

Effective Land Administration in the Asia-Pacific Region: Insights from Nepal on navigating Governance, Legal, and Financial Pathways within the Climate Change - Land Nexus

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Key words: FELA; Climate Change; GLTN

SUMMARY

Nepal has made substantial progress in land administration enhancing land tenure security and efforts towards sustainable land management. This progress is underscored by the adoption of the National Land Policy in 2019, amendments to the Land Act and Land Rules in 2020, and the introduction of the Land Use Act in 2019 and the Land Use Rules in 2022. These measures dwell on protecting land rights, providing security of tenure and undertake land use planning for sustainable land management thereby supporting to Nepal's commitment to the Sustainable Development Goals (SDGs). To build on these achievements, further exploration of innovative approaches within the UN-GGIM Framework for Effective Land Administration (FELA) offers significant potential. This framework with its 9 pathways to enhance land administration is particularly relevant in the context of climate change. Climate change heavily impacts Nepal through floods, landslides, soil erosion, and recurrent natural disasters, affecting the shelter and livelihoods of the poor and vulnerable, underscoring the need for effective land administration and land management.

In this context, a workshop titled "Effective Land Administration in Nepal" was held, where experts and land stakeholders in Nepal discussed the nexus of climate change and land management, focusing on governance, legal, and financial pathways within the FELA framework. Key themes addressed included:

1. Policy, Governance, and Accountability: Enhancing policy frameworks and accountability mechanisms for equitable land administration.
2. Legal Frameworks: Exploring and assessing legal regulations to adapt to evolving land management challenges, particularly in the context of climate change.
3. Financial Strategies: Evaluating Nepal's land valuation system and sustainable financial models to support land administration and adapt to climate change impacts.

Future activities aim to further explore also other FELA Pathways such as innovation and partnership to deepen the impact, including implementing projects to address the climate change-land nexus, capacity-building programs for government officials at all levels and the community leaders and enhance community engagement in land governance. Securing

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adequate funding for these activities remains a critical challenge, but there is a strong willingness among stakeholders to continue collaboration. Based on scale and scope, the learnings from the catalytic support from the development partners in the application of Fit-for-Purpose Land Administration tools in the past and the ongoing UN-Habitat support program linking land tenure and land use in the improvement of livelihoods of vulnerable communities with climate smart land management options are humble beginnings. Larger contributions are anticipated to expand and scale up these efforts.

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1. INTRODUCTION

Nepal has made significant strides in the field of land administration, achieving important advancements in land tenure security and sustainable land management. These efforts reflect the country's broader commitment to sustainable development and its alignment with the United Nations Sustainable Development Goals (SDGs). In recent years, Nepal has undertaken substantial reforms in its legal and policy framework, including the adoption of the National Land Policy in 2019, the 8th Amendment to the Land Act 1964, and the 18th Amendment to the Land Rules 1964 in 2020. Additionally, the Land Use Act (2019) and Land Use Rules (2022) have introduced critical measures that strengthen land tenure security and promote comprehensive land use planning for sustainable land management.

These reforms represent a significant step forward in ensuring equitable access to land, enhancing governance, and laying the groundwork for future development. However, Nepal faces ongoing challenges due to the increasing frequency and severity of climate change impacts. Natural disasters such as floods, landslides, soil erosion, and earthquakes have become more prevalent, creating substantial risks for vulnerable populations. These climate-related events threaten not only the security of land tenure but also the livelihoods and shelter of those most at risk, particularly poor and marginalised communities.

In this context, the need for robust and effective land administration has become more urgent. The impacts of climate change underscore the importance of sound land governance and management to mitigate risks and enhance resilience. To address these challenges, there is a growing opportunity to leverage approaches, particularly with the framework provided by the UN-GGIM, the Framework for Effective Land Administration (FELA). The FELA offers nine pathways to strengthen land administration, providing a comprehensive approach that encompasses governance, legal, and financial strategies.

This paper builds on the country's recent achievements in land administration and explores how these efforts can be expanded to meet emerging challenges, particularly those posed by climate change. It focuses on the governance, legal, and financial pathways outlined in the FELA framework, emphasising their role in addressing the intersection of land administration and climate change. By examining these pathways, the paper aims to contribute to ongoing efforts to enhance Nepal's land administration system, with a particular focus on supporting sustainable land management and serving vulnerable communities.

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Through this, the paper seeks to identify opportunities for further development and collaboration, including the need for capacity-building, community engagement, and financial sustainability. It also highlights the importance of international partnerships and innovative approaches to scaling up land administration efforts, ensuring that Nepal can effectively manage its land resources in the face of evolving environmental and socio-economic challenges.

2. BACKGROUND

The global environmental development has crossed several critical planetary boundaries, as defined by the Intergovernmental Panel on Climate Change (IPCC). These planetary boundaries represent the thresholds within which humanity can safely operate to maintain Earth's system stability. By 2009, three of these boundaries had been crossed, with the number rising to four by 2015 and six by 2023 (Azote et al. 2023).

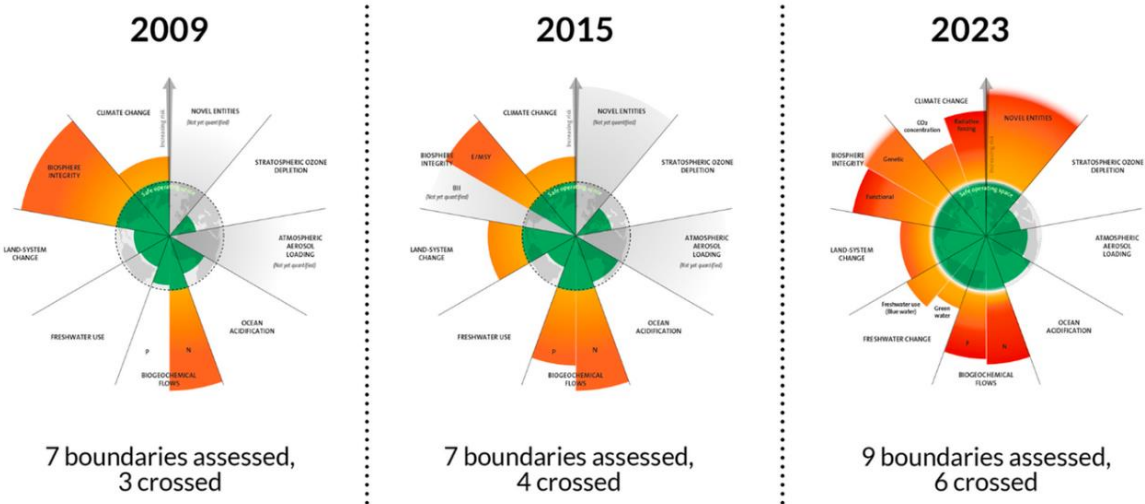


Figure 1. Planetary Boundaries (Source: Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023, Steffen et al. 2015, and Rockström et al. 2009)

Land use change is one of the primary drivers of this environmental degradation, contributing between 13% and 21%. This transformation of land for agricultural expansion, urbanisation, and industrial development disrupts ecosystems, accelerates biodiversity loss, diminishes soil health, and exacerbates climate change.

Tenure security is increasingly recognised as a critical factor in addressing these environmental challenges. As highlighted by Augustinus and Sharma of the FIG Task Force on Climate Compass (FIG, 2024) tenure security underpins land restoration and sustainable land management. It is argued that when land users have secured rights to their land, they are incentivised to engage in long-term land stewardship and conservation practices. Secure tenure

fosters investment in sustainable land management techniques, which are essential for mitigating land degradation and enhancing ecological resilience in the face of climate change.

3.1 Land Degradation in Nepal

Land degradation is a major concern in Nepal, driven primarily by activities that are using land resources, resulting in decreased soil fertility, biodiversity loss, and a decline in land productivity. A 2019 national land degradation assessment reported that 8.3% of Nepal’s total land area, approximately 1.22 million hectares, is degraded (UNCCD, 2019)

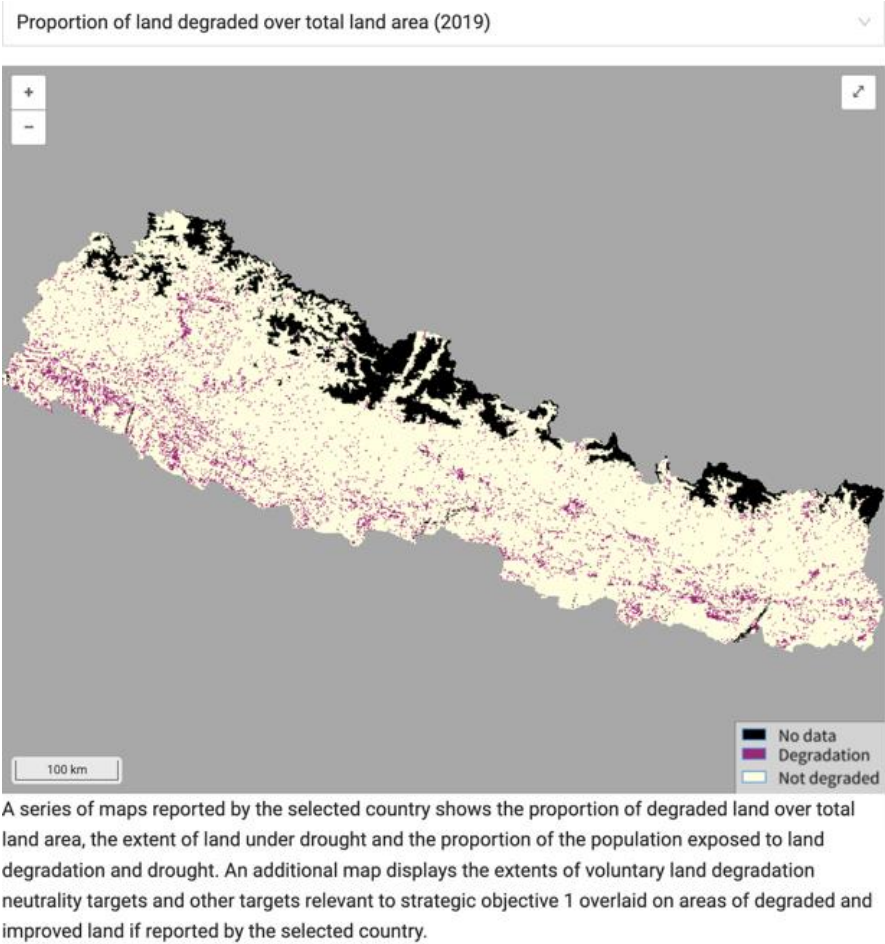


Figure 2: Land degradation in Nepal 2019 (Source: UNCCD, 2019)

The degradation is particularly acute in areas subjected to external pressures such as ineffective government policies, market-driven exploitation, and escalating consumer demands. These factors have intensified competition for scarce land and water resources, highlighting the increasing disjunction between human consumption patterns and the capacity of natural systems to regenerate and sustain these patterns.

Effective land administration is essential for mitigating the impacts of land degradation. The World Bank (UNCCD, 2022) emphasises that robust land administration systems are critical for sustainable resource management, as they regulate land use and ensure the responsible use of natural assets. In Nepal, however, significant gaps exist in formal land tenure, with an estimated 25% of arable land, around 10 million spatial units, is indicated to be unregistered and informally occupied (Shankar et al, 2020). This widespread lack of formal tenure security is argued to undermine efforts to promote sustainable land use, as informal landholders often lack the legal measures and incentives necessary to invest in long-term land conservation practices.

2.1 Nepal's Environmental Strategies and Commitments

Recognising the need to address both land tenure security and the related land degradation and climate change, Nepal has developed and implemented a series of comprehensive environmental strategies. Central to these efforts is Nepal's Second Nationally Determined Contribution (NDC), submitted in 2020 under the Paris Agreement, which outlines a multi-faceted approach to land and environmental management (NDC, 2020) with one of the focus on Agriculture, Forestry and Other Land Use (AFOLU) promoting community-based land management, restoring degraded forests and wetlands, implementing climate-smart agricultural practices, and advancing sustainable urban development through integrated planning.

Complementing the NDC, Nepal's National Biodiversity Strategy and Action Plan (NBSAP) designates 23.23% of the country's land area for biodiversity conservation, the highest proportion in Asia. The NBSAP articulates a 35-year vision for biodiversity conservation and sustainable management, addressing the pressures of human activities on natural ecosystems and promoting the inclusion of indigenous and local communities in conservation efforts (CBD, 2014). The strategy emphasises cross-sectoral approaches, recognising the interconnected nature of land use, biodiversity conservation, and climate resilience.

Furthermore, Nepal's commitment to achieving land degradation neutrality (LDN) by 2030 underscores its focus on reversing land degradation. This includes the stop of forest conversion to other land uses and maintaining the forest cover at the 2017 baseline levels. The LDN targets also aim to restore 10% of Nepal's 26,277 hectares of wetland ecosystems by 2030. These restoration efforts are complemented by initiatives to conserve degraded forests, expand protected areas, and enhance ecological conservation practices (LDN, 2018). These actions reflect Nepal's broader dedication to sustainable land management, biodiversity conservation, and climate change mitigation.

2.2 Legislative and Policy Reforms in Land Administration

In recent years, Nepal has introduced legislative reforms aimed at strengthening land administration and tenure security. The National Land Policy (2019) sets out a comprehensive framework for land governance, with a particular focus on enhancing tenure security, equitable

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access to land, and sustainable land use planning (MoLCPA, 2019). The 2020 amendments to the Land Act (1964) and Land Rules (1964) further bolster this framework by providing legal mechanisms to support tenure security and facilitate sustainable land management.

The enactment of the Land Use Act (2019), the Land Use Rules (2022) and the operational guidelines (2024) has been instrumental in operationalising these policies, providing a legal basis for land use planning and management across Nepal. These legislative reforms have created structured and secure environment for land governance, promoting sustainable land use practices and improving the alignment of land management with environmental conservation objectives.

Despite these advances, significant challenges remain in bridging the gap between formal and informal land tenure systems. As considerable proportion of Nepal's population, particularly in rural areas, continues to lack formal tenure rights, this limits the effectiveness of land administration systems and undermines efforts to promote sustainable land management. Addressing these challenges by expediting the formal land registration process and improving tenure security will be critical to achieving Nepal's long-term environmental and development goals.

3. FELA in Context of Climate-Change

3.2 Policy, Governance and Accountability

Policy, Governance and accountability are foundational to addressing the nexus of climate change and land, particularly in countries like Nepal, where climate-induced risks, such as floods, landslides, and land degradation, pose severe challenges to sustainable development. The UN-GGIM's Framework for Effective Land Administration (FELA) (UN-GGIM, 2020) emphasises the necessity of sound governance structures, effective leadership, and robust accountability mechanisms to manage land resources in a manner that promotes resilience and equity. In the context of Nepal, recent reforms and ongoing initiatives in land administration provide incentives to align governance strategies with the pressing demands of climate adaptation and mitigation.

Nepal's land governance structures have undergone reforms aimed at modernising land administration and enhancing inclusivity. Central to this reform is the establishment of governance models that align with international principles of good governance—transparency, accountability, inclusiveness, and participation. The modernisation of land services (LS) has been a major focus, with initiatives such as the digitalisation of land records and service delivery systems through the Land Records Information Management System (LRIMS) and Nepal Land Information System (NeLIS). These technological advancements are intended to improve the efficiency and transparency of land administration, which is critical for addressing the complex challenges posed by climate change.

Efforts to decentralise land administration and bring services closer to communities have also been initiated, though progress has been slow. The establishment of local service points across

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135 locations within Nepal's 77 districts is intended to make land services more accessible, particularly for marginalised and vulnerable populations. The concept of pursuing localization of land administration within the new federal set-up under the new constitution provides further scope for improvement. In Nepal, recent reforms have aimed to actively promote the principles of good governance within land administration institutions. Policies and legislation are increasingly being developed through participatory processes, fostering a culture of transparency and inclusivity. However, significant gaps remain in ensuring accountability, particularly in the competitive environment of service delivery. The lack of formal auditing mechanisms within land administration weakens institutional accountability and limits the capacity to monitor and improve service quality.

Fostering a collaborative environment is essential to addressing the multi-sectoral challenges of the climate-change and land nexus. In Nepal, efforts are underway to enhance coordination between key institutions, such as the Land Revenue Office and the Survey Office. However, these institutions currently operate under different administrative structures, which can hinder effective collaboration. Robust policy and legal frameworks form the basis of effective land administration, especially in the context of climate change. In Nepal, the National Land Policy (2018) and the Land Use Policy (2015) provide the statutory foundation for land governance (MoLCPA, 2015). However, as climate change intensifies pressures on land resources, there is a need for these frameworks to evolve to better integrate climate resilience and adaptation into land management practices that are actively collaborating with other ministries and institutions. The digitalization of land records and the development of geospatial information systems represent important advancements in the accessibility and management of land information. These systems enhance transparency and provide critical data for climate adaptation planning. However, challenges remain in ensuring that these systems are accessible to all, particularly marginalized groups who may lack the resources or digital literacy to fully engage with these platforms and especially other institutions to formulate informed policies.

3.3 Legal Frameworks

Nepal has made notable progress in aligning its land administration legal frameworks with climate change adaptation and mitigation goals, reflecting its commitments to international agreements such as the UNFCCC, the Paris Agreement, and the Rio Conventions. The country's legal framework is increasingly aiming to integrate climate resilience to address the land-climate nexus.

Nepal's legal framework for land administration, anchored in key statutes such as the Land Use Act 2019, Land (Survey and Measurement) Act 1961, and Land Revenue Act 1977, governs land tenure, land use, and land development (MoLCPA, 2019). These laws have been instrumental in securing land rights and regulating land management. More recently, climate considerations have been incorporated into these frameworks through policies like the National Land Policy 2019 and Land Use Policy 2015, which support sustainable land management in the face of climate-induced risks. Legal provisions now emphasise the need for resilient land

use planning, aligning with national climate strategies such as the National Adaptation Plan of Action (NAPA) (NAPA, 2010) and Nepal's Nationally Determined Contributions (NDCs) 2020 (NDC, 2020). Essentially there is a link between the NDCs and NAPA with the NAPA as implementing policy to reach the NDCs. These frameworks reflect Nepal's commitment to the Paris Agreement, focusing on preserving forest cover, promoting sustainable agriculture, and restoring wetlands, which are critical for climate adaptation. Though this alignment is not seen as sufficient yet and needs further collaborative efforts to place land in the centre.

Nepal's legal reforms align with its obligations under international frameworks, such as the Rio Conventions and the UNFCCC, particularly through the establishment of Land Degradation Neutrality (LDN) targets by 2030 (LDN, 2018). These targets prioritise maintaining forest cover, increasing agricultural productivity while enhancing soil organic carbon, and restoring wetland ecosystems. The National Land Policy 2019 and Land Use Act 2019 (MoLCPA, 2019) are central to achieving these objectives, embedding sustainability and resilience into land governance. The digitalisation of land records through systems like LRIMS and NeLIS supports the efficient management of land data, enhancing transparency and enabling more precise monitoring of land use changes in response to climate impacts. Additionally, the initiation for formalization of informal land tenure through the institutionalization of special task land commission plays a crucial role in addressing informal settlements and landlessness, key issues exacerbated by climate-induced displacement.

Nepal's approach to land governance has increasingly emphasised cross-sectoral integration, with legal frameworks promoting collaboration between land administration and environmental agencies. This coordination ensures that land use decisions are informed by climate risk assessments and contribute to biodiversity conservation, as seen in the National Urban Development Strategy 2017 (MoUD, 2017) and the Sustainable Development Goals Status and Roadmap for Nepal (NPC, 2017) but needs to be further enhanced and closer linked to land.

3.4 Financial Strategies

Addressing the intersection of climate change and land administration requires an integrated financial approach, as the impacts of climate change extend across sectors and significantly influence public policy, resource allocation, and land management. In Nepal, where climate-related risks such as floods, landslides, and land degradation are intensifying, the alignment of financial strategies with land administration under the UN-GGIM's Framework for Effective Land Administration (FELA) (UN-GGIM, 2020) is crucial for fostering climate resilience and sustainable development.

The nexus between climate change, public finance, and land administration is increasingly recognised as critical to effective policy implementation. Climate change affects a wide range of governmental functions, including agriculture, water management, infrastructure, energy supply, and public health. Given the broad scope of its impacts, climate change necessitates a multi-sectoral response that incorporates land administration into broader national strategies for

climate mitigation and adaptation. Public finance is central to this effort, as financial resources must be strategically allocated to support integrated climate actions across sectors.

The most recent review of climate-related public expenditure in Cambodia, for instance, estimates that 2.1% of GDP is dedicated to climate change response (WB, 2023). With Nepal's similar vulnerability to climate-related events, a comparable or even greater investment in climate-resilient land management is essential. The challenge lies in ensuring that climate finance—whether sourced domestically or internationally—supports the development of land administration systems that can address climate-induced pressures on land resources, infrastructure, and ecosystems.

Public finance and climate change are interlinked, and this connection requires enhanced coordination between different government departments. Ministries of finance, planning, environment, and local governance must work together to ensure that climate-related expenditures are aligned with national land administration priorities. However, expertise in climate change, land administration, and public finance often remains siloed. Land administration experts may lack knowledge of national budgetary priority and processes, while public finance specialists may not fully understand the implications of climate change for land governance. This gap highlights the need for a more integrated approach to climate finance that incorporates land administration as a critical component of national climate strategies.

Climate finance is becoming increasingly prominent on the global stage, with nearly USD 1.3 trillion mobilised annually for climate-related initiatives in 2021-2022 (GLCF, 2023). However, this represents only 1% of global GDP, underscoring the need for increased financial flows to address the scale of the climate crisis. Climate finance is sourced from a mix of international public finance, private sector investments, and domestic resources. For developing countries like Nepal, international climate finance—channelled through bilateral, regional, and multilateral arrangements—remains a key source of funding for climate adaptation and mitigation projects. National and international private actors also contribute significantly to global climate finance, accounting for 58% of flows in 2013 (GLCF, 2023). Ensuring that these diverse sources of finance are aligned with national climate and land administration goals is crucial for maximising their impact.

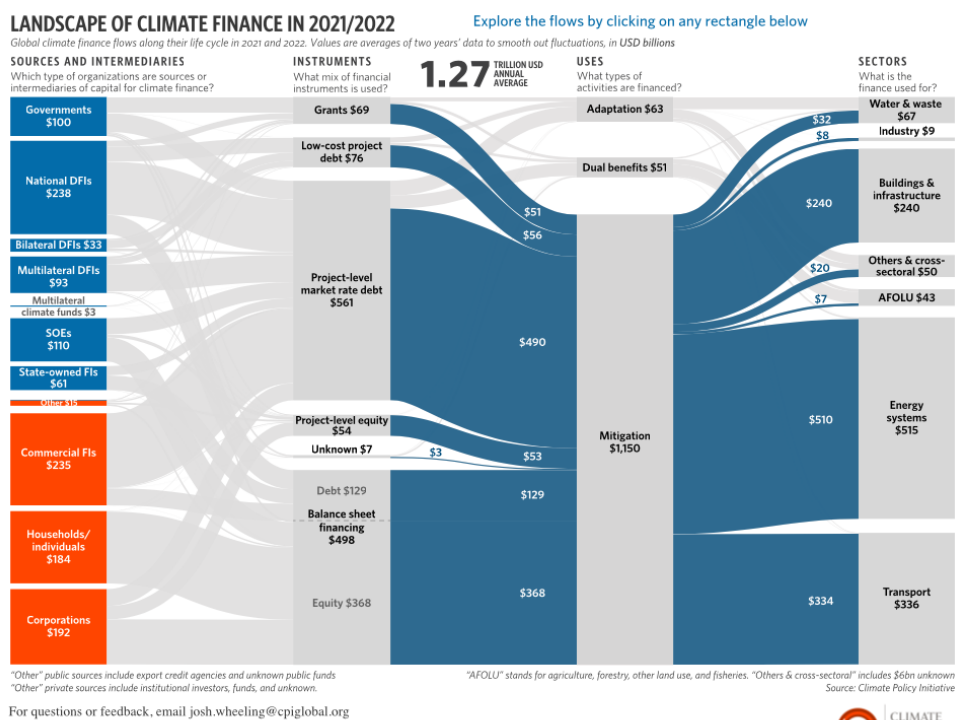


Figure 3: Landscape of Climate Finance (GLFC, 2023)

In Nepal, the integration of climate finance into the national budget is essential for ensuring the long-term sustainability of climate adaptation and mitigation efforts. Often, climate-related grants and projects, such as those for flood management, operate "off-budget" and are not accounted for in national financial planning. This can lead to challenges in the future, as ongoing maintenance and operational costs for these projects may not be anticipated in the national budget. Effective management of climate finance thus requires harmonising external funds with domestic resources and ensuring that all relevant governmental departments are informed and involved in the process.

International frameworks such as FELA provide a structured approach to managing climate finance in the context of land administration. FELA emphasises the need for countries to adopt comprehensive financial strategies that leverage both domestic and international funding sources while ensuring that these resources are utilised efficiently. For Nepal, this means integrating climate finance into national land administration processes, aligning external funding with national priorities, and ensuring accountability and transparency in the use of climate-related resources.

4. FELA in Context of Climate-Change Land Nexus for Nepal

The Framework for Effective Land Administration (FELA) offers a structured approach for countries to develop, modernize, and enhance land administration systems in support of the

Sustainable Development Goals (SDGs). Nepal, facing significant climate-induced risks, has integrated these objectives into its national policies and legal frameworks to address the intersection of climate change and land administration. The following table synthesises Nepal’s approach, aligning the 2030 Agenda, FELA's 5Ps (Planet, People, Prosperity, Peace, Partnerships), and national climate objectives with key stakeholders, success indicators, and supporting initiatives.

2030 Agenda - FELA 5 Ps	Climate Objective	Evidence from Policy	Land Administration theme	FELA Pathway	Stakeholders in Nepal	Success Indicator for Nepal	Supporting (New) Initiatives	Means of Verification in Nepal	Action/Project Idea
Partnership Planet	Build the climate resilience of vulnerable communities in rural and urban sectors (p.23)	NAPA2020	Climate Change – Land Nexus	Governance, Institutions, and Accountability	...	Degree of inter-agency and cross-sectoral collaboration	...	Number and nature of collaborative initiatives or platforms established for coordinating the climate land nexus across different sectors and levels of government	Task Force for inter-agency and cross-sectoral collaboration ...
Partnership Planet	Build the climate resilience of vulnerable communities in rural and urban sectors (p.23)	NAPA2020	Climate Change – Land Nexus	Legal and Policy	...	Number of climate policies or action plans revised to include land.	...	Count of national, regional or local climate policies or action plans that have been updated to integrate land explicitly	Legal Framework Harmonization Nepal Expert Group Meeting ...
Prosperity	Build the	NAPA2020	Climate Change –	Finance	...	Level of	...	Increase in the	

Figure 4: FELA Strategic Alignment for Climate-Change Land Nexus

The table shows the following aspect that is recommended to be investigated to enable a coordinated and collaborative approach for Nepal to tackle the climate-change land nexus:

- 2030 Agenda - FELA’s 5Ps: This column maps the specific goals under the 2030 Agenda through FELA’s 5Ps (Planet, People, Prosperity, Peace, Partnerships), representing key areas of focus for Nepal’s land administration system in the context of climate change.
- Climate Objective: Defines the primary climate-related goal that Nepal seeks to achieve based on the NDC/NBSAP etc..
- Evidence from Policy: Highlights national policies and frameworks that provide a legal basis for integrating land administration and climate resilience in Nepal, e.g. NAPA.
- Land Administration Theme: Identifies specific themes within land administration, such as land use planning, tenure security, and conflict resolution, which are critical to achieving climate objectives.
- FELA Pathway: Refers to the FELA pathways, such as data, innovation, and governance etc.
- Stakeholders in Nepal: Lists key national stakeholders, including government ministries, civil society, and international partners, involved in implementing land administration and climate resilience strategies.
- Success Indicator for Nepal: Defines measurable indicators of success for Nepal, such as reductions in land-related conflicts, increased tenure security, and improved land market efficiency, linked to climate resilience goals.

- **Supporting Initiatives:** Provides examples of ongoing national and international initiatives supporting Nepal’s climate and land nexus, such as the National Adaptation Plan, Nationally Determined Contributions, and partnerships under the UNFCCC.
- **Means of Verification in Nepal:** Outlines the data sources and monitoring mechanisms used to track progress towards achieving success indicators, including land registration data, socio-economic surveys, and environmental monitoring reports.
- **Action/Project Idea:** Proposes actionable project ideas to further enhance the land-climate nexus in Nepal, such as the creation of climate-resilient land use zones, the formalization of informal settlements, and the establishment of multi-sectoral task forces for climate action.

The table serves as a vital tool for fostering a collaborative approach to addressing the climate change and land nexus in Nepal. By clearly mapping out the relationships between national policies, climate objectives, land administration themes, and key stakeholders, the table helps to break down silos between various sectors. It highlights the interconnected roles of government agencies, international organisations, civil society, and the private sector, encouraging coordinated action and resource-sharing. This structured approach ensures that all stakeholders have a clear understanding of their responsibilities, success indicators, and the pathways toward achieving shared climate and land governance goals. Moreover, by aligning these elements with the 2030 Agenda and the FELA framework, the table supports the development of integrated strategies that promote resilience, sustainability, and inclusiveness in land management. Ultimately, this tool helps to streamline efforts, avoid duplication, and leverage the strengths of diverse stakeholders for a unified response to climate change and land challenges in Nepal.

5. CONCLUSION AND RECOMMENDATION

Addressing to secured land tenure, land use and sustainable land management provide a common ground for addressing to climate change- land nexus. Given the complexity of the problem and the multicity of stakeholders, Nepal starts as a good example. Securing adequate funding for these activities remains a critical challenge, but there is a strong willingness among stakeholders to continue collaboration. Based on scale and scope, the learnings from the catalytic support from the development partners in the application of Fit-for-Purpose Land Administration tools in the past and the ongoing UN-Habitat support program linking land tenure and land use in the improvement of livelihoods of vulnerable communities with climate smart land management options are humble beginnings. Larger contributions are anticipated to expand and scale up these efforts.

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Eva-Maria Morscher-Unger works with the international arm of the Netherlands national mapping, land registration and cadastral agency (Kadaster International) as a Senior Land Administration Advisor. She gives advice, assessments, and designs and oversees the conceptualisation and implementation of affordable and effective land administration systems. She is responsible for developing deeper relationships with international donors, partner countries and other consultants and has worked with UN-GGIM, UN Habitat, GLTN, the World Bank, The Dutch Ministry of Foreign Affairs, the EU, and private sector companies. Dr. Unger completed a secondment with UN-GGIM. She holds a MSc. in Geodesy and Geoinformation and a PhD in Land Administration. As a researcher, Eva-Maria is involved in teaching at KU Leuven and the University of Twente. Eva-Maria is chair to STDM Advisor Committee and the Co-Chair of the OGC Domain Working Group on Land Administration and director of OICRF. She was chair of the FIG Young Surveyors Network from 2014-2018, dedicated to the STDM Training of Trainers Program and initiator of the Volunteer Community Surveyors Program (VCSP), supporting the GLTN's county-level implementation plans and programmes.

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