学 位 論 文 内 容 の 要 旨

Dissertation Abstract

博士（環境科学）　　氏　名　BHATTARAI Nabin

学 位 論 文 題 名

Title of dissertation

Studies on addressing challenges and enhancing community engagement in REDD+ implementation in Nepal and India

（ネパールおよびインドにおける REDD+実施に関わる課題への取り組みとコミュニティ参画の強化に関する研究）

Reducing emissions from deforestation and forest degradation in developing countries (REDD+) emerged in 2005 through the United Nations Framework Convention on Climate Change (UNFCCC) negotiations in response to the recognition of the important role forests play in climate change mitigation. The primary goal was to provide financial incentives in the form of result-based payments to developing nations to preserve forests and reduce carbon emissions from deforestation and degradation, which was incorporated in the 2007 Bali Action Plan. REDD+ includes sustainable forest management and enhancement of forest carbon stocks, which are more relevant to communities that have been managing forests.

Over a decade has passed since the inception of REDD +, yet its success remains uncertain, sparking debates on its effectiveness. This study aims to identify the REDD+ progress and challenges for successful REDD+ implementation by taking two case studies in Mamit of Mizoram, India, and

Dhankuta, Nepal. These sites share similar geography and practice community-based forest management, making them ideal for testing whether they meet REDD+ compliance. Given the significance of CMF in carbon projects, this study identified actions on the ground for sustainable REDD+ projects. The study methodology was based on three approaches: 1. PRA, 2. household surveys, and 3. RS and GIS analyses to fulfill its objectives.

The first step involved assessing the progress of REDD+ in both the countries. An indicator-based questionnaire survey involving 63 respondents was conducted in two rounds of consultation meetings at both sites. The findings reveal that both countries are at a similar stage, with Nepal slightly ahead in terms of REDD+ readiness. Institutional readiness has emerged as an area that requires more attention in both countries. While gaps in other readiness areas can be narrowed through capacity development, research, and awareness programs, addressing institutional readiness necessitates greater commitment from government bodies, genuine interest in REDD+, and carbon finance.

The research also identified the key drivers of deforestation and forest degradation at both sites through multi-stakeholder consultation using a problem and solution tree approach. Acknowledging that REDD+ alone cannot address all the drivers of deforestation and forest degradation, this study prioritizes the most significant ones. In Mamit, shifting cultivation and forest fires have emerged as the primary causes driving D&D. Similarly, fuelwood collection and forest fires were identified as the main drivers in Dhankuta. Addressing these drivers is the main challenge for REDD+ in the study area.

To assess changes in forest cover, the study analyzed land use data from 2010 to 2021, revealing a 2% decrease in forested areas in Mamit due to shifting cultivation and a remarkable 12% increase in Dhankuta, driven mainly by rural-to-urban migration. Both regions, particularly their remote areas, rely heavily on fuelwood for energy, and their livelihoods are closely tied to agriculture. Most households engaged in agriculture lack alternative sources of income, rendering them highly dependent on forest resources. In Mamit, an annual consumption of fuelwood results in an estimated loss of approximately 1.8 million USD in potential carbon finance from fuelwood burning. A similar scenario unfolds in Dhankuta, accounting for a potential carbon funding loss of roughly 2 million USD due to the burning of fuelwood. In both the Mamit and Dhankuta areas, tapping this carbon credit will increase per capita income by approximately 2% and 1 %, respectively. Fuelwood is one of the critical aspects of forest degradation and carbon emissions, and REDD+ must channel its efforts to address this pressing issue effectively.

Furthermore, both study areas faced the risk of forest fires, as identified during stakeholder consultations. The year 2021 was particularly devastating, with Mamit experiencing 675 fire incidents, and Dhankuta recording 42. These fires pose not only a risk to carbon finance but also to the environment and human health. During the same period, air pollution levels increased, with high AOD levels in Dhankuta and elevated CO levels in Mamit. These trends were linked to higher temperatures and lower precipitation than average annual norms. Without a comprehensive strategy to minimize forest fires, REDD+ remains risky.

To ensure the success of REDD+ projects in CMFs, it is imperative to identify and encourage active participation from forest-dependent communities. This can be achieved by utilizing potential carbon financing through initiatives such as promoting clean cookstoves, afforestation, and sustainable forest management practices. Developing a benefit-sharing plan is crucial for converting carbon financing into tangible incentives for local communities. REDD+, as a mechanism for RBP, can reduce fuelwood consumption and support sustainable forest management practices, reduce carbon emissions, and make communities eligible for carbon payments. The REDD+ approach ensures the long-term sustainability of these strategies, while fostering site-specific development in an ecologically sensitive manner.