*Article*

# Predicting Future Conflict under REDD+ Implementation

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**Abstract:** With the current complexity of issues facing forest and land management, the implementation of the REDD+ initiative comes with significant risks, including conflict. While the exact nature and shape of conflict in REDD+ implementation is difficult to pinpoint, this study aims to build a preliminary predictive framework to identify possible sources of impairment that may result in conflict over management of forests and natural resources. The framework was developed from an extensive literature review and was tested in three REDD+ pilot project sites in Nepal. The results indicate that most of the sources of impairment are present in all study sites, particularly issues relating to benefit sharing, which have been main drivers of conflict prior to REDD+. While we found that the application of the framework has been useful in the Nepalese context, there are some limitations in its scope and precision. Nonetheless, this study points to important implications with regards to REDD+ implementation and conflict management that can be useful for policy makers and practitioners involved in REDD+ strategy designs, as well as other areas of forest management involving outsiders and communities.

**Keywords:** REDD+; forest conflict; impairment; conflict predictors; conflict management; Nepal

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## 1. Introduction

Reducing Emissions from Deforestation and Forest Degradation (REDD+) is expected to have implications beyond mitigation of greenhouse gas emissions [1]. As reflected by the "+" after REDD, the scope of this initiative is broadened to also include conservation, sustainable forest management as well as carbon stocks enhancement [2,3]. In providing financial incentives for forest emission reductions, it is expected that REDD+ can mobilize billions of dollars in multilateral funding for developing countries—figures that are greater than all current investments in forest conservation [4]. Additionally, REDD+ is also expected to generate a range of co-benefits such as alleviating poverty, securing rights and equity, improving forest governance, and protecting biodiversity, soil and water quality [1].

There are, however, concerns that the implementation of REDD+ may trigger new conflicts or exacerbate old ones [5] and actually harm forest-dependent populations [2,6], especially where their rights, tenure and participation are not ensured [7]. To this end, it is believed that the success of REDD+ hinges on the ability to address an array of existing challenges to forest management.

Conflict over land and natural resources is among the most pressing challenges in sustainable forest management, particularly in Asia [8]. Violent conflict has affected roughly 75% of Asia's forests over the past 20 years [9]. Increasing competition over scarce forest resources continues to fuel the issue and it is expected that REDD+ will increase these pressures. Given that REDD+ stands to affect hundreds of millions of forest-dependent people in the region [5], it is essential to accurately identify and anticipate the potential impacts of REDD+ design and implementation on forest and conflict management. The development of REDD+ implicitly addresses the issues of conflict management: in each country REDD+ is being developed in three phases (e.g., readiness phase, phase of development of policies and measures, performance based payments phase), aims of which include ensuring social safeguards are in place, with a great deal of emphasis being placed on the meaningful consultation and participation of stakeholders. While rigorous research into conflict is a cornerstone of successful conflict management [10], there are few studies to date that focus specifically on the implications of REDD+ for conflict management

In these regards, the primary aim of this study is to build an understanding of the relationship between REDD+ and conflict over forestland and resources, and in particular, to identify existing sources of conflict at study sites in order to predict possible areas of conflict under REDD+ implementation. To this end, this study develops an analytical framework and applies it to three REDD+ pilot sites in Nepal, and in doing so attempts to answer the following questions:

1. What are the existing and possible sources of conflict in the REDD+ project sites?
2. To what extent the framework can facilitate the identification of the sources of conflict?

It is hoped that the framework will serve as a preliminary methodological foundation for future research on forest conflict in general, including forest management under REDD+.

## 2. Material and Methods

### 2.1. Theoretical Background and Analytical Framework

The analytical framework used in this study is based on Glasl's definition of conflict [11], which is further developed by Yasmi and Colfer [12], as a situation in which one actor or group is impairing the activities of another because of different perceptions, emotions and interests. A conflict situation is one in which the impairing behavior from one actor is experienced by another, while factors or conditions that drive such are considered the sources of impairment [12]. An extension of the understanding is that the likelihood of conflict can be determined by examining possible sources of impairment.

Earlier work examining forest conflicts in Asia [5] identified areas of potential conflict for emerging REDD+ initiatives in the region. Yasmi *et al.* [5] categorized the numerous potential sources of impairment as: underlying (e.g., contested and overlapping claims of tenure) and direct (e.g., loss of access by communities). Based on these, an analytical framework consisting of nine possible sources of impairment (Table 1) was developed for this study as possible sources of conflict in the implementation of REDD+. Similar to Yasmi *et al.* [5] the focus of the framework is on the conflict potential on a sub-national level, which will be based on issues at internal (e.g., decision making within the community), and external levels (e.g., laws and regulations regarding community rights).

**Table 1.** Overview of study sites.

| Location | Community Forest area (ha) | No. of Community Forestry User groups (CFUGs) | Total Population | Number of households |
|---|---|---|---|---|
| Kayarkhola Watershed | 2,382 | 15 | 22,090 | 3,935 |
| Ludikhola Watershed | 1,888 | 31 | 23,197 | 3,800 |
| Charnawati watershed | 5,996 | 58 | 42,609 | 10,270 |

Source: [13].

The starting point of the framework is that impairment felt by communities, which relates to forest management and governance, can be in different forms (Table 1). These sources of impairment were selected based on an extensive review of literature (including relevant academic articles, reports by forestry organizations and civil society groups, as well as national government publications), focusing on communities living in and around forests and the potential social impacts of REDD+. While they are not comprehensive, they represent recurring issues in conflict literature. As such, the framework can be used as a basis to help predict conflict not only in REDD+ (e.g., to ensure that lessons are learned from the "readiness" phase of REDD+ prior to actual implementation phases), but also in other areas of community-outsider relations regarding forest management.

### 2.2. Case Studies

The framework was applied to three REDD+ pilot sites in Nepal: Kayarkhola (Chitwan District), Ludhikola (Gorkha District) and Charnawati (Dolakha district) watersheds (Table 2). The project was initiated by International Centre for Integrated Mountain Development (ICIMOD), Asia Network for Sustainable Agriculture and Bioresources (ANSAB), and Federation of Community Forestry Users, Nepal (FECOFUN) in 2009. At the time of writing this article, this pilot project is testing community

forest-based governance and payment mechanisms for REDD+. The relatively advanced level of REDD+ activity, occurrence of forest conflict in or around the area, accessibility of the sites and presence of local organizations guided the selection of the study sites (the watersheds in general and the specific CFUGs). This kind of information would be useful for using this framework for scoping and developing REDD+ project sites.

*2.3. Data Collection*

The study employed a qualitative research approach, using various methods of data collection:

**Experts' workshops** were held in Kathmandu in April 2011 and February 2012. The workshops involved a total of 30 experts (17 attending April's workshop and 20 in February (*i.e.*, some participants attended both workshops)). The workshops allowed further development of the impairment framework, as well discussion on current forest conflict issues. Building on this understanding of conflict, participants anticipated the potential impacts of REDD+ implementation on conflict. The workshop participants were selected for their expertise in conflict and forest management, and REDD+ in Nepal. As much as possible, selection aimed to ensure the representation of multiple sectors (e.g., national and sub-national governments (e.g., REDD-Cell, District Forest Office (DFO)), civil society organizations (e.g., Nepal Federation of Indigenous Nationalities (NEFIN)), research institutions (e.g., Forest Action) and community based organizations (e.g., FECOFUN).

To gather more information about the sources of impairment in past and present conflict over forests and land at the local level, a series of **focus group discussions (FGD)** and **key informant interviews** were conducted in the study sites. The field work took place in two phases May-June 2011 (prior to distribution of first REDD+ payments) and February-March 2012 (after REDD+ payments distributed). The first phase covered four Community Forest User Groups [CFUGs (Birenchok, Dharapani, Gorkha, Kayarkhola CFUGs )]collecting qualitative data from a total of 74 participants from eight FGDs as well as 14 interviews with key informants (8 from the community (4 of which were women), 4 from REDD+ networks, and 2 from Government forestry officials). The second phase covered 10 CFUGs (Bichaur, Birenchok, Charnawati, Chaturmukhi, Chelibeti, Jamuna, Janapragati, Mahalaxmi, Sitakunda, Thangsadeurali CFUGs). 13 FGDs (total of 145 participants), and 27 key informant interviews (16 from the community (9 men, 7 women), 8 from REDD+ networks, 1 from district committee of FECOFUN, 2 government officials) were conducted. Participants of the FGD and key informant interviews were selected to ensure a diversity of community stakeholders in terms of wealth, social status, gender and livelihoods. The participants were interviewed using semi-structured questionnaires. In addition, the study consulted official project documentation from the project sites. It should be noted, however, that due to the qualitative nature of the study, it is not claimed that the results are representative of all stakeholders in the REDD+ pilot project sites. References to actors that are made in this study refer to the individuals and groups that took part in the workshops, FGDs and interviews.

Template analysis, a technique in which the researchers prepared key themes (codes) prior going to the field [14] was used for analyzing the data. In this case, the sources of impairments (Table 1) served as the key themes as well as a template that enabled the researchers to analyze the data [15].

**Table 2.** Sources of impairment.

| | Source | Examples of impairment | Justification | References |
|---|---|---|---|---|
| 1 | Access and use restriction | Regulations limiting local stakeholders' access to or use of forests due to creation of protected areas and/or granting of land concessions to private companies | Access to natural resources is essential in meeting subsistence needs of local stakeholders. Policies or practices that limit local access and ability to harvest forest products can cause conflict. REDD+ may come with such restrictions that have potential to alter the relationship that people have with forests. | [16,17] |
| 2 | Benefit distribution | Unclear or inequitable arrangements for distributing benefits from forest management | The lack of fair and equitable benefit distribution mechanisms may create hostility among stakeholders regarding benefit sharing. The introduction of new resources into the system as well as potential benefits from REDD+ must be factored into this already complex equation of benefit generation and distribution. | [18,19] |
| 3 | Competing demands | Overlap between economic and development agendas, conservation, and cultural importance of forest areas | Prioritization of conservation or economic development agenda over cultural values as well as local needs and aspirations makes natural resource management (NRM) highly contentious. Alternative land use options might generate more income, making REDD+ the less favorable option to communities. | [10,20,21] |
| 4 | Conflict management capacity | Lack of capacity, support or resources from local or central government for managing conflict | The lack of a clear and effective mechanism or process for managing conflict over forest land and resources may escalate conflict. Ongoing tensions can undermine existing institutions, increase the socioeconomic vulnerability of dependent users, and result in environmental degradation. The absence of grievance mechanisms or processes challenging conventional decision-making processes, like Free, Prior and Informed Consent (FPIC), could make REDD+ itself a driver for conflict. | [22] |
| 5 | Leadership | Leadership is not representative, accountable, or transparent; elite groups dominate decision-making processes and bodies | Community elites often exert disproportionate influence on leadership positions. Their elevated social status enables them to circumvent accountability or transparency, and misuse their leadership roles to engage in corrupt practices. The approach to and content of REDD+ implementation may strengthen these prevalent power imbalances or cause conflict by challenging them. | [23] |

**Table 2.** *Cont*.

| | Source | Examples of impairment | Justification | References |
|---|---|---|---|---|
| 6 | Legal and policy frameworks | Dominance of state law over local and/or customary traditions; multiple, ambiguous and overlapping regulations related to forest management; legislation not well understood or effectively enforced; | Effective forest management depends on the clarity and consistency of legal and policy frameworks. State regulations often do not explicitly accommodate customary laws or reflect local realities. The resulting legal pluralism can create conflict. Inadequate provisions for implementation, monitoring and evaluation of programs likewise contribute to legal instability. The commoditization of carbon through REDD+ will add complexity to existing regulatory frameworks for forest management. | [18] |
| 7 | Participation and information | Lack of understanding and access to information, limited opportunities for stakeholders to meaningfully participate in forest management | State forest policies and interventions are sometimes made without active participation of local stakeholders, and thereby fail to account for local rights and practices. Inadequate consultation and communication with stakeholder groups can lead to conflict. Even where REDD+ implementation is equipped with grievance mechanisms and processes to ensure that affected parties understand and agree with the implications, the use of such tools is not fail proof. | [5,22,24,25] |
| 8 | Quality of resources | Actual and perceived decrease or increase in the condition of forest resources caused by an external actor | Decreases in amount or quality of available forest land and resources can create tensions among stakeholders. The pursuit of REDD+ benefits may lead to intentionally skewed perceptions of forest quality. | [26] |
| 9 | Tenure security | Overlapping boundaries between state and CF, contested boundaries, lack of recognition of customary rights and traditional uses of the land | The lack of clear and consistent recognition of stakeholders' claims to forest land and resources can fuel conflict. Such recognition could afford stakeholders rights to manage, control and utilize resources. In practice, however, tenure arrangements are vaguely defined or absent, leading to overlapping claims between state and CF. This is especially true where customary and traditional rights are concerned. REDD+ poses important questions about carbon ownership and benefit entitlements. | [19,27,28] |

## 3. Results

The results are presented according to the different sources of impairment. Where relevant, background information (from literature and experts' workshops) is provided for each source, followed by the information collected in the field.

### 3.1. Access and Use Restriction

### 3.1.1. Background

In Nepal, the State owns all the forests. They are managed under different modalities-protected areas, government managed forests and community based forest management. Community forestry (CF), Leasehold Forestry, Collaborative Forest Management, Conservation Areas and Buffer Zone Community Forestry are various typologies within these basic modalities. Among these, CF is the most significant given its coverage (35% of Nepal's households manage almost a quarter of total forest area) [29]. Under this program, forests are handed over to the local community following approval of an operational plan (OP) by DFO. The CFUGs are given the right to protect, manage and sustainably use forest products and associated benefits as stipulated in the OP. However, tenure in practice is different from that defined by the law. In practice, a household's access to forests is shaped by a number of factors (e.g., provisions in the OP, CFUG decisions, membership status, type of forest products, economic value of the forest).

### 3.1.2. Fieldwork Results

Following the implementation of REDD+ pilot project, the CFUGs in the study sites placed restrictions on extraction of forest products such as fuelwood collection, and grazing. Following the release of the first payments, restrictions on collecting grass, leaves and fodder were reduced, but grazing was still strictly prohibited. REDD+ piloting also appeared to have encouraged CFUG leaders to increase efforts in enforcement and monitoring of the restriction. Participants in FGDs and interviews emphasized that, forest dependent poor and vulnerable groups such as women within the studied CFUGs have suffered from these changes. A female member of Jamuna CFUG for example, faced difficulty in feeding her goats, which is her source of livelihood, because of the grazing ban by CFUG executive committee. In Binchaur CFUG, the restrictions on charcoal making, which is the common fuel for blacksmiths, has affected the blacksmiths who traditionally make agricultural equipment and trade them for grain.

### 3.2. Benefit Distribution

### 3.2.1. Background

Benefit sharing was identified in the literature as being one of the most contentious issues in REDD+ implementation in Nepal (e.g., [15,17]). ICIMOD, together with FECOFUN and ANSAB have initiated the first Forest Carbon Trust Fund (FCTF) and develop its pilot project in Dolakha, Gorkha, and Chitwan districts since 2009. The FCTF was designed as a performance based financial

mechanism for local communities to get incentives for their efforts to protect forests and avoid deforestation [30]. Generally speaking, benefit sharing issues regarding CF are found at two levels: (i) between government and local forest management groups (CFUGs); and (ii) within the CFUGs. There has been visible tension over sharing of CF benefits with recent discussions on amending the Forest Act (1993) in the country [31–33]: including the government proposed restructuring of revenue sharing arrangements. As the land ownership lies with government, it is likely to claim the benefits earned from REDD+.

3.2.2. Fieldwork Results

The Operational guidelines for Forest Carbon Trust Fund (FCTF) stated that to ensure the equity, the REDD+ payment does not only consider the carbon sequestered and conserved in the CFs, but also consider social criteria for the REDD+ payments. The calculation of the payment followed the following formula [34]:

**REDD+ Payment (total payable amount)** = $f$ (forest carbon stock and enhancement) + ethnic diversity (IP and Dalit HH + population of women + number of poor HH).

Specifically, of the multiple criteria for the payment, 40% of the payments was given to carbon stock enhancement (annual quantity of carbon sequestered as a result of community forest management), while 60% of the payment was distributed according to various social criteria (25% was given based on ethnic diversity (number of indigenous people and Dalit households); 15% on women's participation and 20% on the incidence of poverty (number of poorest households identified by CFUG) in each group (Table 3).

**Table 3.** Overview of first payment.

| District (Watershed) | No. of CFUGs | Carbon increment average (%) | Total payable amount (US$) | Payment according to different criteria (US$) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | CF carbon stock (metric ton) | Carbon increment | IPs | Dalit | Women | Poor |
| Chitwan (Kayarkhola) | 16 | 0.4% | 21,904.94 | 5,257.19 | 3,504.79 | 2,190.49 | 3,285.74 | 3,285.74 | 4,380.99 |
| Dolakha (Charnawati) | 58 | 1.1% | 45,534.93 | 10,928.38 | 7,285.59 | 4,553.49 | 6,830.24 | 6,830.24 | 9,106.99 |
| Gorkha (Ludikhola) | 31 | 2.5% | 27,560.13 | 6,614.43 | 4,409.62 | 2,756.01 | 4,134.02 | 4,134.02 | 5,512.03 |
| | 105 | | 95,000 | 22,800 | 15,200 | 9,500 | 14,250 | 14,250 | 19,000 |

Source: [35].

Regarding the distribution mechanism the Program Management Unit (PMU) coordinated by members from project partners (ICIMOD, ANSAB, FECOFUN), disburses the payment to the Watershed REDD+ Network based on their submitted claims and reports on an annual basis. The Watershed REDD+ Network will distribute this fund, twice a year, to the CFUGs based on their submitted claims and reports [15].

In June 2011, the project provided a total of USD $95,000 to the CFUGs in the project sites as a first payment (June 2011).

The FCTF Guidelines suggest the following for using the REDD+ money [34].

  a. Activities that reduce deforestation
  b. Activities that reduce forest degradation (including activities such as alternative energy promotion)
  c. Activities related to conservation and enhancement of forest carbon stocks
  d. Sustainable management of forests and biodiversity conservation
  e. Poverty reduction/livelihood improvement activities
  f. Forest-carbon monitoring
  g. Awareness-raising and capacity-building activities on REDD+ and climate change
  h. Auditing of the FCTF and data verification

The CFUG representatives taking part in the research expressed their satisfaction in their acknowledged role in forest protection through receiving REDD+ payments. However, they, along with representatives of civil society raised some concerns regarding the distribution of the money among and within CFUGs:

1. *Challenge of targeting poor and marginalized community members.* It was found that the CFUGs found identifying poor households to be a challenge; with methods and results prone to manipulation (unexpectedly high number of poor households, to increase their claims to the funds (e.g., Ludidamgade CFUG, Gorkha).

2. *Lack of capacity of community members to fully benefit from the transfer of REDD+ funds to the CFUGs.* For example in Jamuna CF, the CFUG leadership decided to focus on supporting its members to purchase pigs. However, most of the community opted out from the opportunity because they could not afford costs of pig rearing. As a result, relatively better off households received the support to buy a pig. This also reflects the challenges regarding governance (e.g., participation in decision making) in the CFUG, particularly to ensure that the benefits go to the intended beneficiaries and to build strategies to accommodate the obstacles faced by some community members.

3. *The CFUGs received 25% of the seed grant according to number of indigenous and Dalit households.* The resulting challenges were: (i) The CFUGs lack established arrangements to distribute the money to specific households. Though some of them have developed mechanisms to support poor households, they do not have any mechanism to provide targeted benefits to ethnic groups; (ii) Members of the Chhetri and Brahmin households (upper caste) objected that the money should be distributed based on the ethnic or caste-based criteria. Members from the CFUGs in Dolakha argued that they can only provide targeted benefit to poor and Dalits and cannot provide based on specific ethnic or caste group. There are concerns that this mechanism may exacerbate existing ethnic divisions and create conflict between different ethnic groups at a local level.

4. *Fear of overemphasis on forest protection over harvesting.* Janapragati CFUG in Chitwan, for example, earns NRs 2.5 million (about US$ 290,000) per year from timber sales and invests in various community development activities including supporting the poor households. However,

the group received only NRs 83,000 (about US$ 960) from the REDD+ pilot project. Some group members are afraid of disproportionate focus on latter over the former.

Based on the above examples, it is apparent that numerous conflicts around benefit sharing in CF are likely to grow with REDD+. However, the pilot projects have consciously sought to address many of these areas, specifically targeting the poor and marginalized households within CFUG although the selection of these households is contentious. It should be highlighted that the REDD+ money has played significant role in institutionalizing pro-poor investment schemes in CFUGs. For example, Kankali CFUG (Chitwan), a well-off CFUG has recently begun the practice of linking investment with wellbeing ranking. The CFUG has decided to invest the REDD+ money in fish farming, targeting poor households. Nevertheless, there are tensions between the established norms and those introduced by the project that are more equity sensitive. In addition, there are discussions over benefit sharing between the government and the CFUGs.

*3.3. Competing Demands*

3.3.1. Background

Generally, CFs are tasked with maintaining ecosystem services and supporting subsistence livelihoods of rural communities. This naturally raises issues of competing demands.

3.3.2. Fieldwork Results

Competing demands are increasing with REDD+ implementation, with ongoing discussions of balancing forest management taking into account REDD+, traditional forest management and emphasis on cultural and spiritual values, with some CFUG members raising concerns regarding prominence of REDD+.

The issue of the capacity of the communities to identify and meet the optimal forest management objectives were raised on all sites, as was the limited capacity of forest technicians regarding forest management in the context of REDD+ and other forest management objectives.

Community level meetings and other local level discussions in the study sites have been dominated by discussions on REDD+. There was a feeling that the intensive package of REDD+ project activities has dominated the thoughts of CFUG members and their leaders so that many other critical issues of forest management and institutional aspects of CFUGs are overlooked, such as maintaining ecosystem services and supporting subsistence livelihoods of rural communities.

Additionally, there is a challenge for CFUG members to assess the actual tradeoffs between REDD+ and different forest management options. Based on current CF management priorities, it is likely that REDD+ will bring tradeoffs with fodder and fuelwood collection in the hills and timber sales in the Terai (financial benefits from REDD+ are small compared to income through timber sales). However, the benefit has outweighed the CFUG cash income from forest products sales in the hills (Dolakha). It is expected that REDD+ would not have major tradeoffs with ecotourism promotion and watershed conservation.

Given the different levels of forest dependency of the diverse social groups, there are already latent conflicts regarding management priorities. While poor and marginalized people often rely more on fodder, fuelwood and NTFPs, the relatively better off focus on maximizing income from timber sales.

*3.4. Conflict Management Capacity*

3.4.1. Background

Within CFUGs, the key institution regarding conflict management is the Executive Committee (EC). When conflict arises, the EC invites and meets the conflicting parties to seek resolution. If this is not possible, the EC may seek help from local FECOFUN or DFO. In cases of inter-CFUG conflicts, normally CFUG representatives meet. If they cannot resolve the issue, they usually file the case to the DFO and follow formal legal procedures. The DFO or the respective officers usually attempt to resolve the conflict through consensus building and only in the worst cases, take legal measures.

REDD+ pilot projects have seen the creation of two new institutions at the local level: watershed level REDD+ network comprising representatives of participating CFUGs in particular watershed and district level REDD+ advisory committee comprising of DFO, FECOFUN and other stakeholders in the district level, with responsibility of handling REDD+ related affairs including conflict management related to REDD+.

3.4.2. Fieldwork Results

With REDD+ piloting, different issues have arisen with implications for conflict management. For example, identification of and selection criteria for poor households, use of REDD+ money received by CFUGs, and distribution of the funds based on given criteria. Additionally, other new areas of conflict regarding REDD+ include issues of benefit sharing between the local communities as resource managers and the government, with the feeling that this has been inadequately discussed. Also there was concern raised in the expert workshops that CFUGs may clash over the issue of leakage if restrictions on forest use compel community members to extract resources in surrounding areas. Therefore, there will be a need for increased conflict management capacity and mechanisms at different levels of resources governance both within and beyond the watershed level.

The REDD+ Network has been receiving grievances not only related to REDD+ but also to the overall governance and management of CF. The concern raised in the expert workshops and some FGDs was that the REDD+ Network was moving beyond its scope regarding conflict management, creating competition with FECOFUN.

*3.5. Leadership*

3.5.1. Background

There has been increased competition for leadership in CF in recent years along with the increased and competing economic values of forests and symbolic capital of leadership position. There are two major drivers behind this competition. First, over two decades CF has resulted in improved forest resources coupled with emerging market opportunities for diverse products and services. The CFUG

income has substantially increased over the last few years, which is then spent locally on a range of development activities. Second, the anticipated financial benefits associated with carbon projects such as REDD+.

3.5.2. Fieldwork Results

It is apparent that competition over leadership to secure access and control over financial and symbolic capital has increasingly become the critical sources of conflict. FECOFUN for example, has become an important political space for competition over leadership in CFUG. The hierarchically structured network of FECOFUN from local to national level provides platform for leading the CF in particular direction and mobilizing the financial and other resources in their own interest. The symbolic capital of FECOFUN has attracted several leaders with a strong political background. In fact, many leaders, particularly at the local level, shift their involvement between political parties and FECOFUN. Political parties' attempt to control FECOFUN to place their 'own leaders' in key positions has intensified in recent years. The competition can also be seen in the election of CFUG leaders; one FGD participant in Kayarkhola Watershed stated: "for the first time in my life, I saw a candidate for CFUG leader visit every household asking them to vote for him."

Existing disputes will likely escalate with REDD+ as it may result in a new stream of income. The expert workshops highlighted that REDD+ benefits can increase competition in leadership positions within CFUGs. Competition for leadership is already on the rise, which was seen to be partly attributable to the REDD+ benefits. Other reasons include increased timber-based revenue and social status. The prospects of increasing CFUG income through REDD+ payments has attracted local leaders who often use their political and other alliances to get influential position. This was particularly emphasized in Dolkha district.

*3.6. Legal and Policy Frameworks*

3.6.1. Background

The CFUG OP and constitution guide community forest management. These are enforced and monitored by the user groups, EC, and monitoring sub-committees. Local rules and regulations are superseded by government legislation. This includes the Forest Act (1993), the Forest Regulation (1995), the Community Forestry Guidelines (2009), as well as fiscal policies. Currently, a number of forest-related policy making processes are ongoing; such as the REDD+ Strategy and the Forest Sector Strategy.

3.6.2. Fieldwork Results

These policies tend to prioritize and focus on conservation, compared to utilization. This has created tension between organizations advocating community rights and the government as well as conservation organizations. The government-proposed amendment of the 1993 Forest Act, which is at the core of CF, was opposed by CFUGs on the basis that it would curtail local autonomy and rights, raising suspicions that the government initiated the amendment based on the perceived potential increase in the value of forests as a result of REDD+.

*3.7. Participation and Information*

3.7.1. Background

CF in Nepal has been widely lauded for creating an environment of inclusivity [29]. For example, FECOFUN has a provision of at least 50% female representation in all decision-making bodies. However, participation differs between and within communities, with high levels of participation in forest management activities (e.g., thinning and fire management), while in decision making and benefit sharing the issue of elite capture is often raised. The hierarchically structured society (wealth, gender, caste, ethnicity) has posed major challenges to meaningful participation of women, Dalits, and other marginalized groups in forest management [36].

Poor communication within CFUGs can be a major source of conflicts in CF [37]. While legislation is generally supportive of CF, practice is determined by interpretation of the legal and regulatory provisions by DFO staff, often contested by CFUG members.

There are two reasons why communication can be critical in the context of REDD+. First, at the center of REDD+, there is a complex issue of climate and forest science, which is often hard to comprehend and communicate. REDD+ has specific disciplinary jargon and is perceived to demand specialized skills. This will increase the chances of miscommunication. Second, the global REDD+ framework is being developed through international level negotiations, *i.e.*, alien to many local actors. This involves a long chain of actors that mediate and may dilute or otherwise misinterpret many substantive aspects of REDD+. These ensure that the challenges of clear, comprehensive and targeted communication will increase along with REDD+ implementation.

3.7.2. Fieldwork Results

The pilot projects have promoted inclusivity in REDD+ activities and leadership positions. This has contributed to developing leadership capacity of individuals from marginalized groups. For example, of Birenchok CFUG's 200 households, 25 are Dalits, five of which received NRs 10,000 (roughly USD115) each from the REDD+ payments, which they invested in rearing cattle. This has motivated them to participate in forest management activities, and is mirrored in the increased representation of Dalit and women in the EC of the CFUG.

However, not all the increased participation is self-motivated. Some representatives from the CFUGs felt that community leaders have pressured marginalized groups to participate in order to meet the project requirements. An additional issue is the backlash by more affluent groups within the CFUGs against the positive discrimination.

Specific cases of issues regarding communication and mechanisms for informing relevant stakeholders of issues related to REDD+ included: Sitakunda CFUG of Dolakha District received almost half the amount they expected based on what other CFUG with similar forest area and social composition had received. During the research it was found that only half of the community's forest was included under REDD+, with few community members being aware of the exact demarcation.

During the FGDs, community members in various CFUGs expressed that community leaders had not provided clear information on REDD+, thereby create feelings of mistrust. The FGDs conducted in April 2011 revealed that the community leaders had high expectations regarding REDD+, anticipating

large cash income with little costs. However, the FGDs and interviews in 2012 revealed a clear feeling of confusion and frustration even among the leaders during the post-payment period. However, in Ludhikhola Watershed, CFUGs members taking part in the FGDs showed a reasonable level of awareness on the criteria and actual amount of payment they received. As a result, there was no major issue related to payment in these CFUGs.

*3.8. Quality of Resources*

3.8.1. Background

On a national level it is generally perceived that community forestry has had positive impacts on forest area and quality, this has been a reflection of increased monitoring of forest resources and activities that could threaten them [38]. For example, in Dolakha district as a whole the forest area increased by 1.96% per year in the period 1990–2010 [39]. REDD+ activities would also improve the monitoring of forests, which would have positive implications (e.g., increased knowledge of the resource facilitates sustainable harvesting), but also increased restrictions, which are more likely to impact on the marginalized [38].

3.8.2. Fieldwork Results

CF users and key informants in the watersheds perceived forest quality to be improving, perhaps due in part to a vested interest in receiving REDD+ benefits. This was substantiated by carbon monitoring which saw carbon stocks in the forests of the three watersheds increase by 0.4%–2.5% (Table 3).

A key member of Ludikhola's REDD+ network reported a fall in reports of illegal logging–a major issue at the time of the state handover of forests to communities. Despite improvements in forest quality, there have been tensions regarding forest size. ICIMOD's GPS measurements of CF areas have differed with the manual measurements recorded in the OPs. In one instance, the CF area increased by 61 ha according to the new measurements (using GPS); in another, it decreased by 52.25 ha. Such discrepancies have been contentious because CF area is directly proportional to potential REDD+ benefits.

*3.9. Tenure Security*

3.9.1. Background

Tenure rights are still insecure for local and indigenous community in Nepal. Indigenous communities often do not have formal recognition or certification over their traditional land and territory [36]. Likewise for CFUGs, although they have rights to manage and use the resources from forests, their rights are not fully secured because of the lack of rights over the land [40]. Concerns that REDD+ implementation may limit the customary rights for accessing and utilizing forest resources is not without reason. There are experiences that the government has declared protected areas without consultation and consent from local communities [36].

3.9.2. Fieldwork Results

In principle, the demarcation of CF boundaries considers traditional uses of forest land and resources, but the study found that in practice this is not always the case. Kayarkhola's Chepang population in particular felt that the government had not adequately addressed its customary rights and livelihood needs. The Chepang claim customary use rights in neighboring areas outside their designated leasehold forests, insisting that the government has not provided adequate compensation. The result is ongoing tensions between Chepang and other groups in the watershed. In Ludikhola, the collection of forest products from neighboring CFs was considered illegal and problematic at the time of handover of forests to the local communities in 1995. However, this type of conflict has been decreasing in frequency due to increased awareness of the principles, processes and practices of CF as well as the rights, roles, and provisions contained in the CFUG OP.

## 4. Discussion

The work demonstrates that the analytical framework can help identify, understand, and to some extent, predict possible sources of impairment and eventual conflict under REDD+ implementation. In effect, the framework can serve as a useful methodological foundation for future research in conflict related to REDD+, as well as being a conflict management tool for REDD+ proponents. Conflict management in this context is not just for resolving a conflict, but for addressing the underlying causes of conflict that may jeopardize the implementation of REDD+ as well as maximizing the positive impacts of any conflict when it does occur.

Although the framework aims to be comprehensive, it has a number of limitations. Firstly, there might be other sources of impairment that are not explicitly included in the framework (e.g., livelihoods is covered in various sources of impairment, but does not have its own classification). Secondly, the case study sites are unique in many ways. Therefore, further testing and refining of the framework in different contexts is desirable.

Despite these limitations, the framework delivers important findings. The presence of most of the sources of impairment at the study sites highlights a high degree of susceptibility to conflict. Though there were differences between sites on some issues, generally speaking similar problems were found. For example, in all three watersheds perceived failures regarding participation and information were found, this was within CFUGs (e.g., apparent failure to consider Dalits and IPs in all watersheds) or between CFUGs (e.g., where one CFUG (Sitakunda CFUG) felt that other CFUGs were being favored.

Yasmi *et al.* [5,41] identifies some of these sources of impairment (e.g., contested tenure and overlapping claims over forest and land, exclusion of local communities in land use decisions) as common causes of forest conflict in Asia. In addition, multiple sources of impairment in one site were not surprising because the sources are fundamentally interrelated. For instance, tenure security is defined by legal and policy frameworks, but where ambiguous, can lead to inequitable benefit sharing and loss of access to resources [7]. Other works on conflict predictors in NRM [42] use conflict predictors for recreational forest use in the John Muir Wilderness, USA focused on stakeholders' perspectives as a predictor, with the key being the ability to tolerate restrictions on the ability to enjoy

recreational activities. Though in the REDD+ sites the feelings of impairment will tend to move beyond a sense of frustration, perception of the situation is fundamental as to whether a conflict will manifest, and therefore must be given due weight by the REDD+ proponents.

Understanding these sources of impairment not only helps to flag issues that require greater attention in REDD+ planning, but also provides crucial information for conflict management. The more practitioners know and understand about the conflict situations (e.g., triggers), the more effectively they can address the conflict [11,18]. Identifying sources of impairment preemptively helps create a deep understanding before conflict emerges. Indeed, conflicts often take shape at a very low intensity before they manifest themselves and intensify [18]. Paradoxically, however, they are given attention only when they reach a higher intensity, making conflict management efforts significantly more difficult [43,44]. This makes the development of adequate capabilities in conflict management, such as the ability to deal with conflict constructively, including ensuring that effective and equitable governance is embedded within the CFUGs, all the more essential.

The findings have several implications for the REDD+ initiatives in the study sites and beyond. The fundamental ties between local forest management and REDD+ development suggest that various sources of impairment may increasingly emerge with the added social, economic, political and environmental pressures of REDD+. These concerns have also been flagged in the work of Bushley and Khanal [45] in their examination of REDD+ and CF in Nepal, that weak tenurial arrangements, as well as weak policy frameworks, low capacity of communities and officials, as well as restricted market access create a challenging environment for REDD+.

In light of the findings–that many sources of impairment are already in place at the study sites–it seems likely that full-scale implementation of REDD+ may only intensify them if the status quo remains unchanged. At the local level, identifying sources of impairment can provide important clues about which types of actions can minimize the negative impacts of conflict while enhancing the positive ones. At the policy level, the framework can be used to critically assess forest and REDD+ policies and regulations that might lead to conflict [46]. It may also help clarify and detail safeguards for the rights of indigenous peoples and local communities–which do not exist in the international level texts and which are expected to be articulated in national strategies [47]. Additionally, consideration of internal governance of CFUGs is also fundamental as this underpins a number of the sources of impairment (e.g., benefit sharing, leadership). Though the REDD+ implementation process facilitates this somewhat, the results of the study show that there is some way to go. Examples of measures that could be taken include further addressing issues of participation, different methods have been already advocated for CF in Nepal including adaptive and collaborative management (ACM) whereby a conducive environment is created for addressing the different interests and values of the stakeholders, allowing the forming of collaborative, and therefore more equitable relationships among them [48]

Without adequate protection, the rights of local communities and indigenous people related to livelihoods, resource access, culture, benefit sharing and participation in decision-making around REDD+ initiatives may be threatened [47,49]. Many studies found that forest conflicts arose when local people experience or feel injustice because their rights to access forest resources and benefits are restricted [50]. Ensuring the clarity of resource tenure–the systems of rights, rules, institutions and processes regulating ownership, access and use–in legal and policy frameworks as well as in implementation is fundamental to shaping distribution of risk, cost and benefits arising from resources.

Where tenure is secure in both policy and practice, local people have more power in their relations with the government and private sector. Where tenure is insecure, conversely, local people are vulnerable to dispossession and exclusion [7]. In places where REDD+ is perceived to increase forest resource values, this will be particularly true. Furthermore, REDD+ underscores pressing questions regarding the ownership over and ensuing responsibility for carbon stock. Tenure issues should therefore be addressed at the onset of any REDD+ project. Similarly, Free, Prior, and Informed Consent (FPIC) from the local communities is also considered to be one of the important tools to secure communities' rights and dignity [51].

Additionally, the case studies have shown that the lack of information regarding the REDD+ implementation passed on to the local communities, particularly the poor, marginalized and isolated groups has caused lack of understanding and participation of local communities in the REDD+ pilot projects. Some misunderstandings and confusions were even experienced by the CFUG leaders. This should be a concern as participation of and information for local communities, in addition to tenure security are the most prominent concerns in REDD+ implementation [1,52]. In this regards, this paper would suggest the further improvement of capacity building and information sharing activities for all stakeholders, with particular emphasis on the poor forest dependent and marginalized communities who are the most affected by the REDD+ implementation.

Future research may include applying the framework to other REDD+ pilot sites in order to generate lessons and enable comparison. This would help strengthen the framework, particularly in terms of evaluating its applicability and comprehensiveness. It would also allow weighting the sources of impairment (currently equally weighted) to identify which sources require greater attention than others.

## 5. Conclusions

Understanding possible sources of impairment is crucial to conflict management (and therefore project management). To reduce the potential for impairment and conflict under REDD+ implementation (and other externally driven forest management practices), stakeholders must be equipped to recognise and address these sources of impairments in a timely manner. The failure to do so will likely have considerable impact not only to the forest-dependent communities but also for the success of REDD+ itself. When forest conflict arises, local communities are often the most adversely affected and withstand the worst of its costs. In terms of REDD+, conflict would disrupt the implementation process and impact on the credibility of the REDD+ mechanism and its proponents. Conflict could also lead to intentional forest destruction, which would be detrimental to efforts to mitigate global climate change. In the above context the framework of sources of impairment developed in this study offers significant theoretical and empirical potential in the broader study of natural resource management conflict issues, but also should be seen as a tool for REDD+ proponents to ensure that as REDD+ is implemented on the ground that the sources of impairment are explicitly addressed, it would also facilitate the documentation of lessons learned and comparative analysis between communities in identifying what works and what does not in addressing the sources of impairment.

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## Conflict of Interest

The authors declare no conflict of interest

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