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# Advancing Forest-Based Carbon Trading in Nepal: Policy Challenges and Agroforestry Opportunities

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## Introduction

Nepal remains among the countries most vulnerable to climate-related disasters. Although several national policy documents have emphasized the urgency of mitigation and adaptation, climate action remains fragmented and significantly underfunded. Nepal's unique geography—spanning the Himalayas, mid-hills, and Tarai plains—together with recent decentralization reforms offers a favorable context for implementing localized, context-specific solutions to climate threats. However, the lack of consistent policy frameworks, weak institutional mechanisms, limited investment, and fragmented governance across all levels of government continue to impede progress.

In this policy note, we use carbon trading in the forestry sector as a case study to illustrate broader policy challenges and opportunities in Nepal and other Global South countries. Trading is a market-based mechanism that incentivizes the offset of greenhouse gas (GHG) emissions through credits for CO2 sequestration.. Nepal has adopted this approach in line with international agreements such as the Kyoto Protocol and the Paris Agreement. As one of the major strategies, the country has sought to capitalize on its forest resources to generate carbon credits and attract international climate finance.

Nepal's engagement with carbon markets began with the Clean Development Mechanism (CDM) under the Kyoto Protocol in 2005. The shift toward a nationally driven policy framework under the Paris Agreement of 2015 has allowed Nepal to explore new cooperative mechanisms, particularly Article 6.2, which enables bilateral trade of Internationally Transferred Mitigation Outcomes (ITMOs). In its second Nationally Determined Contribution (NDC), Nepal pledged to achieve net-zero emissions by 2045, generate 15,000 megawatts of clean energy by 2030, and maintain 45% of forest cover (GoN, 2020).

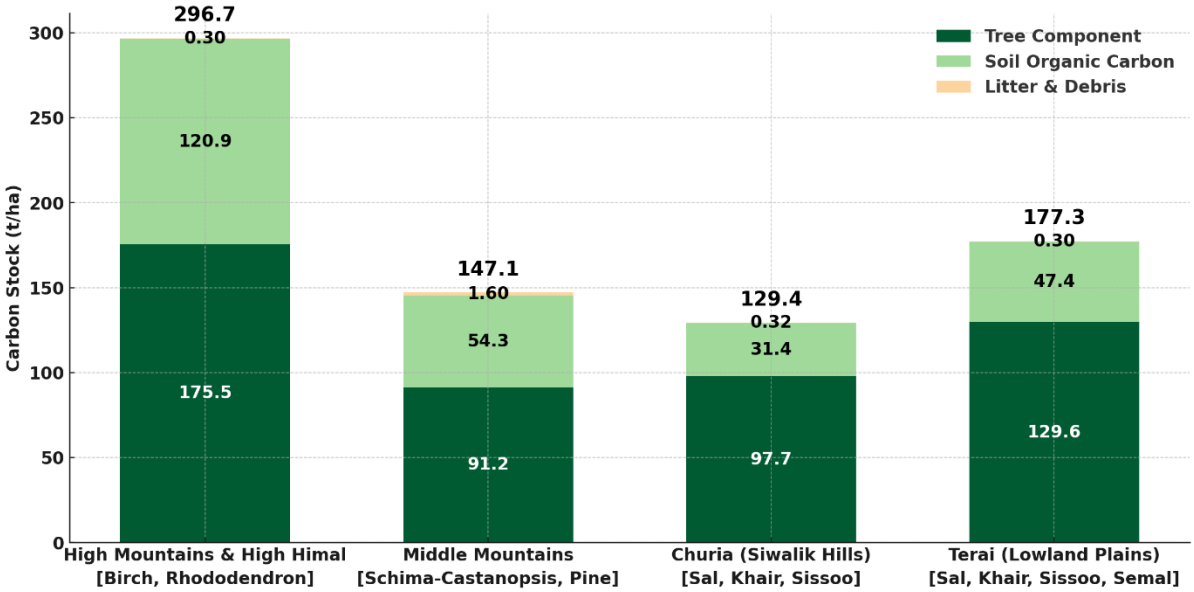
The upcoming third NDC (2025) is expected to formalize Article 6.2 operations and introduce strategies for addressing short-lived climate pollutants (SLCPs), including a National SLCP Plan and Methane Roadmap (CCAC, 2023). Strengthening governance, policy coherence, monitoring, reporting, and verification (MRV) systems, and local capacity will be critical to operationalizing these goals and leveraging international climate finance effectively (MoFE, 2023).

## Forestry Sector, Carbon Sequestration Potential, and Carbon Trading

Nepal's forestry sector plays a vital role in both ecological preservation and climate change mitigation. With forest coverage accounting for 44.74% of the national territory (DFRS, 2015), the country has prioritized sustainable forest management as a cornerstone of its climate strategy. The diverse physiographic zones—from the tropical lowlands of the Tarai to the high-altitude Himalayan belt—host varied forest ecosystems, each contributing to different degrees to the national carbon stock.

According to the National Forest Inventory (DFRS, 2015), Nepal's total forest carbon stock is approximately 1,159 million metric tons, with an average carbon density of 176.9 tC/ha, considering both biomass and soil organic carbon. Figure 1 illustrates the carbon stock by forest type, highlighting that the high mountain and high Himalayan forests store up to 296.7 tC/ha, followed by the Terai at 177.3 tC/ha, middle (mid-altitude) mountains at 147.1 tC/ha, and Churia at 129.4 tC/ha. These variations are attributable to species composition, forest structure, soil characteristics, and management regimes.

**Figure 1: Carbon Stock in Different Forest Types of Nepal**




Source: Forest Research and Training Centre, 2024

Forest ownership and governance also influence carbon sequestration. Public forests comprise 98% of total forest land, managed under government, community, leasehold, and protected area frameworks. Community forests alone cover over 2.2 million hectares and are widely recognized for participatory

conservation and improved carbon retention. Private forests, though limited in area (~2%), exhibit promising carbon sequestration, especially in the Terai, where they sequester approximately 105.25 tC/ha compared to 47.02 tC/ha in the hilly region (Joshi et al., 2023). Table 1 provides comparative data on carbon stocks in private forests.

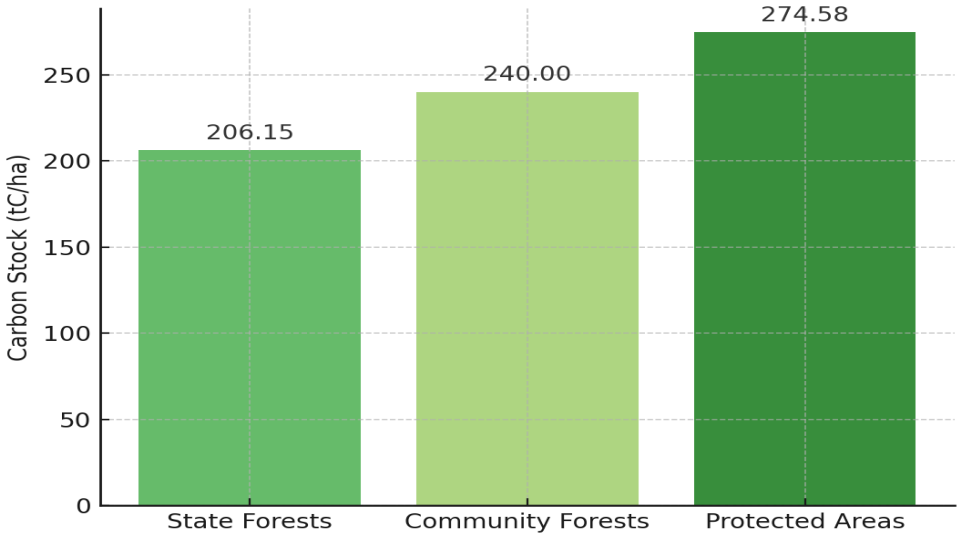
**Table 1: Carbon Stock in Private Forests of Nepal**

| Region | Aboveground biomass carbon (t/ha) | Belowground biomass carbon (t/ha) | Total carbon stock (t/ha) | $CO_2$-equivalent (t/ha) |
|---|---|---|---|---|
| **Terai** | 83.53 | 21.72 | 105.25 | 386.26 |
| **Hilly** | 37.32 | 9.70 | 47.02 | 172.57 |

Source: Joshi et al. (2023)

The type of management regime further affects carbon potential. Figure 2 shows that protected areas in the Terai have the highest carbon density (274.58 tC/ha), followed by community forests (240 tC/ha) and state-managed forests (206.15 tC/ha). These data affirm that decentralized and conservation-focused governance yields larger carbon benefits, positioning Nepal's community and protected forest models as examples for climate mitigation strategies.

**Figure 2: Carbon Stocks in Terai by Management Regime**




Source: REED+ Implementation Center, Government of Nepal, 2017.

Despite this potential, Nepal faces several challenges in maximizing carbon sequestration in its forests. Deforestation and forest degradation driven by agricultural expansion, illegal logging, and infrastructure development are significant threats (Chaudhary et al., 2023). However, initiatives such as REDD+ (Reducing Emissions from Deforestation and Forest Degradation) provide opportunities to integrate carbon trading mechanisms and generate financial resources for forest conservation. Nepal's participation in international frameworks including the LEAF Coalition (Lowering Emissions by Accelerating Forest Finance) and the UNFCCC (United Nations Framework Convention on Climate Change) further strengthens its efforts to monetize carbon credits while ensuring the sustainable

management of its forest resources.

Nepal's NDCs under the Paris Agreement emphasize the importance of forests in achieving emission reduction targets. By promoting reforestation, enhancing forest management practices, and involving the private sector in carbon trading, Nepal could significantly increase its carbon sequestration. The country's community forest management system, which ensures equitable benefit-sharing and local participation, can serve as a model for integrating social and environmental goals (Chaudhary et al., 2023).

Given Nepal's significant forest carbon sequestration potential, the development of robust carbon markets is crucial for maintaining and enhancing forest cover. Effective carbon trading not only provides financial incentives for conserving existing forests but also encourages reforestation and afforestation efforts. By assigning economic value to carbon stored in forests, carbon markets transform conservation from a cost into an opportunity. However, the success of these markets hinges on the active and informed participation of all stakeholders—ranging from government agencies and private investors to local communities and forest user groups. Their understanding of carbon market mechanisms, regulatory frameworks, and benefit-sharing models is essential to ensure transparency, accountability, and equitable outcomes. Empowering stakeholders through capacity-building programs, simplified access to carbon finance, and inclusive governance structures will enhance the implementation of carbon sequestration initiatives in Nepal's forestry sector. Ultimately, well-functioning carbon markets can serve as a sustainable tool for forest protection while simultaneously advancing Nepal's climate and development goals.

## Policy Process and Legal Provisions

Nepal's policy process for developing carbon markets and carbon trading frameworks has progressed through a participatory and multi-tiered approach, particularly between 2015 and 2019. This journey began with the integration of climate mitigation and forest-based carbon sequestration into national policies such as the Climate Change Policy 2011 (revised 2019) and the Forestry Sector Strategy 2016–2025 (MoFE, 2016). These documents recognized forests as critical to Nepal's climate objectives and laid the foundation for leveraging international carbon finance. Supported by the Forest Carbon Partnership Facility (FCPF), Nepal initiated the REDD+ Readiness Program, which engaged diverse stakeholder groups—including community forest user groups, Indigenous Peoples' organizations, civil society, academics, and development partners—in shaping the National REDD+ Strategy 2018 (MoFE, 2018). Through extensive consultations and regional dialogues, the strategy was designed with robust safeguards, benefit-sharing plans, and grievance redress mechanisms, aligning with UNFCCC requirements and ensuring social inclusion.

Concurrently, Nepal undertook REDD+ pilot programs in places such as the Terai Arc Landscape (TAL)

to test frameworks for MRV and to assess institutional capacities at the provincial and local levels (REDD IC, 2017). Lessons from these pilots highlighted the need for legal clarity and institutional coordination in managing carbon rights and revenue distribution. Consequently, the 2019 Environment Protection Act and the 2019 Forest Act introduced explicit legal provisions on ecosystem services and carbon trading (GoN, 2019a; 2019b). These acts legally acknowledged the possibility of market-based conservation mechanisms, including the sale of carbon credits. Moreover, Nepal's 2020 NDC explicitly committed to promoting nature-based solutions and enhancing private sector participation in carbon trading (GoN, 2020). Institutional guidance from the National Planning Commission and parliamentary deliberations further embedded carbon market development into national economic planning. Together, these efforts reflect a structured, inclusive, and legally grounded policy process aimed at operationalizing carbon trading in Nepal's forestry sector.

The 2019 Environment Protection Act established Nepal's legal authority to engage in carbon trading under Chapter 4, Section 28: Power to Participate in Carbon Trade. This provision empowers the Government of Nepal to leverage international carbon markets to reduce emissions and foster sustainable development. By collaborating with international treaties, foreign entities, and the private sector, Nepal seeks to capitalize on economic opportunities while ensuring equitable distribution of benefits among stakeholders. The 2020 Environment Protection Regulation (EPR 2020) provides detailed procedures for implementing the provisions of the 2019 Environment Protection Act, particularly those related to carbon trading. Rule 28 of EPR 2020 outlines the mechanisms for carbon trading, shown in Table 2.

**Table 2: Carbon Trading Mechanisms in Nepal**

| S.N. | Provision | Description |
|---|---|---|
| 1 | Authorization to Sell Carbon Stocks | The Government of Nepal (GoN) is authorized to sell carbon stocks generated through sustainable forest management and carbon emission reductions in both domestic and international markets. |
| 2 | Sale of Emission Reductions | GHG emission reductions achieved by government institutions or private entities can be sold in national and international markets, either by the government directly or through authorized institutions or private entities. |
| 3 | Green Development Projects | The GoN is authorized to sell GHG emission reductions from green development projects in national and international markets, directly or through authorized entities. |
| 4 | Permission for Trading | All entities (governmental, community-based, or private) must obtain independent permission to engage in carbon trading, as per Sub-Rules 1 and 2. |
| 5 | Carbon Pricing Negotiation | The GoN will negotiate the per-unit price of carbon sequestration or emission reductions under Sub-Rules 1 and 2. |
| 6 | Private Forest Participation | Private forest owners with ≥0.5 hectares of land, ≥10% canopy cover, and trees ≥5 meters tall can participate in carbon trading. The Inclusion is based on the Ministry of Forests and Environment's working plan. |

| | | |
|---|---|---|
| 7 | Biodiversity Protection | Activities under Sub-Rules 1, 2, and 3 must not negatively impact biodiversity. |
| 8 | Project Submission Requirements | Entities must submit a Project Idea Note (PIN) and a Project Design Document (PDD) to the Ministry of Forests and Environment for carbon trading under Sub-Rule 3. |
| 9 | Adherence to UNFCCC Guidelines | All procedures under Rule 8 must align with the UNFCCC sustainable development framework. |
| 10 | Compliance with Climate Change Management Frameworks | All carbon trading activities must comply with climate change-related management requirements under the UNFCCC framework. |

Source: Department of Environment, Government of Nepal, 2020.

While Nepal has established a strong legal and policy foundation for carbon trading, implementation faces challenges including limited technical capacity, unclear benefit-sharing mechanisms, and low private sector engagement. Despite these hurdles, opportunities exist through established experience with REDD+, rising global demand for carbon credits, and growing institutional readiness. To realize these gains, Nepal must enhance coordination, streamline regulations, and invest in inclusive capacity-building and transparent MRV systems.

## Institutional Mechanisms for Implementing REDD+ and Carbon Trading

Nepal has demonstrated a proactive approach to combating climate change by embracing the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism. This initiative aligns with the country's commitment to mitigating climate change and promoting sustainable forest management. Nepal's engagement with REDD+ began in 2008 when it became a participant in the Forest Carbon Partnership Facility (FCPF) under the World Bank. This milestone marked the beginning of efforts to build institutional capacity and develop policies that align with international frameworks. The National REDD+ Strategy (2018) serves as a comprehensive guide, outlining Nepal's objectives, intervention priorities, and implementation plans for REDD+ at the national level.

To facilitate the successful implementation of REDD+, the Government of Nepal has focused on strengthening its institutional framework. The Ministry of Forests and Environment (MoFE) acts as the primary coordinating body for all REDD+ activities, supported by the REDD Implementation Center, which oversees technical and operational components such as MRV systems. Additionally, Nepal has introduced Forest Reference Levels (FRLs) and a National Forest Monitoring System (NFMS) to ensure transparency and accountability in carbon stock assessment and emission reductions tracking. These initiatives have laid a strong foundation for Nepal's REDD+ implementation, ensuring adherence to international standards.

To assess the effectiveness of its REDD+ initiatives, Nepal has launched several pilot projects in vulnerable regions, such as the Terai Arc landscape and the Churia region. These projects focus on reducing deforestation, improving forest governance, and empowering local communities. The active

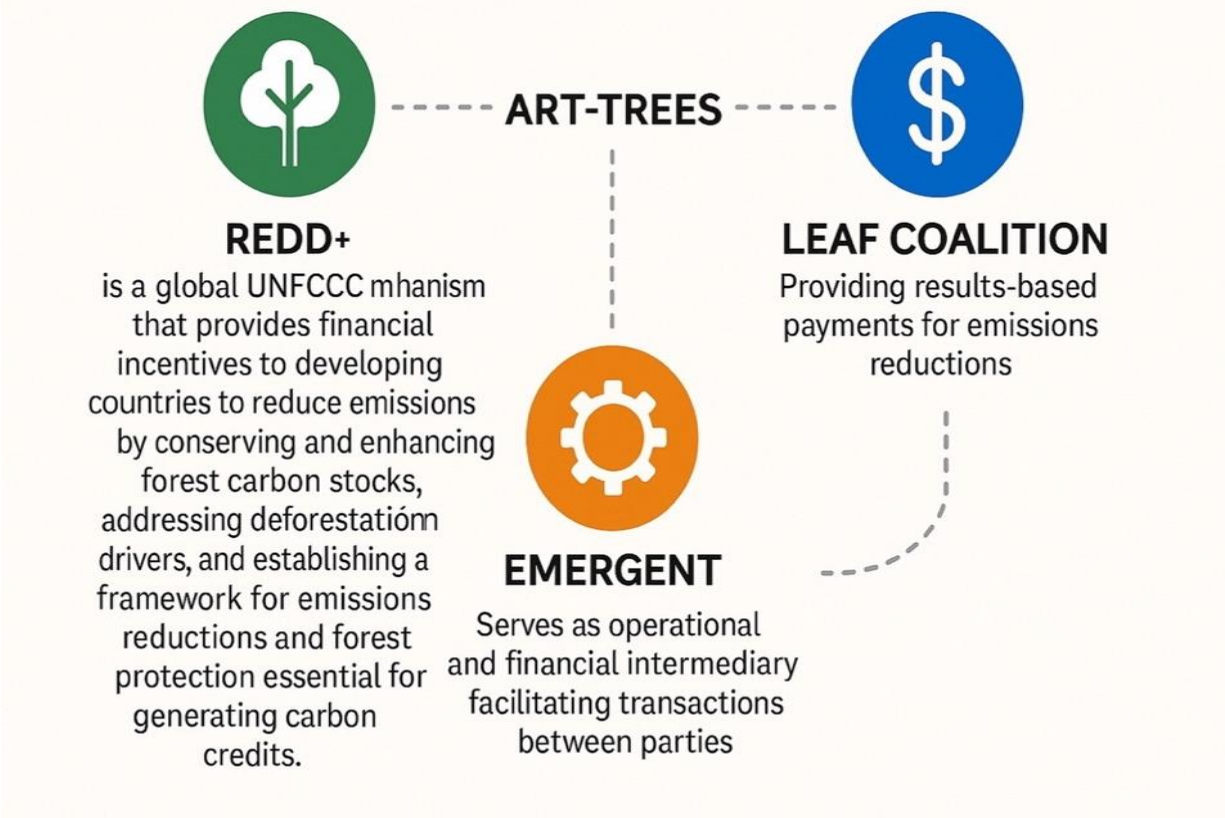
involvement of community forest user groups (CFUGs) has been a cornerstone of Nepal's REDD+ approach. CFUGs, which manage approximately 40% of the country's forested areas, have played a critical role in sustainable forest management and carbon sequestration. Furthermore, the government has prioritized the inclusion of Indigenous communities, women, and marginalized groups in REDD+ activities, ensuring equity and inclusivity in its initiatives.

In parallel with REDD+ implementation, Nepal has made significant strides in establishing a robust carbon trading framework. The 2019 Environment Protection Act and the 2020 Environment Protection Regulation (EPR 2020), provide the legal basis for carbon trading activities in Nepal. Specifically, Rule 28 of EPR 2020 outlines mechanisms for selling carbon credits derived from sustainable forest management and emission reduction activities. The government is authorized to trade carbon stocks in both domestic and international markets, while private sector participation is permitted under strict regulatory oversight. Revenue generated from carbon trading is reinvested in conservation efforts and equitably shared with local communities involved in forest protection, reinforcing the principle of benefit-sharing.

## REDD+, LEAF Coalition, and Emergent

REDD+ is a global mechanism under the UNFCCC aimed at reducing greenhouse gas emissions by incentivizing tropical and subtropical countries to conserve forests, enhance carbon stocks, and promote sustainable management practices. The LEAF Coalition is a public-private partnership launched in 2021 as an initiative to combat deforestation and address climate change by mobilizing large-scale financial resources for forest conservation. Formed through a partnership between governments (Norway, the United States, and the United Kingdom) and leading corporations including Amazon, Nestlé, and Unilever, LEAF focuses on providing results-based payments for verified emission reductions. Its foundational purpose is the purchase of high-integrity carbon credits under the ART-TREES (Architecture for REDD+ Transactions–The REDD+ Environmental Excellence Standard) framework, ensuring adherence to rigorous environmental and social standards. A nonprofit, Emergent, serves as the operational and financial intermediary for the LEAF Coalition, facilitating transactions between buyers (governments and private companies) and sellers (tropical forest nations) to ensure compliance with rigorous standards such as ART-TREES and maintain transparency, accountability, and environmental integrity in global carbon markets.

**Figure 3: Carbon Market Framework: REDD+, LEAF Coalition, and Emergent under ART-TREES**




REDD+, LEAF Coalition, and Emergent are interconnected components of global carbon trading mechanisms, with complementary roles aimed at reducing deforestation, promoting sustainable forest management, and addressing climate change through high-integrity carbon markets. Together, they create a cohesive framework to mobilize finance, implement strategies, and ensure accountability in the global fight against deforestation and carbon emissions (Figure 3).

### 1. REDD+: The foundation

REDD+ is a global mechanism developed under the UNFCCC to provide financial incentives to developing countries for reducing emissions through sustainable forest management.

- REDD+ focuses on conserving and enhancing forest carbon stocks while addressing drivers of deforestation.
- It establishes the framework for emissions reductions and forest protection, which are critical for generating carbon credits.

Connection to LEAF and Emergent:

- ❖ The LEAF Coalition builds directly on the REDD+ framework by using REDD+ mechanisms to generate high-integrity, verified emission reductions from forest nations.
- ❖ Emergent acts as the intermediary that facilitates the financial and technical processes for REDD+ programs to integrate into global carbon markets.

### 2. LEAF Coalition: Scaling up REDD+

The LEAF Coalition leverages the REDD+ mechanism to mobilize significant financial resources for forest conservation by bridging the gap between the public and private sectors.

- LEAF aims to accelerate the implementation of REDD+ by ensuring that emission reductions from forest projects are linked to substantial financial support.
- It brings together governments, private corporations, and tropical forest nations to create a large-scale market for high-integrity carbon credits.

Connection to REDD+:

- ❖ LEAF Coalition relies on the REDD+ framework to identify, verify, and fund emission reduction projects.
- ❖ It provides funding to REDD+ programs through results-based payments, ensuring that credits meet high environmental and social standards.

Connection to Emergent:

- ❖ Emergent acts as the operational backbone of the LEAF Coalition, facilitating carbon credit transactions and ensuring compliance with ART-TREES.
- ❖ LEAF and Emergent together enable forest nations to scale REDD+ projects and access global carbon markets.

### 3. Emergent: The operational link

Emergent serves as the financial and operational intermediary that connects REDD+ programs with the LEAF Coalition's buyers, ensuring seamless integration into carbon trading markets.

- Emergent simplifies the process for forest nations to sell carbon credits generated under REDD+.
- It ensures that emissions reductions meet international standards (e.g., ART-TREES), creating trust and transparency in the voluntary carbon market.

Connection to REDD+:

- ❖ Emergent provides the technical and financial expertise needed to operationalize REDD+ initiatives, including project design and MRV systems.
- ❖ It facilitates the flow of funds from buyers (LEAF Coalition participants) to REDD+ projects.

Connection to LEAF:

- ❖ Emergent acts as the intermediary between the LEAF Coalition's public and private buyers and forested nations. It handles all aspects of transaction management, ensuring that payments are linked to verified emissions reductions.
- ❖ By coordinating the operational aspects of LEAF, Emergent ensures that the coalition achieves its objectives of supporting REDD+ projects and scaling up carbon finance.

### 4. How they work together in carbon trading

1. Generation of Carbon Credits (REDD+):

- ❖ Tropical and subtropical forest nations implement REDD+ strategies to reduce deforestation and enhance forest carbon stocks.
- ❖ These efforts generate verified emission reductions (carbon credits) that meet ART-TREES and UNFCCC standards.

2. Financing and Transactions (LEAF Coalition):

- ❖ The LEAF Coalition provides a large-scale platform for mobilizing public and private sector funding to purchase carbon credits generated through REDD+.
- ❖ It ensures that credits are priced fairly (minimum $10 per ton of $CO_2$) and that benefits are equitably shared with forest communities.

3. Facilitation and Verification (Emergent):

- ❖ Emergent acts as the operational hub for both REDD+ and LEAF Coalition. It ensures that carbon credits are verified, transactions are transparent, and funds are distributed efficiently to forest nations and stakeholders.
- ❖ Emergent' s role ensures credibility and trust in the voluntary carbon market, attracting more buyers and investors.

## Status of Carbon Trading in Nepal

Nepal has made significant progress in operationalizing forest-based carbon trading through the World Bank–supported Emission Reductions Program in the Terai Arc Landscape. The REDD Implementation Centre (REDD IC), part of the Ministry of Forests and Environment (MoFE), has completed the MRV process, allowing the country to earn payments based on verified reductions of up to 9 million tons of $CO_2$ by 2025. The benefit-sharing plan has undergone extensive consultations and is currently pending final approval from the Ministry of Finance. In parallel, the Forest Development Fund (FDF) is being institutionalized to facilitate the equitable distribution of carbon revenues to communities and forest stakeholders (World Bank, 2023).

The legal framework for carbon trading in Nepal is grounded in the 2019 Environment Protection Act and the 2019 Forest Act, which empower the government to trade carbon credits and establish benefit-sharing mechanisms. The REDD IC has assumed a central role in implementing REDD+ activities, ensuring stakeholder coordination and technical execution. Additionally, the draft National REDD+ Strategy (2025–2034) expands the scope of emission reductions program and aligns them with global market frameworks under Article 6 of the Paris Agreement. This strategy reaffirms Nepal's long-term vision for sustainable forest governance and equitable climate finance distribution (REDD IC, 2024).

Nepal is also preparing to scale its carbon trading efforts through engagement with the LEAF Coalition, focusing on jurisdictional programs in Bagmati, Gandaki, and Lumbini provinces. The proposed emissions reduction activities for 2022–2026 are being structured in line with the ART TREES standard, with the Government of Nepal pursuing an Emissions Reduction Purchase Agreement (ERPA) to formalize participation. Concurrently, MoFE is developing national guidelines for voluntary carbon market (VCM) operations, including the establishment of a National Carbon Registry and a Designated National Authority (DNA) for overseeing carbon transactions. These efforts aim to enhance market transparency, define carbon ownership, and support broader private sector involvement (REDD IC, 2024; UNDP, 2024).

## Challenges and Opportunities for Improvement

The current framework in Nepal places significant restrictions on carbon trading, hindering full realization of the country's potential in international carbon markets. We highlight specific challenges and opportunities to overcome these obstacles.

### Legal and Policy Barriers

Under Nepal's current regulatory framework, the autonomy of private sector entities is highly restricted in carbon trading. The 2020 Environment Protection Regulation (Rule 28) mandates that private entities must obtain prior permission from the Government of Nepal before engaging in carbon trading. This

centralized authority creates bureaucratic hurdles and hampers private sector participation. Additionally, the government retains significant control over price negotiations and approval processes, limiting the ability of private businesses and forest owners to negotiate directly with international buyers. Such restrictions discourage private sector involvement and stifle entrepreneurial freedom.

In this context, the potential of carbon sequestration through agroforestry remains significantly underutilized, despite its compatibility with Nepal's agrarian structure (nearly 65% of the population depends on farming) (MoALD, 2025). Agroforestry—integrating trees into farmland—offers a cost-effective and sustainable strategy to enhance carbon stocks while improving soil health, biodiversity, and rural livelihoods. However, existing regulatory barriers and the absence of incentive mechanisms have prevented smallholder farmers and private landowners from benefiting from emission reduction activities such as afforestation and reforestation. Without tailored frameworks that recognize and reward the carbon value of agroforestry systems, particularly on privately managed lands, the private sector—especially rural households—remains excluded from the voluntary carbon market. Policies that encourage local involvement, make it easier to trade carbon, and acknowledge agroforestry as a valid way to store $CO_2$ are essential for tapping into Nepal's large potential for carbon capture and improving climate-friendly development in rural areas.

To foster a thriving and inclusive carbon trading ecosystem in Nepal, regulatory reforms are urgently needed—particularly the reduction of government controls that inhibit private sector participation. The first critical reform is to amend Rule 28 of the 2020 Environment Protection Regulation to allow automatic or simplified registration mechanisms for verified private entities engaging in carbon transactions. Replacing the burdensome approval process with a notification-based or fast-track clearance system for pre-qualified carbon projects that meet technical, social, and environmental safeguards would significantly reduce bureaucratic delays and encourage innovation and investment from both domestic and international stakeholders.

Equally important is the liberalization of price negotiation authority. The current framework restricts direct negotiation between forest rightsholders or private project developers and international buyers, which undermines competitive pricing and financial viability. Empowering local cooperatives, community forest user groups, and private firms to directly engage with voluntary carbon markets under transparent guidelines would unlock greater value and drive efficiency. In doing so, the government should retain a regulatory and oversight role—ensuring integrity, additionality, and equitable benefit-sharing—while enabling market actors to lead operational engagements. Clear guidance on carbon ownership rights, benefit distribution, and third-party certification would also enhance legal clarity, reduce risk, and attract credible investors into Nepal's forestry carbon market.

### Lack of Clarity in Benefit-Sharing Mechanisms

A major issue faced by private entities in carbon trading is the lack of transparency in revenue distribution. While the framework emphasizes equitable benefit-sharing, it does not clearly outline how revenues generated from carbon credits will be allocated among the government, private entities, and community-based organizations. This uncertainty in financial returns discourages private investment. Furthermore, there are inadequate incentives for private players, leaving many hesitant to invest time and resources into carbon trading initiatives without guaranteed benefits.

To improve transparency in decision-making and build trust among stakeholders, Nepal should institutionalize a publicly accessible digital dashboard that tracks the flow of carbon finance and benefit-sharing arrangements in real time. This dashboard should clearly display project locations, verified emission reductions, revenue received from carbon credits, and the distribution of those benefits across stakeholders, including community forest user groups, private developers, and government bodies. Such a tool would empower citizens and civil society organizations to monitor whether benefits are reaching the intended recipients and whether gender and social equity considerations are being met. Additionally, implementing third-party audits and regular reporting requirements, integrated into the dashboard, would further strengthen accountability. By embracing open data standards and participatory monitoring practices, Nepal can ensure that the carbon market operates with integrity, transparency, and fairness, thus encouraging greater stakeholder participation and the long-term success of forestry-based climate finance initiatives.

### Technical and Capacity Constraints

Private sector stakeholders in Nepal face significant technical and capacity-related challenges. Many lack the expertise required for carbon accounting, and MRV systems, which are essential for engaging in global carbon markets. Additionally, the high costs associated with preparing project design documents (PDDs) and conducting emissions assessments make participation prohibitive, particularly for small and medium enterprises. There is also limited access to training and capacity-building programs to address these knowledge gaps

To strengthen local technical capacity and enhance the functioning of carbon markets, it is essential to invest in targeted training programs on carbon accounting, MRV systems, and project documentation (like PDDs), especially for small and medium enterprises and local institutions. Establishing national technical support centers, subsidizing the cost of project development, and fostering public-private partnerships can help bridge capacity gaps. For instance, Vietnam's REDD+ readiness phase included extensive training for local officials and communities, which significantly improved project quality and access to international markets. Enhancing technical skills not only builds credibility but also increases participation, attracts investment, and ensures long-term sustainability of carbon trading initiatives.

### Restricted Access to International Carbon Markets

The reliance on government mediation further limits the private sector's ability to independently access international carbon markets. Private entities cannot directly negotiate with global buyers or establish independent carbon trading agreements without government oversight. Furthermore, the complexity of compliance with international market requirements, such as adherence to UNFCCC frameworks, poses additional barriers. Fluctuations in global carbon prices further reduce the profitability of carbon trading, making it less attractive to private stakeholders.

To allow the private sector to act as a mediator in international carbon markets, Nepal must introduce a hybrid market mechanism that clearly defines the roles of government as a regulator and private entities as facilitators or aggregators. A tiered accreditation system could be established, where certified private intermediaries—such as carbon project developers, brokers, or community aggregators—are authorized to coordinate directly with international buyers under the oversight of the Ministry of Forests and Environment. This would enable streamlined market entry, reduce transaction costs, and enhance scalability. The operational model should be adapted based on the type of forest ownership: for community forests, intermediaries can facilitate group-based transactions, ensuring fair benefit-sharing; for national forests, public-private partnerships may be more suitable, with the government retaining majority oversight; and for privately owned trees, individuals or cooperatives should be allowed to participate independently or via aggregators with minimal regulatory friction. Ensuring legal recognition of carbon rights across all forest categories and issuing clear guidelines for credit ownership, verification, and revenue distribution will be essential to making such reforms effective and equitable.

### Ambiguity in Private Forest Criteria

The eligibility criteria for private forest owners to participate in carbon trading are stringent. For example, forests must meet specific requirements, such as covering at least 0.5 hectares of land, with 10% canopy coverage and trees at least 5 meters in height. These conditions exclude many small-scale forest owners and farmers with agroforestry holdings. Additionally, there are inadequate mechanisms to support private forest owners in meeting these criteria, further marginalizing them from potential opportunities in carbon trading.

To address the ambiguity in private forest eligibility for carbon trading, Nepal should revise its existing definitions under the Forest Act and associated guidelines to adopt a more inclusive and flexible classification system. The current minimum thresholds for area, canopy cover, and tree height are too restrictive and fail to account for diverse forest typologies, particularly smallholder woodlots, agroforestry systems, and scattered private plantations. Instead, the criteria should recognize ecosystem services contributions and carbon sequestration potential regardless of plot size. A differentiated eligibility model could be proposed that would allow smallholders to participate as aggregated units through cooperatives

or intermediary service providers. Additionally, the government should establish technical support programs to help landowners assess, register, and certify their carbon stocks. These reforms, coupled with legal clarity on carbon ownership and rights to trade, would create a more equitable and accessible environment for private forest owners and thus encourage broader participation in Nepal's emerging carbon economy.

### Lack of Domestic Market Mechanisms

Nepal lacks a robust domestic carbon market that could facilitate private sector participation in carbon credit trading. The absence of market mechanisms restricts private entities from selling carbon credit or engaging in voluntary market-driven opportunities. This dependence on centralized governance stifles innovation and private-sector-driven carbon trading projects.

To develop domestic carbon market mechanisms, Nepal should establish a national carbon registry and trading platform under a transparent regulatory framework. This platform would allow verified carbon credits to be traded domestically between emitters and offset providers. Clear guidelines on credit certification, pricing, and third-party verification will be essential. Additionally, incentivizing demand through domestic offset obligations for large industries (like hydropower or cement) can stimulate market activity. A public-private taskforce should be formed to design market rules, set baselines, and ensure fair participation from community forest user groups, private landowners, and businesses.

## Concluding Remarks

Nepal has made notable progress in establishing a forest-based carbon trading system, leveraging over 44% of its land under forest cover. The country's participation in REDD+, Article 6.2 of the Paris Agreement, and the LEAF Coalition positions it to access substantial international climate finance. Forest carbon sequestration potential is significant across community, private, and protected forests, supported by programs like the Emission Reduction Program and the National REDD+ Strategy.

However, major challenges persist. Rule 28 of the Environment Protection Regulation limits private sector autonomy, and there is a lack of clarity in benefit-sharing frameworks. Technical capacity constraints, costly MRV and PDD processes, and the absence of a domestic trading platform further hinder effective implementation. These gaps reduce incentives for community groups, private forest owners, and local actors to engage fully in carbon markets.

Nepal's large population of small-scale farmers offers a largely untapped opportunity for carbon sequestration through agroforestry. Despite its dual benefits of emission reductions and livelihood enhancement, agroforestry remains excluded from mainstream carbon trading initiatives due to rigid regulatory frameworks and a lack of targeted incentives. Private forest owners, especially smallholders,

have not yet benefited from afforestation-driven emission reductions, despite meeting ecological thresholds.

To realize its carbon finance potential, Nepal, like other countries of the Global South, must reform regulatory provisions to enable direct participation, develop transparent market systems, and strengthen local capacity. Prioritizing smallholder inclusion, decentralized monitoring, agroforestry development, and equitable revenue sharing will be essential for scaling up forest-based carbon trading while ensuring environmental integrity and socioeconomic benefits.

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