An assessment of the impacts of the REDD+ pilot project on community forests user groups (CFUGs) and their community forests in Nepal

T. N. MARASENI^{1*}, P.R. NEUPANE², F. LOPEZ-CASERO³ AND T. CADMAN⁴

¹*Australian Centre for Sustainable Catchments, University of Southern Queensland, Toowoomba, Queensland, 4350, Australia*

²*Friends of Nature, Nepal (FON), Sundhara, Kathmandu, Nepal*

³*Institute for Global Environmental Strategies (IGES), Hayama, Japan*

⁴*Institute for Ethics Governance and Law, Griffith University, Brisbane, Australia*

ABSTRACT

REDD+ has the potential to reduce greenhouse gas emissions, meet climate stabilisation targets and protect biological diversity. Consequently, millions of dollars are being channelled into developing countries rich in forests, for pilot projects that will provide data for the design of REDD+ projects that are based on incentives and performance. This paper evaluates the impacts of REDD+ pilot projects on community forests and associated user groups (CFUGs) in Nepal. A field study targeted eight CFUGs that participated in a REDD+ pilot project funded by the Forest Carbon Trust Fund in Nepal. The pilot project increased the participation of *Dalit*, Indigenous people, women and the poor, and was able to provide some social safeguards. However, when all the additional costs and foregone benefits of the project are considered, REDD+ is not an attractive market-based option for Nepalese CFUGs. A better approach would be a bilateral or multilateral approach that is not market based, but provides incentives beyond environmental and social safeguards. The results of this study will be useful in designing REDD+ policies and programmes for community forest-based REDD+ stakeholders in developing countries.

Keywords: REDD+, pilot project, social safeguard, REDD+ payment, Nepal

Corresponding Author: email: Maraseni@usq.edu.au; Phone: +61746312995

1. Introduction

The annual global gross deforestation rate in the period 2000–2010 is estimated at 13 million hectares (FAO, 2011): almost the size of Nepal. Deforestation and forest degradation account for about 20% of global greenhouse gas (GHG) emissions: more than the entire global transportation sector, and second only to the energy sector (UN REDD Programme, 2010). Hence, deforestation and forest degradation must be halted if the goal of climate stabilisation is to be reached (Angelsen *et al.*, 2009, p vii). The Clean Development Mechanism (CDM) – one of the three market-based mechanisms under the Kyoto Protocol – recognizes the role of forests in mitigating climate change. However, forests are not well represented in the registered CDM project list for three main reasons: (1) developing countries often have poor finance, administration and governance systems (Thomas *et al.*, 2010); (2) only afforestation and reforestation projects are eligible under the CDM; and (3) carbon credits generated from afforestation and reforestation activities are of a non-permanent nature, and are therefore not eligible under the European Union Emissions Trading Scheme (EU ETS) – the largest GHG market in the world (World Bank, 2012). Of the 5511 CDM projects registered by the end of 2012, less than 0.8% were afforestation or reforestation projects (UNFCCC, 2013). This reality may be reflected in the transition in the negotiations of the United Nations Framework Convention on Climate Change (UNFCCC), via the Bali Action Plan (2007), to the concept of “reducing of emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” (REDD+), as agreed at the Copenhagen Conference of the Parties (COP15) to the UNFCCC.

The basic economics behind REDD+ are simple; it provides cash for developing countries in exchange for those countries lowering their GHG emissions by reducing deforestation and forest degradation, and managing their forests sustainably from accepted baselines. With growing recognition of REDD+, developed countries may have a chance to offset part of their GHG emissions through payments to developing countries that wish to participate in REDD+ (Dooley, 2013). The idea of REDD+ has proved popular because it is sufficiently broad to accommodate different interests; however, without international agreement, things are likely to carry on as usual (Angelsen and McNeill, 2012).

At COP15, a number of agreements were reached regarding REDD+, although these were not legally binding (Lesniewska, 2010: p105). The mechanism gained further recognition at COP16 in Cancun, with conference parties committing to REDD+ at a global level, and to developing a framework for negotiations around a range of important issues, such as safeguarding Indigenous peoples' rights, and monitoring, verification and reporting (CIFOR, 2011). Developing countries could stand to make considerable financial gains from REDD+, because forestry will be a major component of the US\$100 billion funding referred to in the Copenhagen Accord (Lesniewska, 2010: p107). This accord was formalised at Cancun with the establishment of a 'green climate fund' (GCF), and an expectation that developed countries will provide \$30 billion of climate finance to developing countries by 2012 (WRI, 2010: 5). At the Doha Conference in 2012, developed countries reiterated their commitment to mobilise US\$100 billion by 2020, for both adaptation and mitigation (Arab Sustainability Association, 2012). A few European countries put on the table a new pledge of more than US\$10 billion for post-2012, and a similar amount has been pledged for the GCF. However, parties presented varying views on several issues, particularly in the areas of verification, mode of finance and design of new REDD+ institutional arrangements (Dooley, 2013). These are some of the topics that will be discussed in the Subsidiary Body for Scientific and Technological Advice (SBSTA) meetings in 2013, and it is expected that the REDD+ architecture will be finalised soon (Dooley, 2013).

REDD+ is designed for developing countries where, coincidentally, community-based forest management systems (CBFMS) are becoming more popular. In developing countries, at least 22% of the total forest area is legally under community management systems (Nurse & Malla, 2006), compared with only 3% in developed countries (White and Martin, 2002). Although the latest report from Sunderlin *et al.*, (2008) has not clearly discussed the topic of developed and developing countries status, this report found that the past transition continued in the period 2002–2008. Sooner or later, the forest management regimes in developing countries could be dominated by CBFMS (Smith and Scherr, 2002).

In 2010, social and environmental safeguards were developed and adopted by the UNFCCC, to realise the co-benefits of the REDD+ mechanism without compromising the rights of local users and Indigenous people, or reducing biological diversity (Swan, 2012). With these developments, several Indigenous and local communities are making efforts to

1 increase the carbon stock in their forests through REDD+ readiness and demonstration
2 activities. Study of these pilot projects may provide an opportunity to assess current practices,
3 the trade-off between carbon benefits and their opportunity cost and, most importantly,
4 guidance for policy makers on how to design incentive-based REDD+ projects (Agrawal &
5 Angelsen, 2009; Springate-Baginski *et al.*, 2010; Caplow *et al.*, 2011). The overarching goal
6 of this paper is to evaluate the impacts of the REDD+ pilot project on community forests user
7 groups (CFUGs) and their community forests in Nepal. REDD+ payment should be solely
8 based on the amount of avoided emissions. However, in Nepal, approximately 60% of the
9 total payment is based on social safeguards and only about 40% is related to carbon
10 emissions (Operational Guidelines for Forest Carbon Trust Fund, 2011). Nevertheless this is
11 a pilot project and there are lessons to be learned for the full-scale implementation of REDD+
12 policies and programmes.
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23 Nepal contributes less than 0.1% (or 40.6 m tCO₂e) of global GHG emissions;
24 however, in terms of climate change impacts, it has been assessed to be the fourth most
25 vulnerable country in the world (Climate Investment Fund, 2011). In response to this
26 situation, Nepal is playing a leading role in developing a mountain forum and a least-
27 developed country forum, and influencing climate change negotiations through these forums.
28 The Land Use Land Use Change and Forestry (LULUCF) sector is a major source of GHG
29 emission in Nepal. Total CO₂ emissions from the LULUCF sector in Nepal in the base year
30 2000/2001 was 16,909 Gg, which included 12,561 from forest and grassland conversion, and
31 4348 from soil (Ministry of Environment, Science and Technology, 2012, Table ES-2a).
32 Hence, there is scope to reduce emissions from forests in Nepal, under the REDD+
33 mechanism. Seeing the possibilities of REDD+, Nepal has been implementing various
34 REDD+ initiatives, such as the REDD+ readiness activities supported by the Norwegian
35 Agency for Development Cooperation (NORAD), the World Bank and the Forest Carbon
36 Partnership Facility (FCPF). A new institutional body, the REDD+ Forestry and Climate
37 Change Cell (the REDD+ Cell), has been created under the Ministry of Forest and Soil
38 Conservation to coordinate and implement REDD+ activities in Nepal, and has prepared a
39 REDD+ readiness proposal that is aligned with the National Development Strategy (Ministry
40 of Forests and Soil Conservation, 2010).
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Nepal has a successful history of over three decades of participatory forest resource management. There are several forest management regimes in Nepal, but community forestry is the major one, and Nepal is considered a pioneering country in community forestry. More than 1.66 million ha (>28% of total forest land) of national forest is managed by 17,808 CFUGs, and currently about one third of the total population of Nepal are members of the CFUGs (DoF, 2012). Different aspects of REDD+ are the subject of pilot studies at the level of CFUGs; these studies are funded by the Government of Norway, and jointly implemented by three major non-governmental organisations (NGOs): the International Centre for Integrated Mountain Development (ICIMOD), the Asia Network for Sustainable Agriculture and Bioresources (ANSAB) and the Federation of Community Forestry Users, Nepal (FECOFUN) (Operational Guidelines of Forest Carbon Trust Fund, 2011).

2. Research methods

This study was conducted in the Chitwan and Gorkha districts of Nepal. Altogether, 16 CFUGs participated in the REDD+ pilot project in Chitwan district, and 31 in Gorkha district. During a field trip (October–December 2012), a series of discussions was held with staff from District Forest Offices (DFO) and FECOFUN. These organisations are the key REDD+ stakeholders in both districts. The discussions were helpful in identifying issues and developing four selection criteria for CFUGs; these were: (1) have received the highest payment from the REDD+ carbon fund; (2) have received the lowest payment from the REDD+ carbon fund; (3) are led by Indigenous people; and (4) are led by women. Based on these criteria, four CFUGs were selected from each district. In Gorkha district, researchers were able to include all four types of CFUG. In Chitwan district, the CFUG that received the lowest payment did not have time to participate, so we instead selected the active Janapragati CFUG, which had also received a relatively low payment (the fourth lowest of the 16 CFUGs). The sample size was small, and the findings are therefore symbolic only; however, the selected eight samples did represent four different types of CFUG.

2.1. A snapshot of the study area

Table 1 gives the names of the selected CFUGs and their key attributes related to REDD+. Figures 1 and 2 show maps of Chitwan and Gorkha districts, respectively, and the location of the four CFUGs in each district.

[Table 1 here]

In Chitwan district, the selected CFUGs are located in the north-eastern part of the district (Figure 1). Kankali is the largest CFUG in terms of forest area (760 ha) and population (11,539), followed by Nibuwatar (357.5 ha; population 1064), Janapragati (150.5 ha; population 1314) and Chelibeti (56.88 ha; population 901). REDD+ payment also follows the same trend; that is, the greater the area of forest and human population, the greater is the carbon payment (Tables 1 and 2). Low-land *Sal* forest (*Shorea robusta* Gaertn. F.), which can grow up to 40 m high, is the major forest type under the forest management entities. In Chitwan district, *Sal* is associated with *Terminalia tomentosa*, *T. belerica*, *Adina cordifolia*, *Schima wallichii*, *Lagerstroemia parviflora*, *Cedrela toona* and so on. *Sal* is a popular species in Nepal, and can be used for many different purposes (e.g. timber, poles, firewood, leaves and fodder). The species has a high economic potential for local and national markets.

[Table 2 here]

[Figure 1 here]

In Gorkha district, in which hill *Sal* forests are the major forest types, the selected CFUGs are located in the southern part of the district (Figure 2). Lundi Damgade CFUG has the largest forest area, followed by Baghepani, Laxmi Mahila and Sitalu Pakha CFUGs. REDD+ payments are commensurate with the size of the forest area (Table 1 and Table 2). Other associates are *Chilaune* (*S. wallichii*), *Saj* (*T. tomentosa*), *Khote Salla* (*Pinus roxburghii* Sarg.) and *Katus* (*Quercus* spp.).

Total carbon stock and the rates of carbon increment (tC/ha/yr) in community forests are given in Table 1. Ludhi Damgade CFUG has the highest carbon increment rate, followed by Laxmi Mahila and Baghepani CFUGs.

[Figure 2 here]

2.2. Data collection

Data on the total carbon in different years, and the amount of seed grant received by the selected CFUGs from the Forest Carbon Trust Fund (FCTF) as a REDD+ payment, were collected from respective CFUGs. The data collected were subsequently verified with the data from the project implementing agencies (ANSAB, FECOFUN and ICIMOD). In order to distribute the seed grant, social and environmental safeguards were identified and their relative weights were allocated by national level REDD+ stakeholders. Approximately 60% of the total weight was distributed for social safeguards (20% for the poor, 15% for *Dalit* or untouchables, 15% for women and 10% for Indigenous people) and another 40% for environmental safeguards (24% for carbon stock maintenance and 16% for carbon increment) (Operational Guidelines for Forest Carbon Trust Fund, 2011).

Regarding the cost and forgone benefits, about 28 potential CFUGs performance criteria (hereafter referred to as *indicators*) that could have been affected by the REDD+ pilot project were identified through expert discussions at the central level. These indicators were then discussed with the key district-level stakeholders. Finally, in the local context they were narrowed down to 23 CFUGs indicators (Table 3).

A one-day workshop was organised in each CFUG. In the workshops, users and committee members (including women, *Dalits*, Indigenous people and the poorest) participated. The average number of participants in each workshop was 24 (range 18– 35). In the workshops, participants were asked to discuss the 23 indicators in their own context, and to come to a consensus on whether each indicator had increased or decreased (on an annual basis) after the implementation of a REDD+ pilot project in their CFUG and the respective community forest. Participants were also asked to indicate group perception on a 1–4 scale (4 for extraordinarily decreased/increased, 3 for highly decreased/increased, 2 for fairly decreased/increased, and 1 for slightly decreased/increased) against each activity. If there had been no change, respondents were asked to indicate “same”. Finally, the average impact of

the seed grant payment to CFUG activities was estimated from the perceived figures from the CFUGs.

3. Results and discussions

3.1. Seed grant and management cost to eight selected CFUGs in Chitwan and Gorkha districts

Table 2 presents the REDD+ payments for selected CFUGs in 2011 and 2012. In Chitwan, the four selected CFUGs received US\$ 8857 of seed grant in 2011; this increased to US\$ 10,551 in 2012. In Gorkha, the four selected CFUGs received US\$ 4380 in 2011; this decreased to US\$ 3954 in 2012. There was no default amount in the 2011 payment, but since participants raised the issue of “principle of fairness” (i.e. irrespective of environmental and social criteria, each participating CFUG should receive some incentives for their time), in 2012, each CFUG was given \$100 as a default grant.

As noted, this REDD+ pilot project is funded by NORAD, and jointly implemented by three renowned NGOs. NORAD determines and fixes the seed money, irrespective of changes in social and environmental attributes. Once the total seed money for the whole REDD+ pilot project for a year has been finalised, it is distributed to each CFUG based on social and environmental criteria (as described in Section 2.2). Although the carbon increment rate in CFUGs in Gorkha district was higher than in Chitwan district, the CFUGs in Chitwan district still received higher payment (Table 1), mainly thanks to (1) a higher payment from social safeguard criteria (because the larger the total population, the larger the female population, which carries 15% of the total weight); and (2) the presence of a higher amount of initial carbon stock.

Of the 40% weighting for environmental criteria, only 16% is allocated to carbon increment. This 16% allocation is low if we see REDD+ simply from a carbon trading perspective. However, the main objectives of this ‘dummy’ carbon trading system in REDD+ pilot project are to: (1) consider both social and environmental safeguards, so that CFUGs know the international view of these safeguards; (2) familiarise CFUGs with how REDD+ works; and (3) motivate CFUGs towards sustainable management of forests, so that they can

1 receive carbon incentives without compromising the basic needs of local users (Operational
2 Guidelines of Forest Carbon Trust Fund, 2011).
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5 **3.1.1. Average annual management cost and REDD+ payment**

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9 Table 2 gives the total number of household and area of each CFUG and their average annual
10 management costs. The higher management costs in CFUGs in Chitwan district was mainly
11 due to: (1) larger forest areas; (2) intensive silvicultural operations; and (3) use of a higher
12 number of paid workers.
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18 The average annual REDD+ payments for the selected CFUGs in Chitwan district and
19 Gorkha district were US\$ 2426 and US\$ 1042, respectively. However, the number of
20 households in CFUGs in Chitwan district was much higher than in Gorkha district (Table 2);
21 therefore, the average annual REDD+ payment per household in CFUGs in Chitwan district
22 was much lower than that of Gorkha district. Likewise, the average area of CFUGs in Gorkha
23 district was much lower than that of Chitwan district; hence, the per hectare REDD+ payment
24 in Gorkha district was more than two times that of Chitwan district.
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32 Comparing the average annual management cost and the average REDD+ payment
33 received by selected CFUGs illustrates that the payment is a significant financial transaction
34 for these CFUGs. In Gorkha district in particular, the payment was higher than the average
35 annual expenditure of the CFUGs in the district. This implies that the payment could
36 represent considerably higher additional revenue for the CFUGs in Gorkha district than in the
37 Chitwan district. However, three things are noteworthy here. First, the management cost
38 stipulated here does not include voluntary work by community members, which is manifold
39 higher than this cost. Second, the REDD+ payment is not only the income from community
40 forestry; there are several other direct and indirect benefits. Third, this dummy REDD+
41 payment gives high priority to social safeguards. However, the real carbon trading in the
42 forestry sector must be solely based on the carbon increment rate. If this were the case, the
43 districts would receive much lower payment. For example, on average, each CFUG increases
44 its carbon stock by 668.22 tC/year (2452 tCO₂/yr) (Table 1). If the 100-year rule is applied
45 (Fearnside *et al.*, 2000; Moura-Costa and Wilson, 2000), to make it equivalent to an
46 emissions reduction project, the carbon stock increment equates to 24.5 tCO₂/year (because
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of the non-permanent nature of forest-based carbon sequestration). At a carbon price of US\$ 10/tCO₂, the average carbon payment to each CFUG would be about US\$ 245 per year. This does not take into account the cost of monitoring, reporting and verification, which could be high for small community forests. If this cost is taken into account, the net REDD+ payment for CFUGs could be much less than US\$ 245.

The CFUGs spent most of the fund on pro-poor activities and the community, particularly women, *Dalits* and marginalised CFUG members, which contributed to their empowerment. The pro-poor activities involved seed money for small enterprises based on forest products; income-generating activities such as goat, pig, cow and buffalo farming; support for poor and under-resourced students; and loans for CFUG members who wanted to go abroad for employment. The CFUGs also used the fund for forest management activities such as construction of fire lines, salary for forest and fire watchers, and implementation of silvicultural measures such as thinning and enrichment plantations.

3.2. Impact of REDD+ pilot project on different indicators

Table 3 gives the status and the scale of CFUGs' perception of the 23 different indicators affected by implementation of the REDD+ pilot project. Table 4 gives the average perceived impact of REDD+ pilot project on these 23 indicators.

Indicators that generally increased in most of the CFUGs included “number of total participants in general assembly”, “number of women in general assembly”, “number of Indigenous people in general assembly”, “number of poor people in general assembly”, “frequency of committee meetings” and “fire control and prevention”. Indicators that generally decreased included “number of fires”, “quantity of grass extraction from the forest”, “quantity of fodder-grass extraction from the forest”, “quantity of fuel-wood extraction from the forest” and “quantity of illegal logging”. In seven of the eight CFUGs, there was no change in the grazing system.

[Table 3 here]

Average scores of eight CFUGs for all indicators, and their rankings, are given in Table 4. On average, 11 of the 23 indicators in CFUGs increased, whereas 12 decreased. Both increased and decreased indicators are solely linked with the efforts to maintain or increase carbon stock in the forests.

[Table 4 here]

Based on the results from this study, we attempted to answer two questions: (1) Is the additional revenue received by CFUGs from the REDD+ payment sufficient to cover their additional costs and the benefits forgone?; and (2) Has the REDD+ pilot project addressed its global-level social safeguards objective, and the second-generation issue of community forestry in Nepal? Each of these questions is answered below.

3.3. Is additional revenue received by CFUGs sufficient to cover benefits forgone?

Table 2 shows that the average annual payment of eight CFUGs was US\$ 1734. To receive this payment, communities have to bear significant additional costs, and sacrifice many benefits. For example, in the field survey, most of the CFUGs mentioned that they are now having at least three “committee meetings” in a month, whereas before the REDD+ pilot project they might not have had even one meeting in a month. If 10 people participate in a committee meeting, this represents an additional meeting burden of 105 person-days (assuming 3.5 hour per meeting including travelling time, and a working day of 8 hours) in a year. At a rate of 500 Nepalese rupees (NRs) per person-day, which equates to US\$ 525 (US\$ 1 = NRs 88). Also, after a meeting, committee members need to spend at least a couple of hours passing their decisions on to all users, through either “corner meetings”, phone calls or paper work. In addition, many more people participate in the general assembly, which lasts for at least 1 day, and there is an increase in activities such as thinning, pruning, weeding and fire control in forest areas. If the costs of all these activities are considered, REDD+ payment is almost certainly not sufficient to offset them.

To maximise carbon benefits, CFUGs have sacrificed many things. For example, they have decreased the quantity of grass, fodder grass, green twigs, leaf litter, fuel-wood, timber

and non-timber forest products (NTFPs) extracted from the forests. They have also reduced the number of animals (goats, buffalo, cows and oxen) grazing in the forest. If these additional costs and forgone benefits were evaluated in monetary terms, the REDD+ payment would be even less attractive.

There are three major implications of these reduced activities: (1) livelihood of users may be at stake, because there may have been limits on collecting NTFPs and necessary goods (e.g. wood for making hoes and coal for fuel); (2) cattle and other agricultural production may have been reduced by limited supply of grass, fodder grass, green twigs and leaf litter; and (3) some people may have been forced to find alternative sources of these goods. Therefore, the opportunity cost of the reduced access to resources could be high, especially in the long run, because scarce private land could be used for the production of these resources. The reduced access would also affect the production of crops and livestock.

The REDD+ funding agency is trying to minimise leakage (i.e. the increase in emissions or reductions in removals by sinks outside the project boundary that occurs as a consequence of a REDD+ pilot project) (Maraseni, 2007), by supporting households through improved cooking stoves and biogas plants. However, some leakage problems continue, because only some of the CFUGs are covered by the REDD+ pilot project so those that are excluded create a leakage problem (Maraseni *et al.*, 2005). For example, people from the REDD+ pilot area have been trying to collect some resources from non-pilot areas, and cattle from the REDD+ pilot area have been left to graze in non-pilot areas. However, at this stage, the exact opportunity cost of reduced access to resources and the amount of leakage are difficult to quantify.

The findings of our study are in line with Neupane and Shrestha (2012), who reported that REDD+ could adversely affect the Nepalese poor in several dimensions, including access to forest products. Also, as suggested in Bushley and Khatri (2011), REDD+ could recentralise forest rights in Nepal, a country where community forestry policy and programme have been touted as a successful case in decentralized forest management (Sunam *et al.*, 2013). On the other hand, better coordination in the forest sector could spur private investment in this sector (Bluffstone *et al.*, 2008; Mekonnen and Bluffstone, 2008; Bluffstone *et al.*, 2012) and benefit poor people. For this to happen, REDD+ proponents – especially

donors financing REDD –need to work closely with REDD+ stakeholders and governments to carefully design REDD+ institutions that improve rather than destabilize community forestry systems (Bluffstone *et al.*, 2013).

There are various activities that can ensure effective forest protection on one hand, and higher productivity and forest vitality on the other. Such activities include increased tending and cultural operations; fewer forest fires; more activities in fire prevention and control; undertaking less illegal and illicit felling; and having fewer livestock grazing the forest. Protecting forests for carbon would have a number of other co-benefits, including increased biodiversity and soil conservation. Because of the REDD+ pilot project, CFUGs are highly motivated, and are working together to receive carbon benefits that could promote social capital and cultural harmony among the CFUGs. If these benefits are considered, REDD+ projects could be attractive. Therefore, comprehensive research that covers all the related costs and benefits is essential; this study provides a basic framework for such research.

3.4. Has the REDD+ pilot project process provided social safeguards and addressed ‘second-generation’ issues of community forestry in Nepal?

The international policy community has published a number of documents containing various principles and criteria aimed at safeguarding the interests of Indigenous people, women and minority groups, and ensuring their meaningful participation in REDD+ projects (FCPF, 2009, 2011; redd-standards.org, 2010; UNREDD, 2012). Participation has been described as the, “cornerstone of democracy [and] a categorical term for citizen power”, because it redistributes power between the advantaged and disadvantaged, enabling them to share benefits; without participation “the redistribution of power is an empty and frustrating process” (Arnstein, 1969: 216).

REDD+ offers a great opportunity because it is designed to share benefits arising from reducing deforestation and forest degradation; on the other hand, it could be a problem unless power is redistributed, with some degree of power going to marginalised groups. *Interest representation* has been identified as a key criterion of good governance, and has been broken down into three important components: inclusiveness, equality and resources

(Cadman, 2011). Inclusiveness has been further divided into two elements: access (the extent to which interests actively participate) and weight (the level of influence among participants). Governance is inclusive when those directly or indirectly affected are involved in decision making, either formally or informally (Koenig-Archibugi, 2006; Gentle and Maraseni, 2011). There is also a relationship between inclusion and equality (or inequality): governance is legitimate when it gives voice to those affected by any given decision (Young, 2000).

Governance research also points to the need for resources, or economic, technical and institutional capacity (money and expertise), if previously marginalised interests are to represent their interests effectively (Mason, 1999). Resources also include education and training, both of which increase participants' skills to represent their interests effectively (Simmons and Birchall, 2005). The results shown in Tables 4 and 5 suggest that REDD+ has led to an increase in participation in CFUG meetings, and in general assemblies of *Dalit* and untouchable castes, Indigenous people, women and the poorest households. In addition, CFUGs in the REDD+ pilot projects investigated have allocated REDD+ payment funds for pro-poor community-based activities with an emphasis on women, *Dalit* and marginalised CFUG members. This also suggests that there has been an increase in recognition of social interests – and indicates the potential for future increased representation in REDD+. In Nepal, the poor, women and Indigenous people have low participation rate in CFUGs activities. This has been termed a 'second-generation' issue because these 'new' recruits into community forestry have less participatory capacity; efforts are being made to address this issue through several policies and programmes (Kanel, 2004). It is encouraging that REDD+ may be reversing this trend. To guarantee ongoing participation, incentive payments need to be continued. This would ensure that social safeguards are provided as a trade-off for ongoing emissions reduction from deforestation and forest degradation.

The REDD+ pilot project investigated by this research in Nepal appears to have promoted meaningful participation of these marginalised and vulnerable people to some extent. This enhanced participation of stakeholders in the project has allowed the poorest and most marginalised groups to have a voice and a choice in decision-making processes, and has thus contributed to improving the governance of forest management overall. However, for these stakeholders increased participation particularly the greater number of meetings and discussions, means that they must expend considerable time and labour on being involved. If

these costs are not compensated for, participation by these stakeholders may only be temporary.

The REDD+ fund could be beneficial, but an overemphasis on this fund could blind us to other approaches to reducing forest emissions; for example, one approach could be to recognise the property rights of Indigenous peoples and forest communities, because the cost per hectare of recognising rights is orders of magnitude less than the estimated costs of REDD+ (White, 2011). In Mexico, property rights, along with factors such as emigration and reduced land-use pressures, have already resulted in successful REDD+ projects, even though no market opportunities for investors were created (Bray, 2013). Therefore, in addition to REDD+ funding, promoting policies that improve community forestry systems could be helpful.

4. Conclusions and recommendations

The overarching goal of this research was to evaluate the impacts of the REDD+ pilot project on selected CFUGs in Nepal. The REDD+ pilot project affected all 23 CFUG indicators studied, with 11 increasing and 12 decreasing. Among the indicators that increased, the frequency of committee meetings increased the most, followed by the number of Indigenous people and women in general assemblies. Among the indicators that decreased, the number of fires decreased the most, followed by the quantity of grass and fodder extraction from the forest. These are positive developments. However, the increased participation of stakeholders in a larger number of meetings and discussions, in forest protection and patrolling, and in cultural and tending operations, requires considerable time and labour. In addition, the cost of greater participation is not compensated. Therefore, to avoid ‘consultation fatigue’, more attention needs to be paid to maintaining stakeholder capacity (e.g. by allocating resources to support increased involvement in forest governance).

Reduced forest product harvesting and reduced grazing may impose additional costs on stakeholders. On the positive side, some carbon-centric forest activities – such as fewer forest fires; less extraction of leaf litter, grass, fuel-wood and timber; and fewer livestock for grazing – increase the productivity and sustainability of the forest ecosystem. On the negative side, these benefits are associated with increased burdens and they carry a cost. Related

1 payment-based incentives will only be an effective mechanism for CFUGs implementing
2 REDD+ projects if the additional direct and indirect time and labour costs, as well as forgone
3 benefits, do not significantly exceed payments.
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7 In our study of eight CFUGs, the additional costs and forgone benefits suggest that
8 REDD+ payments may not be an attractive option for reducing loss of forest biomass.
9 Payments given to the CFUGs in this REDD+ pilot project provided 60% of funds to social
10 attributes and 40% to environmental considerations. If payments were based purely on carbon
11 increment rates at a rate of US\$ 10/tCO₂, each CFUG would receive US\$ 245 on average,
12 which would not even offset the increased number of committee meetings and related costs.
13 Therefore, in this situation, REDD+ may not be the appropriate avenue, so other non-REDD+
14 funding approaches need to be sought. A better option might be non-market based bilateral or
15 multilateral approaches that could provide incentives for both environmental and social
16 safeguards.
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Figure

Figure 1 Locations of the studied CFUGs in Chitwan district

Figure 2 Locations of the studied CFUGs in Gorkha district

Table 1 Key attributes of the selected CFUGs for the study in Chitwan and Gorkha districts

District	Name of CFUGs	Selection criteria	Year of handover	Mode of forest origin	Dominant tree species in the respective community forests	Total population	Total C stock (t) in 2012	Total C increment (t) (2010-12)	Rate of C increment (tC/ha/yr) (2010-12)
Chitwan	Kankali	Highest payment	1995	Natural & plantation	<i>Shorea robusta</i> Gaertn. F., <i>Terminalia tomentosa</i> , <i>Lagerstroemia parviflora</i> , <i>Cedrela toona</i> , <i>Syzygium cumini</i> , <i>Acacia catechu</i> , <i>Dalbergia sissoo</i> , <i>Semicarpus anacardium</i> , <i>Michelia champaca</i> , <i>Bombax ceiba</i> , <i>Phyllanthus emblica</i> , <i>Cassia fistula</i>	11539	26990.1	357.7	0.24
	Chelibeti	Led by women	2010	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Terminalia tomentosa</i> , <i>Terminalia belerica</i> , <i>Adina cordifolia</i> , <i>Schima wallichii</i> , <i>Lagerstroemia parviflora</i> , <i>Michelia champaca</i>	901	19519.7	265.1	2.33
	Janapragati	Active but lower payment	2003	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Terminalia tomentosa</i> , <i>Terminalia belerica</i> , <i>Adina cordifolia</i> , <i>Schima wallichii</i> , <i>Lagerstroemia parviflora</i> , <i>Michelia champaca</i>	1314	34820.2	452.2	1.50
	Nibuwatar	Led by IPs	2006	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Terminalia tomentosa</i> , <i>Terminalia belerica</i> , <i>Adina cordifolia</i> , <i>Schima wallichii</i> , <i>Lagerstroemia parviflora</i> , <i>Michelia champaca</i>	1064	98396.8	1370.2	1.92
Gorkha	Ludi Damgade	Highest payment	1992	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Schima wallichii</i> , <i>Pinus roxburghii</i> Sarg.	3551	58138.7	2219.26	4.60
	Baghepani	Led by IPs	2004	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Schima wallichii</i> , <i>Terminalia tomentosa</i> , <i>Quercus</i> spp.	447	15268.9	562.99	4.13
	Sitalu Pakha	Active but lowest payment	2001	Natural & plantation	<i>Shorea robusta</i> Gaertn. F., <i>Schima wallichii</i> , <i>Quercus</i> spp., <i>Pinus roxburghii</i> Sarg.	126	1139.3	46.45	4.08
	Laxmi Mahila	Led by women	1998	Natural	<i>Shorea robusta</i> Gaertn. F., <i>Schima wallichii</i> , <i>Quercus</i> spp.	458	1924.02	71.83	4.43

Table 2 Average annual expenditure or management cost and REDD+ payment

District	Name of CFUGs	Area of CF (ha)	No of household (HH) involved	Average annual expenditure or management cost in 2011 and 2012 (US\$)	Average annual expenditure or management cost in 2011 and 2012 (US\$/HH)	Average annual expenditure or management cost in 2011 and 2012 (US\$/ha)	Total REDD+ payment (US\$) in 2011	Total REDD+ payments (US\$) in 2012	Average annual REDD+ payment in 2011 and 2012 (US\$/HH)	Average annual REDD+ payment in 2011 and 2012 (US\$/ha)
Chitwan	Kankali	760	1780	\$113667.73	\$63.86	\$149.56	\$4,591	\$6,011	\$2.98	\$6.98
	Chelibeti	56.88	171	\$3686.75	\$21.56	\$64.82	\$1,021	\$1,075	\$6.13	\$18.42
	Janapragati	150.5	180	\$43782.73	\$243.24	\$290.92	\$1,188	\$1,303	\$6.92	\$8.28
	Nibuwatar	357.5	914	\$23895.52	\$26.14	\$66.84	\$2,057	\$2,162	\$2.31	\$5.90
	<i>Avg of 4 CFUGs</i>	<i>331.2</i>	<i>761.3</i>	<i>\$46258.2</i>	<i>\$88.7</i>	<i>\$143.0</i>	<i>\$2,214</i>	<i>\$2,638</i>	<i>\$4.6</i>	<i>\$9.9</i>
Gorkha	Ludi Damgade	241.2	487	\$1768.48	\$3.63	\$7.33	\$3,088	\$2,584	\$5.82	\$11.76
	Baghepani	68.16	87	\$618.39	\$7.11	\$9.07	\$833	\$773	\$9.23	\$11.78
	Sitalu Pakha	5.69	25	\$238.00	\$9.52	\$41.83	\$157	\$233	\$7.80	\$34.27
	Laxmi Mahila	8.1	75	\$372.62	\$4.97	\$46.00	\$302	\$364	4.44	\$41.11
	<i>Avg of 4 CFUGs</i>	<i>80.8</i>	<i>168.5</i>	<i>\$749.4</i>	<i>\$6.3</i>	<i>\$26.1</i>	<i>\$1,095</i>	<i>\$989</i>	<i>\$6.8</i>	<i>\$24.7</i>

Table 3 Impact of REDD+ pilot project on CFUGs indicators

Indicators	CFUG1			CFUG2			CFUG3			CFUG4		
	I	D	S	I	D	S	I	D	S	I	D	S
Chitwan district												
No. of total participants in general assembly	3			4			4			2		
No. of women's in general assembly	4			4			4			2		
No. of indigenous people in general assembly	4			4			4			3		
No. of poor people in general assembly	3			3			2			3		
Frequency of committee meeting	3			4			3			4		
No of participants in committee meeting			*	3			2			3		
Plantation activities/area	2			4			2			2		
Thinning, pruning and cleaning activities			*	2			2			2		
Weeding activities/area			*	2			4			2		
Fire control and prevention activities	4			4			3			4		
No. of fires		3			4			4			4	
Quantity of timber extraction from the forest			*		4				*		4	
Quantity of grass extraction from the forest		1			4			3			4	
Quantity of fodder grass extraction from the forest			*		4			3			4	
Quantity of green twigs extraction from the forest		1			3			2			4	
Quantity of leaf litter extraction from the forest		2			3			4				*
Quantity of fuel wood extraction from the forest		4			4			2			3	
Quantity of NTFPs extraction from the forest			*		3				*			*
Quantity of illegal logging		4			4				*		4	
No. of buffalo grazing in the forest			*			*			*		2	
No. of cow/ox grazing in the forest			*		4				*		2	
No. of goat grazing in the forest		3			4				*		2	
More organised grazing (e.g., rotational)			*			*			*	3		
Gorkha district												
No. of total participants in general assembly	2			2			3			2		
No. of women's in general assembly	2			3			4			1		
No. of indigenous people in general assembly	3			4			4			1		
No. of poor people in general assembly	2			3			4			2		
Frequency of committee meeting	4			3			4			4		
No. of participants in committee meeting			*			*	2			2		
Plantation activities/area	1					*			*	2		
Thinning, pruning and cleaning activities			*	3					*	4		
Weeding activities/area			*	3					*			*
Fire control and prevention activities	4			3					*			*
No. of fires		4			4				*		1	
Quantity of timber extraction from the forest			*		2				*			*
Quantity of grass extraction from the forest			*		4			2			4	
Quantity of fodder grass extraction from the forest		2			3			2				*
Quantity of green twigs extraction from the forest		1			1			3				*
Quantity of leaf litter extraction from the forest			*			*		2				*
Quantity of fuel wood extraction from the forest			*		2			2				*
Quantity of NTFPs extraction from the forest		4				*			*			*
Quantity of illegal logging		4				*		2				*
No. of buffalo grazing in the forest			*		4				*			*
No. of cow/ox grazing in the forest			*		4			4				*
No. of goat grazing in the forest			*		3			4				*
More organised grazing (e.g., rotational)			*			*			*			*

Note: CFUG stands for Community Forests User Group. In Chitwan district CFUG 1, 2, 3 & 4 are Kankali CFUG, Chelibeti CFUG, Janapragati CFUG & Nibuwatar CFUG, respectively. Similarly in Gorkha district CFUG 1, 2, 3 & 4 are Ludi Damgade CFUG, Baghepani CFUG, Sitalupakha CFUG & Laxmi Mahila CFUG, respectively. The notations "I", "D" & "S" indicate increased, decreased and same,

respectively. Similarly, scale 4 stands for extraordinarily decreased/increased, 3 for highly decreased/increased, 2 for fairly decreased/increased and 1 for slightly decreased/increased.

Table 4 Average impact of REDD+ pilot project on CFUGs indicators (N=8 CFUGs)

Indicators	Increased		Decreased	
	Average scale	Ranking	Average scale	Ranking
No. of total participants in general assembly	2.8	IV		
No. of women's in general assembly	3.0	III		
No. of indigenous people in general assembly	3.4	II		
No. of poor people in general assembly	2.8	IV		
Frequency of committee meeting	3.6	I		
No. of participants in committee meeting	1.5	VI		
Plantation activities/area	1.6	V		
Thinning, pruning and cleaning activities	1.6	V		
Weeding activities/area	1.4	VII		
Fire control and prevention activities	2.8	IV		
No. of fires			3.0	I
Quantity of timber extraction from the forest			1.3	IX
Quantity of grass extraction from the forest			2.8	II
Quantity of fodder grass extraction from the forest			2.3	III
Quantity of green twigs extraction from the forest			1.9	VI
Quantity of leaf litter extraction from the forest			1.4	VIII
Quantity of fuel wood extraction from the forest			2.1	IV
Quantity of NTFPs extraction from the forest			0.9	X
Quantity of illegal logging			2.3	III
No. of buffalo grazing in the forest			0.8	XI
No. of cow/ox grazing in the forest			1.8	VII
No. of goat grazing in the forest			2.0	V
More organised grazing (e.g., rotational)	0.4	VIII		