowner's requests, and land tax can be exempted (GoN 1977). Furthermore, minimal compensation may apply if a disaster leaves a household landless without alternatives for resettlement. In such cases, the government may provide nominal amounts of land (ranging from 254.37 sq. meters to 381.55 sq. meters in hilly areas and 338.6 sq. meters to 507.9 sq. meters in southern plain areas) for housing, with ownership registration after five years of occupation (MoUD 2014). At the same time, private land washed away by a river can be reclaimed once the river returns to its original course (Rule 4A.(3) of the Land Revenue Regulation, 1979; Rule 16(3) of the Land Survey and Measurement Act, 2001) (GoN 1979), (GoN 2001) (DoLMA 2001). In some cases, the government has provided token compensation to disaster-affected individuals. For example, the government issued norms for compensating farmers affected by unseasonal rainfall in October 2021, partially and nominally compensating those affected, especially during the rice harvest (GoN 2021).

Thus, it can be concluded that existing policy and legal provisions are insufficient to address the impact of climate change in land tenure security.

2.3 Land Tenure Overlooked in Climate Discussion

Land agencies and land professionals have minimal involvement in forums addressing climate change-related issues. Despite the existence of a Climate Change Council, chaired by the Prime Minister and tasked with guiding Nepal's climate change policies, the Minister for Land Management is notably absent, with most ministers holding positions on the council. Similarly, various committees across different levels lack representation from the Ministry of Land Management. Moreover, the Ministry of Land Management is rarely invited to national or international events focused on climate change. Official international travel data from the Ministry of Land Management Cooperatives and Poverty Alleviation indicates that no land officials have attended any Conference of Parties (COP) events to date. Consequently, the significance of land tenure issues in the context of climate change remains inadequately advocated for in both national and international forums.

2.4 Lack of Recognition of the Importance of Land Tenure Issues in the Context of Climate Change

Recognition of the importance of tenure security issues in the context of climate change remains lacking, even today. The Nepal Law Commission recently drafted a bill aimed at regulating climate change. This preliminary draft has been circulated by the Disaster Preparedness Network-Nepal (DPNet-Nepal) for stakeholder consultation. DPNet-Nepal, a non-governmental organization, positions itself as a key national umbrella organization dedicated to enhancing disaster management in Nepal through a unified approach involving national and international agencies. Regrettably, this draft overlooks the significance of land tenure issues in the context of climate change, lacking any provisions addressing this matter (Commission 2024). The consultation, held virtually on March 14, 2024, saw the principal author of this paper personally invited to participate. During the consultation, he voiced concerns regarding the impact of climate change on tenure security. These concerns were well-received by the participants, and organizers assured that they would be forwarded to the Nepal Law Commission for consideration. We remain hopeful that these concerns will be duly acknowledged and addressed.

3. CASE STUDY- MELAMCHI FLOOD

There are many cases that have severely faced impacts in tenure security due to climate induced disasters in Nepal. However, we have selected the case of Melamchi Flood for this paper. This is a representative case although focusing on a single case. The purpose of this case study is to examine how tenure issues have been addressed in Nepal in the context of climate induced disasters or disasters in general.

The case study area covers a stretch of Indrawati basin, 18 kilometer in length, consisting of the Melamchi, Yangri, and Larke rivers that lies in Helambu Rural Municipality and Melamchi Municipality of Sindhupalchowk District of Nepal (Figure 1). Melamchi Bazaar is one of the major settlements and economic zones of the affected area, which is about 50 kilometers from Kathmandu Valley.

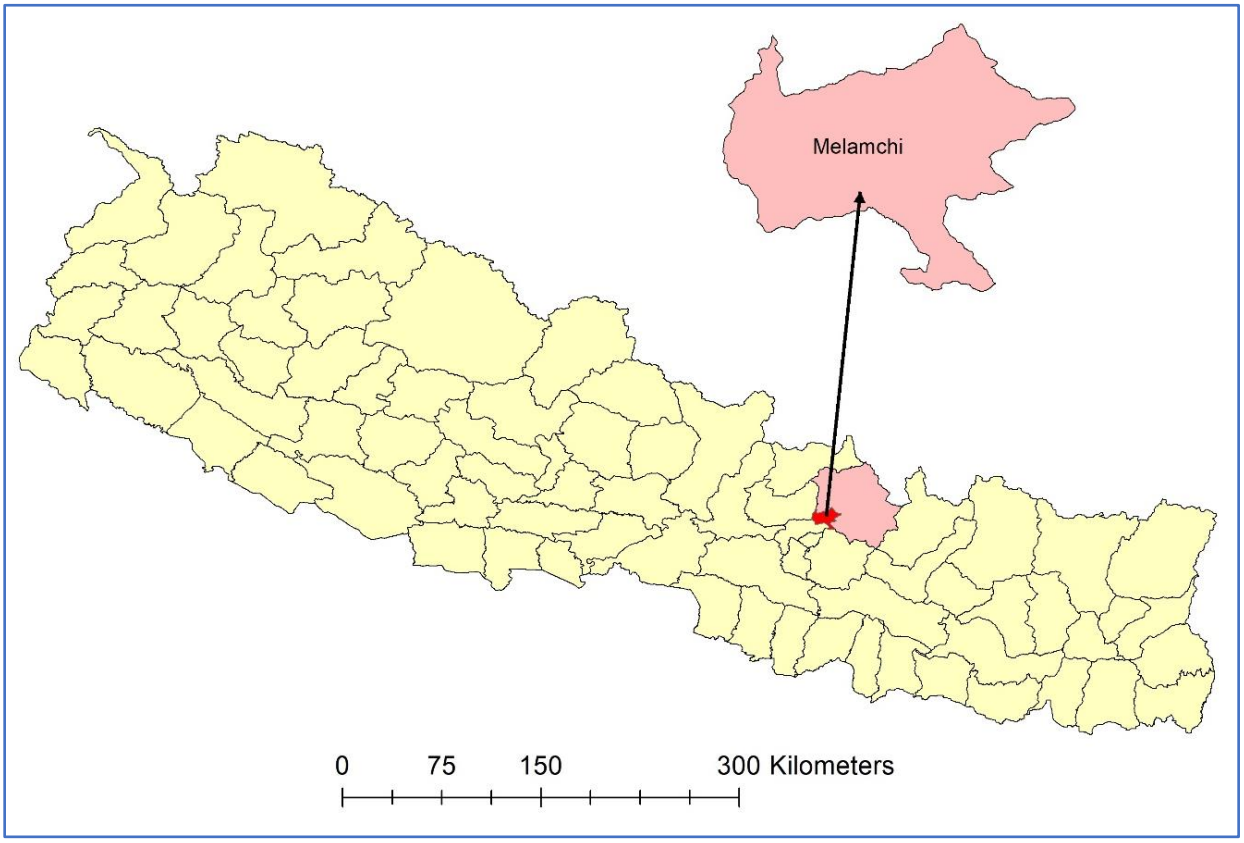

Figure 1: Case Study Area- Melamchi (map courtesy: (Dahal 2023)

This area was heavily hit with a disastrous flooding on June 15, 2021 causing severe damage across the stretch of the downstream of the Melamchi River. Figure 2 shows the pre- and post-disaster picture of the stretch. This disaster is considered to be the result of multiple anthropogenic and climatic factors and processes; (Maharjan 2021), and has its close nexus with climate variability mainly precipitation and temperature in the Himalayan basin (Baniya 2024).

As cited with reference to the data from National Disaster Risk Reduction and Management Authority (NDRRMA) by the WB (2021), this disaster caused, 17 causalities and at least 23 were reported missing. The disaster also led to the destruction of houses, infrastructure, agriculture,

tourism, traditional practices, and cultural values in both the municipalities including the damage to the headworks of a mega drinking water project developed for Kathmandu Valley, the Melamchi Water Supply Project (WB 2021) (Parajuli, Baskota et al. 2023).

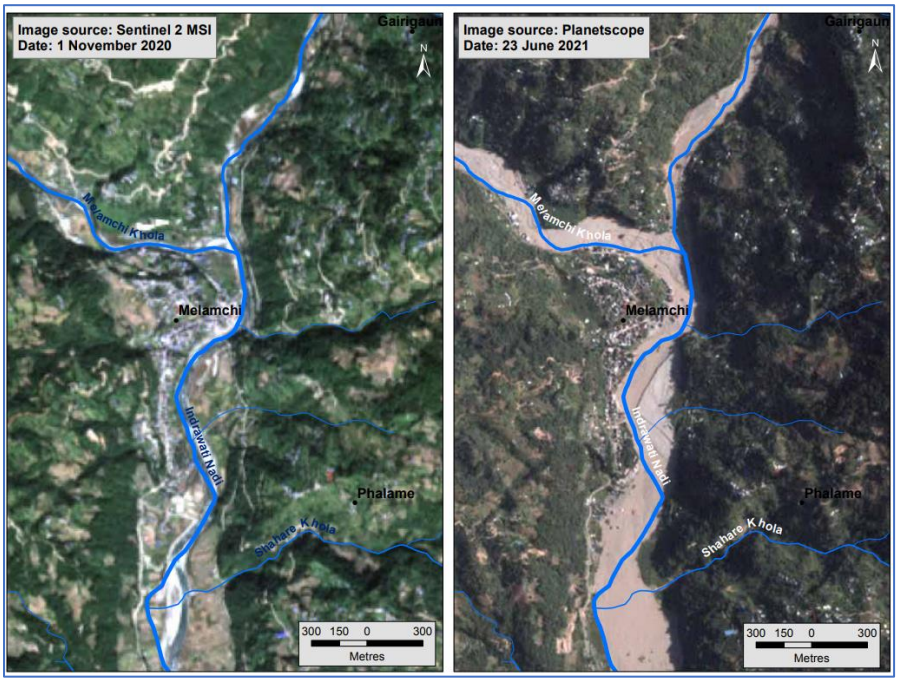

Figure 2: Affected Strech of the Indrawati Basin:Left (Pre-flood); Right (Post-flood) (image courtesy (Maharjan 2021)

Most importantly, this disaster impacted different population groups differently (Maharjan 2021);

- Many people displaced from their homes,
- Subsistence farming-based families have incurred a permanent loss or damage of highly valuable agriculture and farm land, especially highly productive paddy fields as well as the harvest of rice which was planted in Spring that year. Dahal (2023) has investigated the number of such agricultural land parcels lost or damaged is 273 as shown in Figure 3.
- Communities settled near the river have lost multiple sources of livelihoods such as small shops, agricultural land, and their only homes facing a daunting challenge in managing basic needs such as food, shelter and clothing in the future.
- Riparian communities such as fishing communities faced a higher level of vulnerability due to their dependence on the river for their livelihoods.
- Trout farm holders along the Melamchi river, 12 in number, not only lost their farms but also many people lost their jobs from such farms.
- Subsistence farming based families have in fact incurred a (permanent) loss of highly valuable paddy fields as well as.

– Children also faced disruption in their education due to the loss of school buildings.

According to the mayor of the Melamchi Municipality, there was a loss of 76 hectares of farm land and 215 households were displaced only in his area, causing a loss of significantly more than 30 billion Nepali Rupees. (BBC 2021) Using satellite images of the area after the flood, Dahal (2023) found that total 6 patches of the stretch are affected by the flood having 270 Number of parcels as mentioned in Figure 3, and from the recent picture from the site,

Figure 4, shows that the damaged boundaries of affected parcels are yet to get delineated on the ground in its original shape. Parajuli, Baskota et al. (2023) have estimated, the total estimated economic loss for Melamchi Municipality is about USD436 million, whereas USD 62 million for Helambu Rural Municipality.

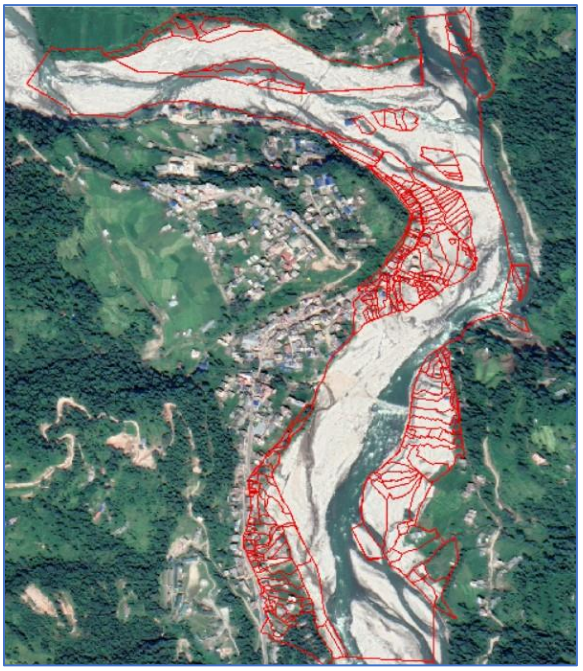

Figure 3: (Left) Damaged or lost parcels with red color (image courtesy (Dahal 2023)
Figure 4: (Right) Recent Pictures from devasted Melamchi (Pictures taken on February 3, 2024 by Mr. Santosh Gurung)

Although none of the reports and literatures reviewed for this case study explicitly mention any concerns regarding the impact of the disaster on tenure security in the affected area, Parajuli, Baskota et al. (2023) and Maharjan (2021) have reported some interesting impacts of the disaster that, in a way or another, resemble its effects on the tenure security of the affected people.

- The destruction of homes, agricultural lands, and job opportunities forced many people and families to look for new places to seek alternative livelihoods leading to permanent or temporary migration. (Parajuli, Baskota et al. 2023) (Maharjan 2021)
- The situation also constituted a significant economic loss raising questions regarding the food and nutritional security of such families. (Maharjan 2021)
- The households and communities residing in the river banks not only faced the problem at the time of the disaster but also there is high chance of facing problems regarding their ability to continue with their traditional livelihood option due to the changing river morphology. (Maharjan 2021)
- The severity of the effect is disproportionate to the women and men. Women experienced an increased workload including household affairs, secure food and water, and tend to family's emotional needs. Furthermore, women faced barriers in accessing resources and participating in decision-making during the response and recovery phase (Enemark 2006, Parajuli, Baskota et al. 2023).

4. FINDINGS AND DISCUSSION

Upon reviewing the legal system and practices of land management in Nepal, we have found that the challenges posed by the climate change in ensuring tenure security have not been adequately addressed, despite some initiatives at community level aimed at enhancing their climate-resilience. The Melamchi Case, shows weak performance in addressing tenure security issues among the affected people. Additionally, the Government's response to the disaster may not have been as sufficient as expected by the affected people as Parajuli, Baskota et al. (2023) found some people expecting more financial support. As reported by then Mayor of the Melamchi Municipality to the BBC (2021), the displaced were temporarily settled in the schools and community buildings as the immediate relief whereas the Government decided to compensate each households with a sum of nearly USD$4,500. No further initiatives from the Government are seen in order to ensure tenure security related issues. From Dahal (2023)'s research, it can be seen that the damaged parcels are yet to get rehabilitated.

This case underscores the weakness in ensuring resilience for land tenure security in Nepal, ultimately endangering the lives and well-being of its people. This state of affairs is incompatible with the principles of a welfare state, which should take care of its citizens in every aspect. Thus, there is an urgent need to address this situation that is strengthening resilience for land tenure security is essential to safeguarding the rights and livelihoods of vulnerable communities, particularly in the face of climate change. Based on the scenario in Nepal following strategies can be advisable:

(a) **Enhancement in Policy and Legal Framework:** The primary focus for the Government of Nepal should be to enhance the policy and legal framework to address the impact of

climate change on land tenure security. This should encompass not only personal property but also all forms of land tenure rights. FAO (2012) also emphasizes the need to ensure that the legitimate tenure rights of all individuals, communities, or peoples likely to be affected are respected and protected by laws, policies, strategies, and actions aimed at preventing and responding to the effects of climate change.

(b) **Recognition of all forms of tenure rights:** The Government should integrate land tenure considerations into disaster risk reduction strategies, including measures to prevent land tenure disputes that may arise during and after the disasters. This may involve pre-emptive measures such as updating land records, delineating protected areas, or establishing land-use restrictions in hazard-prone zones. Recognition of all forms of tenure such as customary or informal tenure is important. Effort should be made in recognizing and formalizing such tenure systems including access to land resources, including pasture land, forest, temple, crematorium.

(c) **Timely Rehabilitation of the affected people:** The state should prepare and implement comprehensive strategies and initiatives for the rehabilitation of individuals displaced by climate-induced disasters, ensuring the restoration of livelihoods for affected communities without compromising the livelihoods of others or affecting the tenure security of other population (FAO 2012). Based on the field situation of Melamchi case, Parajuli, Baskota et al. (2023) suggests immediate actions on restoring bridges, and roads, and constructing protective barriers to prevent floods; preserving cultural and natural heritage and ensuring access to essential services and providing financial support for immediate relief, among others.

(d) **Climate-resilient Land Use Planning:** There is a need of taking into account the need to promote diversified sustainable management of land to meet the challenges of climate change (FAO 2012), the foundation of which is climate-resilient land use planning. Furthermore, climate-resilient development planning should be promoted to avoid the risk of future disasters (Maharjan 2021).

(e) **Empowering Communities:** The government should empower communities to enhance their resilience for land tenure security. Some tools to achieve this include establishing community-based early warning systems, raising awareness for preparedness, facilitating access to insurance coverage for crops, investments, and productive assets, offering training programs, addressing psychosocial needs through counseling services, preserving cultural and natural heritage, ensuring access to essential services, promoting collaboration among stakeholders, and providing financial support for immediate relief, among others (Parajuli, Baskota et al. 2023) (Maharjan 2021).

To be more specific, it is important to respond the issue of land tenure insecurity that has close link with the climate vulnerability, as insecure land tenure can reduce incentives to undertake good land management, causing environmental degradation (UNHABITAT 2019). IPCC (2022) also supports the fact that insecure land tenure affects the ability of people, communities and organisations to make changes to land that can advance adaptation and mitigation. It further rules out that limited recognition of customary access to land and ownership of land can result in increased vulnerability and decreased adaptive capacity.

5. CONCLUSION

Nepal faces significant threats from the climate change and greatly endangering the security of land tenure. Existing policy and legal provisions are inadequate in effectively addressing these challenges. Despite various initiatives aimed at enhancing community resilience to climate change, tenure security issues are largely neglected, fostering fears of land and property rights loss among communities. Insights from the Melamchi flood case study validate this situation, revealing vulnerability of communities to the adverse impacts of climate change, particularly concerning tenure security.

As a welfare state, the Government of Nepal should take immediate steps to address these challenges. Several strategies can be considered for this purpose. First and foremost, there is a need to enhance policy and legal frameworks to effectively address tenure security amidst climate change challenges. This includes recognizing and protecting the legitimate tenure rights of all individuals and communities affected by climate change. Additionally, integrating land tenure considerations into disaster risk reduction strategies and recognizing customary or informal tenure systems are crucial steps. Comprehensive strategies for the rehabilitation of displaced individuals are also vital for enhancing community resilience to climate change. Climate-resilient land use and development planning are equally important. Furthermore, communities should be empowered through various tools such as establishing early warning systems, enhancing awareness, facilitating access to insurance, addressing psychosocial needs, ensuring access to essential services, and providing financial support for immediate relief, among others.

In conclusion, addressing the nexus between climate change and land tenure security is paramount for building resilient communities in Nepal and beyond. It requires concerted efforts from policymakers, stakeholders, and communities to develop and implement effective strategies that protect land rights and promote sustainable development in the face of climate change.

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