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Case Report

Case Study Report: REDD+ Pilot Project in Community Forests in Three Watersheds of Nepal

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Abstract: Reducing emissions from deforestation and forest degradation (REDD+) is an international climate policy instrument that is expected to tap into the large mitigation potential for conservation and better management of the world's forests through financial flows from developed to developing countries. This paper describes the results and lessons learned from a pioneering REDD+ pilot project in Nepal, which is based on a community forest management approach and which was implemented from 2009–2013 with support from NORAD's Climate and Forest Initiative. The major focus of the project was to develop and demonstrate an innovative benefit-sharing mechanism for REDD+ incentives, as well as institutionally and socially inclusive approaches to local forest governance. The paper illustrates how community-based monitoring, reporting, and verification (MRV) and performance-based payments for forest management can be implemented. The lessons on REDD+ benefit sharing from this demonstration project could provide insights to other countries which are starting to engage in REDD+, in particular in South Asia.

Keywords: pilot REDD+; community forests; community MRV; benefit-sharing mechanism; incentive-based payment

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1. Introduction

Deforestation and forest degradation have received worldwide attention because of the implications for climate change. It has recently been estimated that around 12% of annual greenhouse gas (GHG) emissions are attributable to land cover changes, including forest losses [1,2]. Under the United Nations Framework Convention on Climate Change (UNFCCC), a policy known as Reducing Emissions from Deforestation and Forest Degradation (REDD+) is being introduced. This is a performance-based policy instrument aimed at reducing anthropogenic emissions of GHG [3,4] by rewarding countries that are able to reduce rates of deforestation and degradation and increase the rate of removals of carbon dioxide from the atmosphere by forest enhancement. The goal of reducing deforestation is not new. In the past, many countries have made regulatory policies aimed at curtailing deforestation [5]. However, most such regulatory instruments have proven ineffective. In the South Asian Association for Regional Cooperation (SAARC) countries from 1990 to 2005, all member countries except Bhutan and India reported decreasing forest cover and growing stock (Table 1), despite the fact that many of these countries were actively engaged in programs for community management (Table 2). REDD+, with its performance-based incentives, is widely regarded as a new approach with a greater chance of success.

Table 1. Change in forest resources in the SAARC countries (1990–2005).

Variable	Year	Unit	AFG	BGL	BHU	IND	SLN	NEP	PAK
Forest area	1990	1000 ha	1309	882	3035	63,939	2350	4817	2527
	2005	1000 ha	867	871	3195	67,701	1993	3636	1902
Change in forest area	1990–2005	1000 ha	−442	−11	160	3762	−357	−1181	−625
		%	−33.8	−1.2	5.3	5.6	−15.2	−24.5	−24.7
Change in growing stock	1990–2005	1000 m^3/year	−925	−570	+11,500	+37,100	−2019	+13,600 [a]	−10,200
Carbon stock in living biomass	1990	million tons	38	84	296	2,223	90	602	330
	2005	million tons	38	82	324	2615	66	485	243
Change in total carbon stock in living biomass	1990–2005	million tons	0	−2	28	392	−24	−117	−87

AFG, BGL, BHU, IND, SLN, NEP, PAK = Afghanistan, Bangladesh, Bhutan; India; Sri Lanka; Nepal; Pakistan; [a] an increase from 1990–2000 was followed by a decrease to 2005; Source: [6].

Table 2. Community-managed forests in SAARC countries.

Country	Management Modality	Area/Length Managed	Forest User Groups/Communal Land	Source
Bangladesh	Social Forestry	40,387 ha woodlot plantation, agroforestry plantation, 48,420 km strip plantation	n.a.	[7]
Bhutan	Social Forestry	21,025 ha, <1% national forest land	As of July 2009, 173 community forests with 8650 households	[8]
India	Joint Forest Management	>22 million ha, 33% forest land	By end 2006, around 69,200 villages involving 21 million households	[9]
Nepal	Community Forestry	1.65 million ha	17,685 CFUGs involving 2.2 million households	[10]
Pakistan	Social Forestry	31% of total forest area	18% communal forest, 13% Guzara forests	[11]
Sri Lanka	Community Forestry	more than 7000 ha of forestland	By January 2009, 55 community groups registered with approved management plan	[12]

1.1. REDD+ in the SAARC Context

Following the 2009 Conference of Parties (CoP16) [13] all SAARC countries have endorsed REDD+ and are working on developing implementation strategies. In the case of Nepal, six co-benefits of implementing REDD+ have been identified by the Government's REDD Cell [14] in addition to the financial incentive, these are: enhancement of local livelihoods; increase in the value of biodiversity; better ecosystem services to people and the environment; more resilient ecosystem-based climate change adaptation; improved governance, institutional setup, and policies for natural resource management at local to national levels; and contribution to achieving the objectives of other MEAs that the countries have ratified to (UNFCCC, Aichi Targets and other provisions of the Convention on Biological Diversity, Ramsar, CITES, and UNCCD).

To realize such co-benefits, it is essential for REDD+ finance to be adequate and to cover more than simply the REDD+ compliance cost [15]. Opportunity costs differ between locations, and the co-benefits can sometimes be greater than the REDD+ benefits. When these co-benefits are clear, REDD+ could garner more interest and support, especially in South Asia where there is a large population whose livelihoods depend on forest-based resources. Co-benefits are an important aspect for REDD+ implementation as it is unlikely that the REDD+ payment will be sufficient to stimulate incentive for improved conservation and sustainable management.

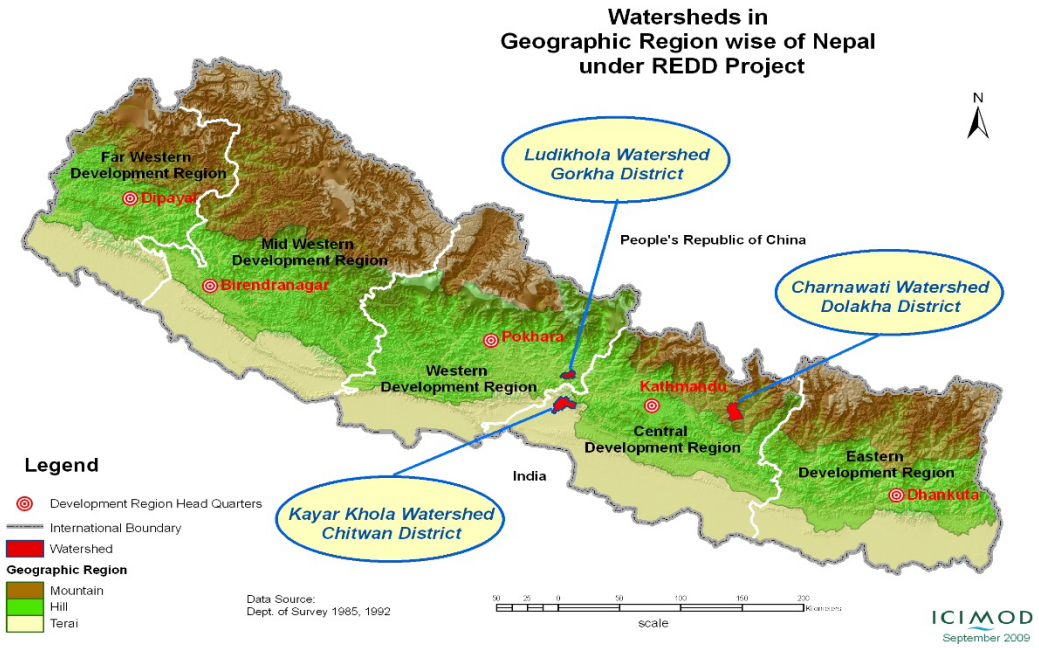
This paper describes one of the first REDD+ demonstration projects within the region, which is based on community management practice. It concerns a project which is being implemented in three watersheds of Nepal. The objective of this paper is to provide and disseminate lessons learnt from this project as input to the national REDD+ formulation processes, particularly in the other SAARC countries. In particular, the paper describes the methods used for community monitoring of the carbon, an innovative system developed for distribution of the benefits and the governance structure that was developed to support the approach. The study employed an extensive review of project documents, and relevant literature including several independent research studies conducted on project sites (not related to the project or the project donors) and drawing upon the sharing of experiences in different national, regional and project-site based seminars and workshops.

1.2. The Norad REDD+ Pilot Project

The project was entitled "Design and setting up of a governance and payment system for Nepal's community forest management under reduced emissions from deforestation and forest degradation (REDD+)" and was implemented by a consortium of three agencies—International Centre for Integrated Mountain Development (ICIMOD), Asian Network of Sustainable Agriculture and Bio-resources (ANSAB), and the Federation of Community Forestry Users, Nepal (FECOFUN) from 2009–2013, with financial support from Norad's Climate and Forest Initiative. The project aimed to demonstrate an innovative mechanism for governance and benefit sharing of REDD+ payments in the community forestry sector, which involved strengthening the capacity of civil society to participate in the REDD+ process. It covered more than 10,000 ha in three watersheds (Charnawati in Dolakha, Kayarkhola in Chitwan, Ludikhola in Gorkha), with 112 community forests, and users from 18,000 households with

90,000 people (Figure 1). The demonstration covered three different geographical regions representing the mountains (high altitude), hills (medium altitude) and the plains (low altitude) as shown in Figure 1.

Figure 1. Location of project sites in the three watersheds in Nepal.



A baseline on carbon, demographic condition and identification of drivers of deforestation and degradation was established in 2010 after the project's onset and training was provided for community forest user groups to undertake carbon inventory. The forest carbon stock data were collected annually in 570 permanent plots established in the base year. As a part of this project, a Forest Carbon Trust Fund (FCTF) was established in 2011 to institutionalize the REDD+ payment mechanism and carbon payments were disbursed annually based on incremental carbon and socio-economic indicators. These payments were utilized under different headings underlined in FCTF guidelines. The project's effectiveness at the end has been measured with reference to the baseline.

The demonstration project was carried out in collaboration with existing local-level community forest user groups (CFUGs), which are autonomous and self-governing institutions who have been carrying out management of forests in their areas for many years. Community forestry in Nepal, which upholds the rights of people from local communities to manage and utilize the forest resources, has been hailed as a successful strategy for forest conservation and has resulted in improvement of forest cover, increase in production of forest products to support subsistence livelihoods, replenishment of greenery in denuded hills, biodiversity conservation, and increases in socioecological resilience against climate change [16–21].

Many of these outcomes of community forest management are congruous with the objectives of REDD+ under the UNFCCC. The presence of established institutions and mechanisms for community management in Nepal provided an enabling environment for REDD+, although the question of additionality needs further consideration. This is because in the long run, REDD+ performance payments to a country such as Nepal will be based on measured improvements on the past situation regarding emissions and carbon stocks, as represented by a national baseline (Reference Emission Level).

Community forest management has been effectively combating deforestation and degradation for many years at least in some parts of the country, so in principle only improvements over what has already been achieved will be eligible for performance payments. Although, as we will show, the project certainly promoted additional activities which have speeded up the sequestration of carbon, the full additionality of this cannot be assessed at present.

The demonstration project described here was set up in part to trial a system of REDD+ payments to local communities to support and incentivize improved forest management. In particular, these improvements include the incorporation of monitoring of carbon stocks in the management process, as described below in Section 2.1. The pilot also designed and set up a governance system for implementing REDD+ at the community level (2.2) and it devised payment criteria (2.3) which are in part related to performance as regards carbon and in part related to social variables, to ensure social safeguards are complied with and that the project responds to local circumstances, as for example represented by the six co-benefits identified by the REDD Cell. This is in line with the many calls for equity and social justice that have been made in the context of REDD+ [22,23].

2. Outcomes and Impact

2.1. Community Involvement in Monitoring, Reporting, and Verification

The project developed forest carbon stock measurement guidelines following IPCC 2006 standards, and trained and supported CFUGs to carry out annual forest measurements. Other authors have noted that local MRV may be cheaper than, and as accurate as, national-level alternatives [24] and that collecting data on their own forests engages local communities and reduces the costs of technology and experts [25]. Communities have been able to measure stock using standard forest inventory methods and mapping techniques based on hand-held information and communication technologies [26]. They have been shown to be proficient at diameter measurements, boundary delineation, and to carry out species identification more effectively than outside professionals. Their involvement in monitoring activities is also said to enhance transparency [27]. The involvement of local communities in forest monitoring has been said to promote a feeling of ownership [28], and may motivate people to take on REDD+ responsibilities. When communities are responsible for forest management, it makes particular sense to involve them in forest monitoring.

The demonstration project therefore included a sub-national level Monitoring, Reporting and Verification (MRV) system in which monitoring responsibilities were devolved to local communities through a participatory method with an opportunity to seek guidance and supervision from the District Forest Office (DFO). MRV is an important activity for performance-based forest management, particularly if the scale of payment and incentive at the local level is to be based on carbon performance, which was the intention in this case. Moreover, community-based monitoring can provide a data source for national level MRV, as well as local [29].

2.2. Forest Carbon Trust Fund and Improved Forest Governance

Governance is critical for the success of meaningful REDD+ interventions. REDD+ governance demands an appropriate mechanism to fulfill the REDD+ objectives while minimizing the risk of

mismanagement that can lead to reduced biomass and less payment. The governance structure for the pilot project was centered on a Forest Carbon Trust Fund (FCTF). This involved financial resources provided by NORAD for the specific purpose of designing and operating a local level performance based payment system. It should be noted that the NORAD finance was itself not performance related, it was a lump sum payment. The local level distribution of benefits mechanism was devised to ensure that financial resources, initially through the NORAD seed grant, but in the long term through regular carbon financing would reach the communities in a transparent and accountable manner and meet the resource mobilization criteria specified in the 2011 Climate Change Policy of Nepal. The project prepared Operational Guidelines for the FCTF and met with stakeholders to explain the REDD+ payment criteria and define payment utilization headings.

The project set up several multi-stakeholder institutional structures to implement, oversee, and monitor REDD+ payments and ensure that distribution and mobilization was transparent and accountable. The CFUGs in each watershed were grouped to form a Watershed REDD Network to operate as a focal point for all REDD+ related activities at the watershed level. Members of the executive committee were nominated from each CFUG in the watershed. The networks bridged the payment from national level to the CFUGs by making claims for payment and disbursing payments to CFUGs based on the claims made. District Monitoring Committees were formed in each district with representatives from stakeholders such as DFOs, civil society organizations, district chapters of relevant federations, and private sector representatives. These committees were responsible for administering the REDD+ payments and registering and verifying the data used for claims before they were sent to the Project Management Unit (PMU) in Kathmandu. The project was implemented and coordinated at the central (national) level by the PMU, with monitoring by a central level Forest Carbon Trust Fund Advisory Committee (FCTFAC) with representatives from the Ministry of Forests and Soil Conservation-REDD Forestry and Climate Change Cell, the Dalit NGO Federation (DNF), Nepalese Federation of Indigenous Nationalities (NEFIN), Himalayan Grassroots Women's Natural Resource Management Association (HIMAWANTI), FECOFUN, ANSAB, ICIMOD, and the three watershed level REDD Networks. The FCTFAC verified the data sent from the watersheds and decided on the REDD+ payment. Annual auditing of payments was carried out by a Nepalese auditing firm using the FCTF Guidelines. This helped in keeping costs low and in-country while satisfying the need of outside and independent verification.

The stringent administration of carbon data and REDD+ payments, and the multi-layer monitoring system, supported REDD+ governance and also resulted in more general improvement in the community forest governance. After the project implementation, most of the executive committees held regular meetings. The representation and participation of women and socially marginalized communities increased in the executive committees in CFUGs receiving the seed grants. Management of the CFUGs improved as the REDD+ compliance process required them to have more frequent meetings, open bank accounts, maintain transparent financial records, and perform targeted activities for marginalized groups, including auditing of funds, thus motivating CFUGs to be more active and operate as institutions. Improved community forest governance was one of the co-benefits of REDD+ implementation.

2.3. Innovative Payment System and Benefit Sharing

The FCTF Operational Guidelines determined the REDD+ payment and benefit sharing process. A nested system was used for the financial transfers from central to community level through watershed level institutions. The money from FCTF was paid to Watershed REDD Networks at each site. The Watershed REDD Networks then distributed the money to individual CFUGs. This mechanism bridged the community and the national level, satisfying both the need to centrally administer payments, and to make payments to CFUGs that ultimately reach to households. REDD+ payments were made for three years from FCTF. The pilot did not use certified emission reduction credits.

The benefit sharing system could have been based purely on emissions metrics: those actors who have demonstrated reductions or removals are provided a level of benefits linked to the quantity of reduced emissions or enhanced removals. However, this would not necessarily have resulted in an equitable distribution of benefits as the scale of involvement of the actors may vary. Since the geography of Nepal is diverse, there is a huge difference in the size, altitude, growth rates and quality (cover and density) of the community forests, and also the population who depended on these forests. Hence in terms of equity, payments based strictly on performance would not have been perceived as "fair".

To address this challenge, broader eligibility criteria were used to identify which actors should receive benefits and how much. The benefit sharing system of the pilot project adopted a multi-criteria approach, based on both performance and socio-economic variables. Performance was measured in terms of the amount of carbon stored and sequestered, *i.e.*, forest enhancement, not reduction of deforestation and degradation, since in the areas concerned community forest management had been operating for some years and had already succeeded in halting these processes. Forty percent of the payment to a participating community was based on their achievements in terms of such forest carbon stock (24%) and enhancement (16%). Carbon stock is the carbon pool stored at start of the project period and enhancement is the annual increment. The remaining part was weighted to favor CFUGs with households with a greater number of indigenous people (IP) (with a weight of 10%), with Dalit ethnic composition (15%), and female population (15%), and households in poverty (20%) as shown in Table 3. This mechanism was intended to ensure that REDD+ benefits are felt by marginalized groups, and to avoid elite capture. The measurements were carried out at watershed level with carbon measurement plots laid out in every CFUG which were demarcated individually within the watershed. Thus, CFUGs were the unit for carbon measurement. Socioeconomic data was available for each CFUG. In order to reduce the risk of cheating by reporting high values of carbon, locals were made to measure the carbon stocks in their neighboring forests, *i.e.*, by mixing the villagers during field survey.

These criteria helped in ensuring that disadvantaged and marginalized groups received some payments even if they did not achieve high performance in the sequestration of carbon. In addition the social weighting gave communities a feeling of agency as REDD+ payments were utilized to expand existing social and poverty related activities through co-financing. The total payments are shown in Table 4. A minimum payment of USD 100 was introduced after the first year to increase the incentive to participate.

Table 3. Criteria for making pilot reducing emissions from deforestation and forest degradation (REDD+) payments to community.

Criteria for Payment	Percentage
CF Carbon Stock	24%
CF Carbon Increment	16%
Indigenous People's Household	10%
Dalit Household	15%
Poor Household	20%
Sex Ratio	15%

Table 4. Total payments in three years and breakdown according to different criteria.

Watershed (District)	No. CF	Total (USD)	Payment According to Different Criteria (USD)						
			Carbon Stock (ton)	Carbon Increment	IP HHs	Dalit HHs	Women	Poor	Basic
Kayarkhola (Chitwan)	16	72,255	16,573	11,049	6,905	10,359	10,359	13,811	3,200
Charnawati (Dolakha)	58/65 [a]	132,879	28,939	19,293	12,058	18,086	18,086	24,116	12,300
Ludikhola (Gorkha)	31	79,866	17,679	11,787	7,366	11,050	11,050	14,733	6,200
Total	105/112 [a]	**285,000**	**63,192**	**42,128**	**26,330**	**39,495**	**39,495**	**52,660**	**21,700**

[a] in Chamawati, 58 CFs in 2011/2012 and 65 in 2013.

These payments were disbursed to each community forest user group and were utilized for various socio-economic (climate change awareness and capacity building, livelihood generation *etc*.) in addition to forest management activities. These carbon fund expenditures made at the CFUG level ultimately became channeled to the households, largely in the form of improved knowledge and skills for forest management, switching to fuel efficient cooking technologies, employment generation, incremental income, improved community infrastructures, *etc*. This helped in ensuring community participation even though per household cash payments were very low.

3. Other Characteristics of the Project

3.1. Pro-Poor and Livelihood Improvement Activities

REDD+ is not primarily a poverty reduction program. However, while addressing the drivers of deforestation and forest degradation, livelihood requirements must be met first and foremost of any forestry related interventions of the populations that depend on forest resources. The REDD+ finance was used to give poor households additional opportunities for income generation. Well-being ranking was carried out to identify poor and socially excluded forest users. The project implemented income-generating activities (IGAs) such as animal husbandry (goat rearing, pig-farming, cow farming, and poultry), high value agriculture (vegetable farming, mushroom cultivation, broom-grass cultivation, and apiculture), business (shops, grocery management), vocational skills (tailoring), and training. The IGA activities were selected by users at the watershed network level. In many cases, the watershed

networks also used the REDD+ payment as micro-finance, and lent it to borrowers for IGA development at low (sometimes zero) interest rates.

The audit firm did random sampling of eight CFUGs from the project and did a detailed audit at this level. In the samples selected by the audit report, it was demonstrated that money transferred to the local CFUG level and targeted programs on livelihood improvement did reach the targeted groups, *i.e.*, the poor, women, Indigenous People and the Dalit community.

3.2. Interventions Ensuring Additionality

An important criterion for complying with REDD+ is additionality, proven by real emission reduction or real enhancement of forest carbon as a result of the project. Although a carbon baseline showing rate of increment of carbon stocks before the project began was not available, the project implemented various interventions to ensure forest carbon additionality including plantation, installation of alternative energy technologies, monitoring and control of forest fire, grazing management, and sustainable forest management.

The baseline study indicated that around 70% of people in the project area depended on fuelwood as their sole source of energy. The study suggested that alternative renewable energy would be an effective way of reducing local pressure and allowing the community forest to increase. Two schemes were introduced: biogas and improved cook stoves (ICS). A total of 284 biogas and 1490 improved cooking stoves were installed in poor and middle income households to reduce pressure on forest from fuelwood demand. The improved energy technologies benefited 1774 households, including 903 indigenous people households and 202 Dalit households. The saved carbon was not counted but will ultimately relate to changes in biomass in the community forest.

The project encouraged enrichment plantation of indigenous and culturally valuable tree species in community forests and private farmland. Filling gaps in forests through enrichment plantation is an important way of increasing forest carbon stocks and thus a potential REDD+ intervention. Plantation records play an important role in ensuring sustainability of regeneration as community forests are continuously harvested to meet basic needs. Altogether 254,584 trees were planted, of which 143,540 survived, on an area of 168 ha.

Various activities were conducted to control carbon loss, including control of forest fires. Using MODIS (Moderate Resolution Imaging Spectroradiometer, Terra and Aqua satellites of NASA) satellite-based technology, a monitoring and alert system was developed that forwards fire information by email or SMS to district forest officers, focal persons in the watershed network and FECOFUN, and local leaders so that immediate action can be taken. The REDD networks raised awareness of forest fire management and the CFUGs constructed forest fire lines. The incidence of forest fire was markedly reduced within project sites compared to non project sites. Avoiding forest fire was an important means of ensuring additionality of the pilot project.

3.3. Social Inclusion

Involvement of local communities is central to curbing deforestation, thus safeguards must be built into the REDD+ mechanism to ensure that community rights, practices, and interests are protected. A key challenge in ensuring full and effective participation, as well as in benefit sharing, is ensuring

participation and benefit of marginalized and/or vulnerable people. The REDD+ project included social safeguards by including the population of indigenous people, Dalits, women, and poor households in the payment criteria. Furthermore, poverty reduction and livelihood improvement activities were included in the FCTF guidelines as activities qualifying for expenditure of REDD+ payments, and programs on awareness and capacity building on REDD and climate change were targeted to Dalits and indigenous people.

3.4. Changes in Forest State Following REDD+ Implementation

The participatory carbon monitoring strategy enabled an overall estimate to be made of carbon increments. Satellite images were used to classify forests into dense and sparse types and select areas for permanent plots. Four carbon pools (above ground biomass, below ground biomass, leaf litter biomass, and soil carbon) were measured by communities. Annual measurements showed that the carbon stock per unit area increased in all three watersheds (Figure 2). The weighted mean annual increment of all forest carbon stocks in all watersheds combined was 2.62 t/ha, 2.69 t/ha, and 3.53 t/ha in the three consecutive years. The CO_2 equivalent(e) saved as a result of enhanced biomass in the CFs is shown in Table 5. The improved management supported by the REDD+ project increased carbon sequestration in the community forests of between 10 and 33 t/ha over three years. Improved forest conditions are attributable to more conscientious practices adopted by community fueled by increased recognition that they can receive more financial rewards if they enhance forest carbon, as well as the activities mentioned in Section 3.2.

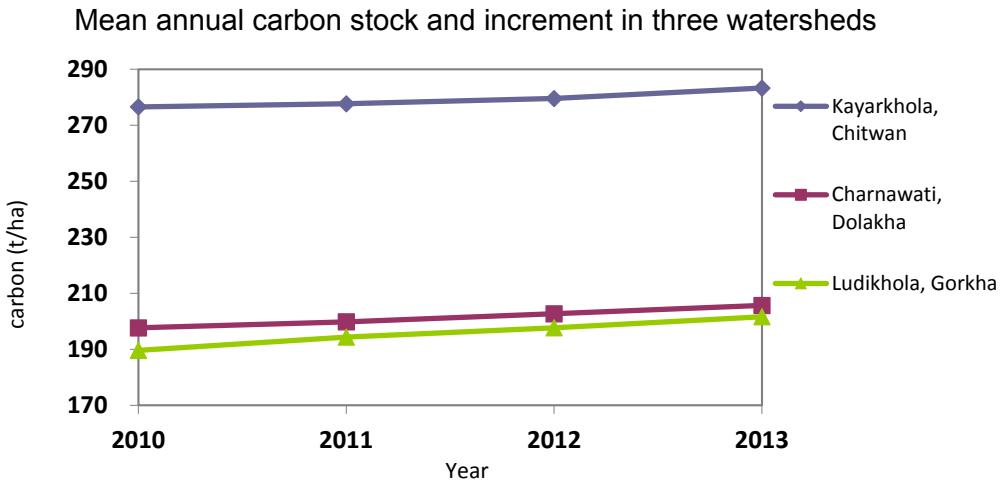


Figure 2. Trend line showing carbon stock per unit area in the three watersheds.

Table 5. Total Carbon-dioxide equivalent saved.

Watershed	Total tCO_2 e (2010)	Total tCO_2 e (2011)	Total tCO_2 e (2012)	Total tCO_2 e (2013)	Net tCO_2 e Emissions Saved (2013-2010)	Total CO_2 e Benefit (t/ha)
Charnawati	4,554,109	4,605,703	4,690,599	4,753,766	199,657	33.3
Kayarkhola	2,521,500	2,533,620	2,554,337	2,579,804	58,304	9.7
Ludikhola	1,448,638	1,485,419	1,505,546	1,534,016	85,378	14.2
Total	**8,524,247**	**8,624,742**	**8,750,482**	**8,867,586**	**343,339**	

It is acknowledged, as mentioned above, that not all the increment should be considered additional, since before the project began communities were managing the forests and the carbon stocks were in all probability increasing, albeit at a slower rate than under the pilot project. In the absence of a local historical baseline to capture past levels of increment, however, it was not possible to separate out how much of the growth was "business as usual" and how much was "additional".

3.5. Leakage

The project checked for leakage (displacement of emissions to adjacent leasehold forests) and deducted appropriate quantities of carbon from the project accounts if leakage was found to occur. This was done using leakage plots that were established during the first year of the project; these were monitored annually using a similar method as in permanent sample plots in community forests. Leakage monitoring was done by CFUGs and the district monitoring committee. Also, some project activities were focused on preventing leakage, for example, fire control, grazing management, and plantation inside and outside community forest land.

4. Lessons and Conclusions

The pilot REDD+ project benefited from four decades of experience of CFM in promoting successful sustainable forest management by local communities in Nepal. This provided an ideal basis to experiment with a REDD+ payment mechanism and establish an effective, efficient, and equitable REDD+ procedure at a pilot scale. What the project shows in particular is (1) that improved forest management by communities can enhance growth rates of forest vegetation and thus result in higher levels of sequestration of carbon; (2) that communities are able, with training, to carry out accurate and reliable carbon surveys; (3) that it is possible to distribute financial benefits among participants based partly on the carbon performance by communities but also taking into account social needs and (4) that the participatory governance structure used in the project was effective, and could provide a model for other SAARC countries. It was also shown that there were co-benefits in the form of improved livelihoods, and institutional and technical capacities within communities. There are, however, a number of other lessons that can be drawn from the experience.

In terms of linking local level community monitoring (such as described in this report) to national REDD+ MRV, such systems can benefit from community monitoring in various way, particularly in terms of obtaining data on local level stock changes and impacts of REDD+ activities to supplement estimates made using other techniques such as remote sensing. For community monitoring to function well as an integral element within the national MRV system, however, governments need to formally define the role of community forest monitoring within the REDD+ MRV system. There are still challenges imposed by capacity constraints in up-scaling the program to the national level. The limited capacity of the government and civil society organizations to implement REDD+ effectively at a larger scale are of serious concern. Government needs to establish the necessary institutional architecture for REDD+ implementation such as REDD+ desk at district level and most importantly, there is a need to build the capacity of local people who manage forests.

The demonstration project has been appraised, as mentioned above, as having a good impact not only on carbon sequestration rates but also on livelihood and institutional and technical capacity of local

communities. Though socio-economic enhancement is secondary to carbon effectiveness within REDD+ policy, in reality it is of crucial importance for the sustainability of REDD+ initiatives. The project's best practices included advancing REDD+ implementation by creating awareness, proper planning with baseline data, establishing of institutional structures, regular monitoring and evaluation, and supporting communities' own ability to organize and manage their forests by addressing the livelihood concerns of the poor and socially marginalized. The lesson is that successful implementation of REDD+ at national level hence will depend on how well the concerns of livelihood and problems of inequality and exclusion are addressed, while trying to achieve the target of emission reduction.

A further key lesson of the demonstration project is the need to have appropriate social safeguards in place. Maintaining social inclusion (ethnicity, gender and well-being) in benefit sharing is crucial for bringing positive change in local communities behavior and enhancement of their sense of ownership and commitment to the program. The project promoted meaningful participation of underprivileged communities to some extent, but strong inclusive stakeholder engagement is still a challenge for national REDD+ to succeed given the conflicting interests of various stakeholders and the social traditions that militate against inclusion of the poor and underprivileged.

Preliminary evidence suggests that local forest dependent communities are capable of and interested in implementing REDD+, but only on condition that use of forest resources is not curtailed. It is essential to find the balance such that sustainable off-take of forest resources is permitted, to enable enhancement of tree growth while still permitting extraction for local needs. The project brought about behavioral change among the local people and their forestry practices such as more cautious harvesting of forest products and active participation in controlling forest fire or plantation. The seed grants significantly increased local awareness about the value of forests. The incentive from REDD+ payment for carbon was seen as a bonus over and above the many other forest goods and services people gain from the forests. Financial incentives for standing timber in particular provide an incentive for better forest management and conservation. However, with compliance to REDD+ come other challenges. The requirements of maintaining bank-accounts, record keeping, organizing and attending regular meetings and monitoring imply considerable costs to the communities. Though no actual cost-benefit estimation was made, it is obvious that payment-based incentives will work only if the additional time, labor and monetary costs, as well as cost of forgone benefits, do not significantly exceed payments. If payments are based purely on carbon increment rates and on the international market of carbon value, they would be unlikely to offset the increased burdens to the communities. The funding of this project by NORAD enabled a higher value to be given to carbon, to a level which adequately compensates the local communities. The lesson here is that unless the market value of carbon rises, it may be difficult to implement REDD+ projects of this type on a large scale.

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Author Contributions

The first author framed the paper and prepared the first draft of the manuscript. The second author provided critical inputs to the paper and helped to shape the final version. Third author supported in supplementing data about the project. Overall, all the authors have worked as a team for preparation of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

References and Notes

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