



# **MOVING BEYOND REDD:** REDUCING EMISSIONS FROM ALL LAND USES IN NEPAL

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While the international community has embraced Reducing Emissions from Deforestation and forest Degradation (REDD-plus), the role played by land outside the forest in storing carbon and reducing emissions has not been sufficiently addressed.

The project, 'Architecture of REALU: Reducing Emissions from All Land Uses', pays specific attention to the interactions between forest carbon stocks, other carbon stocks affected by land use, the major drivers of land-use and forest change, and the livelihoods of the hundreds of millions of people whose actions shape these changes.

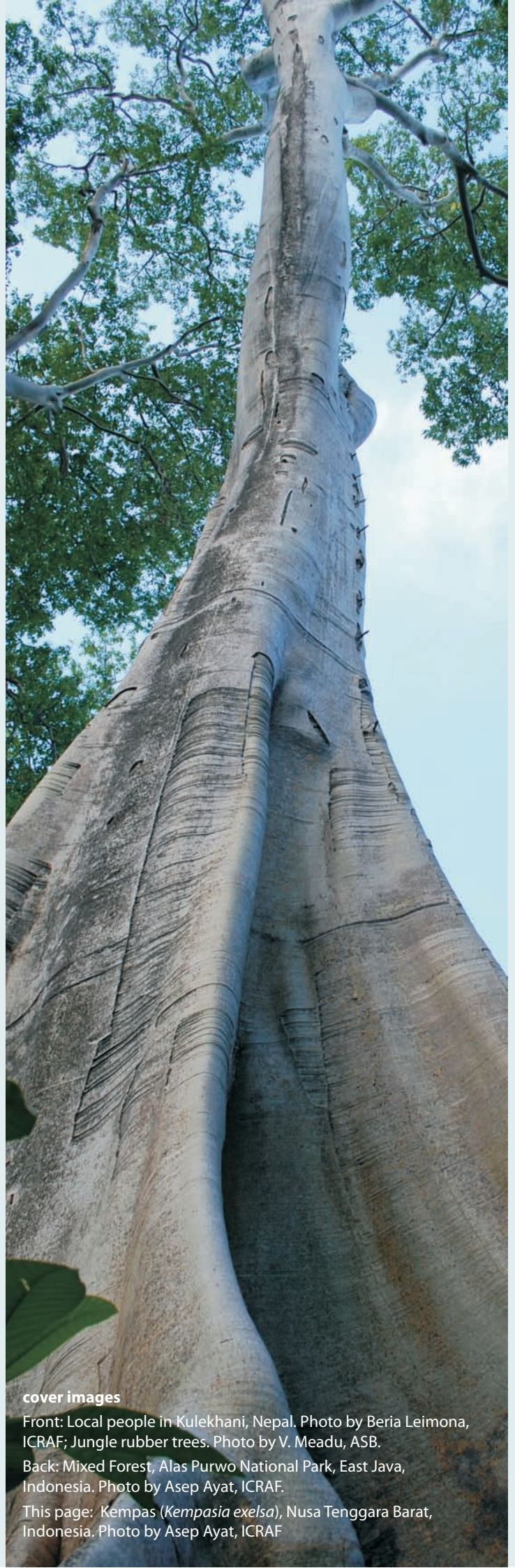
A broad-based approach to carbon management can lead to greater emissions reductions and larger benefits for local people.

This project is implemented by the ASB Partnership for the Tropical Forest Margins in collaboration with local and international research partners in eight countries: Indonesia, Philippines, China, Nepal, Vietnam, Cameroon, Peru and Tanzania.

ASB is the only global partnership devoted entirely to research on the tropical forest margins. ASB's goal is to raise the productivity and income of rural households in the humid tropics without increasing deforestation or undermining essential environmental services.

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**cover images**

Front: Local people in Kulekhani, Nepal. Photo by Beria Leimona, ICRAF; Jungle rubber trees. Photo by V. Meadu, ASB.

Back: Mixed Forest, Alas Purwo National Park, East Java, Indonesia. Photo by Asep Ayat, ICRAF.

This page: Kempas (*Kempasia exelsa*), Nusa Tenggara Barat, Indonesia. Photo by Asep Ayat, ICRAF

## Summary

Nepal's heavy reliance on land-based resources makes it hard to justify protection of any land or forest solely for mitigating emissions. As almost 80% of the population relies on land and forests they have a strong stake in land use. In addition, since most of the Terai forest is on fertile land suitable for farming, there is a huge opportunity cost in protecting such forest. Moreover, the community and forest interaction is complex, going far beyond pure economic relations, rendering inadequate any compensation based on narrow economic production. This adds to the challenges of calculating opportunity costs and to any carbon financing instrument based on the estimation of such cost.

The government owns all the forest lands in Nepal. While about one-third of national forests is under community management, there is no transfer of ownership; only a few use and management rights are handed over. Normally, only the aboveground biomass is transferred. This applies more or less to non-forest land as well, including privately owned land. All transfers of rights are subject to periodic renewal and approval from relevant government agencies. The Forest Act 1993, National Park and Wildlife Conservation Act 1973 and associated rules and regulations are silent on carbon tenure. Lack of clear provision on carbon tenure may create confusion over forest carbon financing. Besides, as the state holds all residual rights under current law, communities may find it difficult to articulate their rights that are not already explicitly defined in favour of communities.

Such waiting confusions over carbon tenure have implications for carbon financing. First, while the state is involved in different kinds of climate negotiation it is actually communities who are involved in carbon sequestration. Second, although communities are given certain use and management rights, it is not clear whether the communities own the carbon. The lack of clarity over carbon tenure may undermine the whole process, particularly when markets add value to carbon. Third, if communities are recognised as the owners of carbon, what is the appropriate unit of transaction that addresses both cost efficiency and equitable distribution of payments? While larger units are preferred to reduce transaction costs, smaller units may be preferred for equitable distribution.

Some also suggest that REDD itself can strengthen community tenure. However, considering the historical failure of tenure reform in Nepal there seems little prospect. Most of the major political parties preach land reform but little has been achieved, either in providing individual land titles or devolving forests commons to local communities, especially where the resources are valuable.

Community-based forest management systems in Nepal provide multiple benefits, including a range of forest products for household needs, tradable items such as timber and non-timber forest products, watershed conservation, landscape beauty, biodiversity conservation and cultural amenity. Apart from supporting local livelihoods and the national economy, Nepal's community forest management has contributed to diversifying livelihoods and increasing socio-ecological resilience against climate change. Forests managed primarily for timber may not necessarily generate biodiversity and livelihoods co-benefits. Moreover, a significant part of forests have been handed over to local communities thereby promoting local democracy, institutional capacity and enhancement of local and indigenous knowledge. Forest management in Nepal, particularly that by local communities, does not only reduce emissions but also helps develop a climate-resilient, sustainable system. Nepal's forest carbon is different from that of carbon in the single-purpose forests of Brazil or Indonesia and therefore may attract a premium value.

Any financial rewards or compensation that focuses purely on emission reduction distorts the incentive system because it results in discrediting the whole range of co-benefits. Undermining these multiple benefits and singling out carbon undermines the principles of sustainable development.

The biophysical diversity, multiple and complex drivers of land-use change, institutional plurality in forest management and weak institutional and technical capacity of the forest sector all pose methodological challenges for carbon financing. First, establishing a credible reference level is difficult, particularly in Terai. The existing high deforestation rate is expected to continue given food scarcity and the associated unrest around access to land. Second, since deforestation and degradation was reduced mainly after 1980 with the introduction of community forestry, that could be the preferred reference year. However, because of a lack of credible evidence and Nepal's low negotiation capacity, this is unlikely to be accepted. Third, which level of transaction to use remains a critical issue. The variation in land-use change across the ecological zones implies that it is hard to establish a national reference. Fourth, in the Hills, small patches of forest are distributed across the country and are managed by user groups. Assessing forest-cover and land-use change and carbon content is complex in these forests. The ecological and institutional diversity also adds variables requiring sophisticated technology for any credible assessment.

Comprehensive, reliable data on deforestation, land use and land-use change, climate variability and its impacts on ecosystems and livelihoods is scant. This lack has posed a major challenge to policy development, planning processes and research. As the government cannot allocate adequate funds, research has been undermined.

Sustainable natural resource management is both a mitigation as well as an adaptation strategy. The issues are common to both: strengthen governance, policies and institutions; extend empowerment; build participatory planning processes and community involvement in decision making; improve access to information; and build the capacity of institutions. This means that Nepal should not take up forest-carbon finance instruments without clearly articulating its position on how it will address these matters.

The government must initiate reform ensuring clear, comprehensive and secure forest and land tenure, property and carbon rights and promote transparent, inclusive and accountable forest governance. The poor and marginalised groups, including indigenous people, must have adequate opportunities to engage in climate-change-related decision making and framing a sustainable pathway. However, policy reform alone would not be adequate to develop inclusive and socially accountable practices. Government should increase investment in institutional and organizational capacity to enable forest-dependent communities to actively participate and influence sustainable forest management. The opportunities provided by the current constitution-building process must be realised toward this end.

Forest covers about one-third of the country's area and there is at least another 33% of area under other land-use systems that can be targeted for carbon sequestration. Given the growing demand for food and livelihood benefits from natural resources in Nepal, carbon incentives should be linked with various options for land management, including multiple-use forestry, agroforestry and other sustainable land-use systems, beyond traditional approaches to forest conservation. Nepal should lobby for widening the scope of carbon financing beyond the current REDD model, both in terms of rewards as well as diverse financing modalities. A narrowly conceived REDD would not adequately reward local community-based conservation initiatives nor would it help address the complex drivers of deforestation and degradation that often lie outside of the forest sector.

Nepal should be working for expanding the scope of payment mechanisms to include biodiversity and livelihoods co-benefits. Since the sustainable management of non-forest land has the potential to be a significant carbon sink, Nepal must include agriculture and other land-use change beyond pure forestry in its negotiation strategy. In terms of financing modalities, Nepal can benefit if a) carbon financing is linked with poverty-reduction assistance; and b) carbon financing strategies include upfront institutional capacity-building investments.

Nepal should also intensify efforts to pilot, experiment and innovate carbon-assessment methodologies and institutions that help assess and market carbon. These initiatives should be aimed at generating lessons to inform REDD readiness, international REDD negotiations and implementation of a post-2012 climate regime. There must be better collaboration among the actors and institutions involved in experimenting, documenting and synthesising lessons.

The current state of political transition provides huge opportunity for a fundamental restructuring of the governance system, particularly to transform the existing state-society relations. This implies some specific concerns regarding carbon financing. First, current political and administrative units that may become the basis of sub-national carbon credit transactions may be changed. Second, socio-ecological units that are suitable from the point of carbon financing may inform the discussion on designing sub-national and local political units and vice versa. Third, the issue of land tenure is at the top of the discussion's agenda. While land tenure is seen only from an economic perspective, such as property rights, better tenure arrangements can be put into place for sustainable land use.

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## Chapter 1

### REDD and Nepal

Reducing emissions from deforestation and forest degradation (REDD) as an international climate-change mitigation instrument that formally entered into climate-change negotiations through the Bali Action Plan in December 2007 was strengthened and expanded at the December 2009 UN climate change conference in Copenhagen.

Reducing greenhouse gas emissions from deforestation and degradation is regarded as an effective and efficient (low cost and rapidly implementable) strategy to mitigate climate change. There appears to be a global consensus to expedite the process. Consequently, REDD has become the dominant mitigation option involving developing countries that is currently negotiated under the global climate regime. This has fired a debate on the potential opportunities and challenges for forested developing countries around the world. Nepal depends strongly on its forest and natural resources for its economy. High deforestation and degradation rates have led to an expansion of community-based forest management initiatives.

Nepal represents a typical forested developing country and has some unique features that make it an interesting case for examining the possibilities and challenges of a REDD scheme. The location and topography of Nepal provide a specific set of geographical, ecological and hydrological features that determine the importance of forest cover. Monsoon is the major source of precipitation, falling June–September (over 80% of total rainfall). While the average annual rainfall is 1530 mm, it varies greatly from east to west and there is a huge variation in altitude (68 MASL to 8848 MASL) within a distance of 180 km. These variations in monsoon and altitude give rise to an enormous ecological diversity. Nepal's unique culture and recent political changes provide both challenges and opportunities for sustainable development and management of natural resources.

### Biophysical features and climate sensitivity

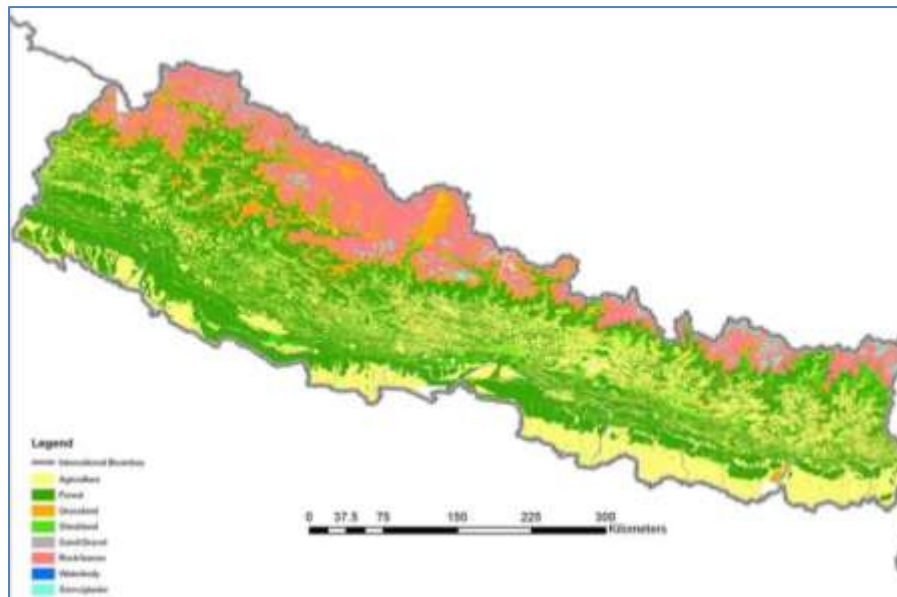
Nepal lies at the heart of the ecologically sensitive Himalayas, which feeds 70% of the dry season flow in the Ganges Basin (Alford 1992). The Basin, home to over 400 million people in Nepal, India and Bangladesh, is where the massive river system recharges water and consequently creates livelihood opportunities, driven by monsoons, glaciers and snow fall. The region is fragile geologically owing to steep mountains, the weak geological formation of the Himalayas and frequent tectonic movements. The changing patterns of monsoon and melting have started to pose serious hydro-meteorological hazards in the region, including higher flood risks and water shortages in winter. Environmental changes in the Himalayas and their downstream effects have historically attracted the attention of researchers and policy makers. Nepal is situated in the Himalayan foothills, with dozens of rivers originating from the Himalayas flowing through the country to India. Therefore, land-use change in Nepal has a direct impact on India through these rivers. For example, floods in India and Bangladesh are often associated with deforestation in the Nepalese hills, though there are several other factors. India's interests in protecting the Churia Range's forests after last year's Koshi River flood<sup>1</sup> can be understood through this trans-boundary ecological link. Similarly, Nepal is discussing trans-boundary conservation initiatives

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<sup>1</sup> The Koshi Basin is the largest river basin of Nepal. It originates from the Tibetan Plateau of China. The Koshi River is also known as the 'sorrow of Bihar'. Floods from the Koshi in the past have created havoc in the downstream areas of Nepal and India leading to loss of lives and property and causing widespread human suffering. Source: <http://www.indiaenvironmentportal.org.in/content/koshi-flood-disaster>



with India and China. The Terai Arc Landscape project<sup>2</sup>, covering 11 protected areas in the Indo-Gangetic plain, and the Kangchenjunga Conservation Area<sup>3</sup> in the eastern Himalayas, are two examples. These unique biophysical features justify Nepal's strong stake in proposed REDD mechanisms and other forest carbon financing concepts for climate-change mitigation.



**Figure 1.** Land-use map of Nepal

## Poverty, disparity and vulnerability

Nepal is one of the poorest countries in the world, with 31% of the population below the poverty line (USD 1/person/day). It ranks among the lowest in the Human Development Index (0.509), among the highest in the Human Poverty Index (35.4) and has a weak Gender Related Index (0.499) ranking. Rural poverty is much higher than urban poverty. Agriculture is the mainstay of livelihoods and local economies. Over 80% of Nepalese rely heavily on agriculture, forestry and livestock yet only one-fifth of the land is under agriculture, indicating huge pressure on farmland. Moreover, owing to skewed land distribution over 45% of people have less than 0.5 ha of land, implying a high reliance on forests and other commons.

High social differentiation and disparity based on economic class, caste and ethnicity, gender and spatiality is another important feature of Nepalese society (Benette 2005). The hierarchically constituted socio-political and economic institutions largely nurture unequal and often exploitative relations of power between diverse social groups. As a result, capture by elites at different levels of governance has become the key constraint in equitable sharing of state resources or even of international aid and development assistance. In this context, designing a fair and equitable mechanism for carbon benefit-sharing becomes a formidable challenge. There is a high risk that the poor and disadvantaged groups, who might have to bear the cost of forest conservation, may not have access to benefits, which suggests a complete restructuring of forest institutions is needed to ensure fair distribution.

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<sup>2</sup> [http://www.wwfnepal.org/our\\_solutions/conservation\\_nepal/tal/](http://www.wwfnepal.org/our_solutions/conservation_nepal/tal/)

<sup>3</sup> <http://www.icimod.org/hkhconservationportal/PA.aspx?ID=1>

In addition, Nepal's rich social diversity poses both opportunities and challenges in resource management and governance, including suitable units for transactions, administering paid funds and designing a suitable benefit-sharing mechanism. A differentiated society implies two major challenges.

- i) People have diverse types of interactions with the forests, with some more dependent than others, meaning that a negotiated management regime that satisfies everyone's needs would be difficult to achieve.
- ii) Any compensation mechanism would have to recognise this dependency differential and establish an equitable rewards process according to the various claims. This is particularly important in the context of recent debate on indigenous rights and proposals of federalism based on ethnic identities. Endorsement of the ILO 169 resolution by the Nepalese parliament and indigenous communities' claims for special rights on natural resources creates complex issues for resource governance, particularly the forest commons.

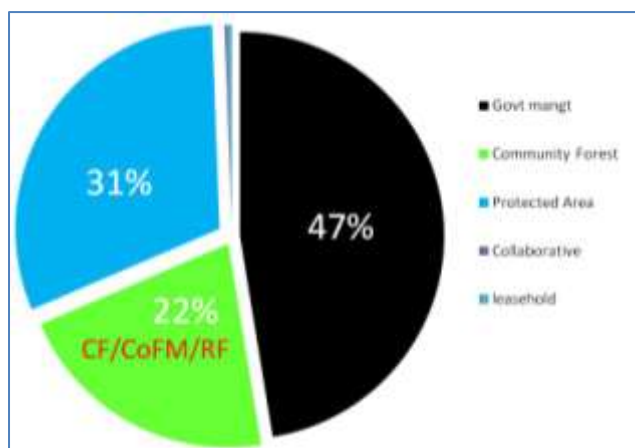
The poverty, diversity, disparity and lack of institutional capacity to effectively deal with imminent climate vulnerabilities pose formidable challenges to Nepal. Heavy reliance of the poor and other marginalised groups on natural resources and the high concentration of poverty in agro-ecosystems means intense vulnerability of rural livelihoods systems to climate change. For researchers, two questions are important.

- i) How has climate variability added to rural communities' vulnerability?
- ii) How would mitigation strategies based on forest carbon financing affect these resource-dependent communities?

### **Policy, governance and institutions in the forest and livelihoods sector**

Nepal's forest policies have moved a lot from state-centred, conservation-oriented management to decentralised and participatory management aimed at fulfilling the subsistence needs of local communities. However, forest policy varies across ecological zones. While a large part of hill forests have been handed over to local communities, the government continues to control the economically valuable Terai forests and those at high altitudes.

Nepal is known globally for its successful model of community-based forest management, with about one-third of forest area under the control of over 16 000 local forestry groups covering about 40% of the country's population (Figure 2). As a result, the once critically degraded Nepalese hills have now turned into green landscapes, resulting in increased supply of forest products and a substantial increase in ecosystem services. Not surprisingly, the deforestation rate is lower in community-managed forests (Kandel and Neupane 2007). Deforestation is curbed wherever and whenever forests are handed over to communities.



**Figure 2.** Forest management regimes in Nepal

Tenure security over land and forest resources is the key element here. Since the late 1970s the government began to recognise the importance of providing tenure security. Today, local communities manage a significant part of forest under various decentralised and community-based management schemes. Under these schemes, parts of national forests are handed over to local communities based on approved operational plans. A bundle of rights, mainly use and management rights, are transferred to identified groups, which are subject to periodic inspection from the state forest authority. This community forestry system is part of a wider agro-ecological landscape that provides multiple livelihood benefits to local communities.

The constitution-building process in Nepal provides an historical opportunity to craft political, legal and institutional frameworks for forest governance and carbon finance. There exists an immense opportunity to constitutionally define tenure on natural resources, including carbon. There are also opportunities to mandate subsequent natural resource legislation to improve sustainable forest management. While the appropriate scale and institutional model for carbon financing is at an experimental stage there must be an informed dialogue between those involved in the constitution-building process and those dealing with climate-response strategies.

Nepal has been undergoing a political transition, aiming to achieve a fundamental restructuring of its governance system, particularly to transform existing state-society relations. This implies some specific concerns regarding carbon financing. First, current political and administrative units may become the basis of sub-national carbon credit transactions. Second, socio-ecological units that could be recipients of carbon financing can inform the discussion on designing the sub-national and local political units and vice versa. Third, land tenure is at the priority discussion. Currently, land tenure is seen only from an economic perspective, such as property rights, but a better tenure arrangement can be established if sustainable land use is the focus. Two opposing school of thoughts prevail today. One says that too much land fragmentation has reduced both productivity and sustainability, while the other argues that the equitable distribution of land is the single most important action to reduce poverty in general and food scarcity in particular.

Nepal has pioneered community-based conservation, which has generally shown better performance in improving the condition of forests and livelihoods and promoting equitable benefit sharing. It also has implications for carbon financing. First, while the state is involved in different kinds of climate negotiation it is actually the communities who are involved in carbon sequestration. Second, although communities have been given certain use and management rights it is not clear whether communities own carbon. The lack of clarity over carbon tenure

may undermine the whole process, particularly when the market adds value to carbon. Third, if communities are recognised as owners of carbon, what is the appropriate unit of transaction that addresses both cost efficiency and equitable distribution of payments? While larger units are preferred to reduce transaction costs, smaller units may be preferred for equitable distribution.

Nepal has some trans-boundary issues in relation to forest management and carbon financing, particularly regarding land use in the hills and the impact downstream. These include dams and their effects on surrounding areas and deforestation in the Nepalese hills and floods in India and Bangladesh. Reliable data on deforestation as part of overall land-use change, is, however, not yet available. This lack of data poses a major challenge to policy development and planning. Nepal has used the Food and Agriculture Organization forest definition, implying that deforestation is the loss of forest canopy to less than 10% or reduction in its height to less than 5 m. However, much of the change in forest condition does not fall into this category. The major change in the quality of forest cover is due to forest encroachment, illegal logging, forest fire and over grazing. This is degradation not deforestation. Therefore, as the major changes in forest cover and quality are due to degradation, carbon financing through RED (only focused on gross deforestation) may have little benefit to Nepal.

As endorsed by the Bali Action Plan, REDD takes forest degradation into account. It addresses many of the critiques of earlier clean development mechanism (CDM) projects under the Kyoto Protocol that excluded forest rehabilitation and improvement. It clearly includes all types of deforestation and forest degradation. However, a REDD scheme would offer only small benefit to Nepal because over 78% of the forests lie with the state and only 23% with the community. There is little likelihood that government-managed forests will come into any REDD scheme. Moreover, as the small remaining percentage of community-managed forests are already protected without any REDD scheme, it is hard to demonstrate additionality. Other matters like leakage, permanence and substitution become important.

If a system only pays for reducing degradation it creates a perverse incentive: those who had degraded more would be rewarded. Moreover, while a scheme might pay for halting deforestation or degradation it would not provide incentives to improve the forests' condition. Consequently, any such scheme would have little relevance to Nepal. The Nepalese rural people would benefit only if their efforts to improve the condition of their forests were rewarded.

## Looking beyond REDD

The core idea behind REDD was rewarding the 'avoided bad' rather than the 'committed good'. However, the limitations of this approach include perverse incentives such as potentially rewarding those who are doing the worst. Instead, rural communities in Nepal who have been effectively conserving forest should be rewarded for 'enhanced positive change' (REDD+).

To achieve this, Nepal should strive for mechanisms that will provide incentives beyond mere forest management to include all sustainable land uses. The country has only 39% designated 'forest land', of which only 29% is actually forest. Therefore, the huge areas of land that lie outside of 'forest land' should also be counted.

To reduce carbon emissions effectively we have to take into account all existing and potential land-based sources of emission. Accordingly, any incentive structure should include rewards for reducing emissions from all land uses (REALU), a concept that is included in the so-called REDD++ mechanism. A REDD++ scheme in Nepal would provide more realistic and accurate accounting for carbon and sustainable development.

Carbon financing focusing only on REDD means excluding major human activities on land: crop farming and horticulture. Exclusion of these activities from rewards schemes would mean that the majority of land would continue to degrade. Apart from increased carbon emissions, exclusion also has implications for soil fertility and, ultimately, food availability.

One of the issues associated with financing is whether payments would benefit the actual land managers<sup>4</sup>. If the focus is only on forest conservation, then the Nepalese state would be the beneficiary since the forests are largely owned by the state. If the focus is on sustainable land use, then individual farmers and communities would receive the benefits, ensuring a more equitable distribution of benefits.

A comprehensive package should include all types of environmental services, including biodiversity, protection of natural beauty, watershed services and carbon sequestration. At the same time it must focus not only on outcomes but also policy and institutional development and the scientific and other knowledge bases that produce those outcomes.

Given limited data availability on key land-use changes and associated changes in carbon stock (and flow), timely and systematic studies are needed that become the foundation of negotiations and planning. The methodology gradually becomes more complex as we expand the scope from deforestation (RED) to REDD++ or REALU but there should be greater benefits from carbon financing. To achieve this, we will need to build the capacity of everyone involved through experimentation, analyses, piloting and close interaction between researchers and policy makers.

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<sup>4</sup> Carbon financing should 'not only reduce carbon emissions significantly, but also benefit developing countries, support poverty reduction and help preserve biodiversity and other forest services.

## Chapter 2

### Reducing emissions from all land uses: Nepal as a case study

Climate change, and associated fluctuating weather patterns, is a serious global problem. Its impact is being felt by ordinary people even in Nepal. Since climate change is caused by the emission of greenhouse gases—mainly carbon dioxide (CO<sub>2</sub>)—we need to know how the carbon pool located in different land uses changes over time. We also need to know the opportunity costs<sup>5</sup> of retaining carbon in solid form rather than in gaseous form in order to better understand the economics of land-use change in Nepal. Knowing the opportunity cost of a particular land use can help when designing appropriate policies to counter carbon emissions. Since significant carbon is locked in forest biomass, we will also discuss how deforestation and degradation occurs in Nepal and what drivers are operating.

This is a ‘snapshot’ study based on secondary information available in a limited time period. The paper is divided into four sections. The first presents land-use patterns and their corresponding carbon pools, both above- and belowground. The second gauges the opportunity costs of different land uses and the levels of greenhouse gas emissions projected for the foreseeable future from each (Each land use is simulated to gradually change over time, based on past trends and their crude assessment by the authors. The changes in different land uses (on a proportional basis) over a period of 20 years was simulated and is shown in Table 1 of the annex). The third section identifies the important drivers of deforestation and degradation that are operating in Nepal.

### Present land use and the carbon pool in Nepal

The total area of Nepal is 14.7 million ha. About 1.2 million ha of forests and shrub land are officially under a community management regime. Similarly, about a million hectare of forests and shrub land are estimated to lie within the protected area system (national parks, reserves etc). Another 21 000 ha fall under a leasehold forest system. The remaining forests are with the government-managed system.

The agricultural area comprises 21% of the country and is divided into irrigated and non-irrigated fields. Non-cultivated inclusions constitute about 7% of the land area and are interspersed in-between agricultural fields. Most of them feature trees and, in some cases, can be treated as agro-forestry areas. Grassland constitutes about 12% and the remaining land use (water bodies, rocks, snow and settlements) make up the remaining 20%.

The population of Nepal is about 27 million. About two-thirds of the population is engaged in farming but contribute only about one-third of the gross domestic product. Productivity of the farming sector is low and more than half of the farmers are functionally landless. This leads to higher pressure on forests for conversion into agriculture.

In Table 1, below, we compare the land uses of Nepal between 1991 and 2001, based on the three ecological regions of the country: the mountains in the north, hills in the centre and the Terai grasslands, savannas and forests in the south. These data sets are decomposed into three ecological

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<sup>5</sup> The cost of using a resource based on what it could have earned if used for an alternative. For example, the opportunity cost of farming your own land is the amount you could have received by renting it to someone else. Source: [http://www.agmrc.org/business\\_development/getting\\_prepared/valueadded\\_agriculture/glossaries\\_of\\_terms/farm\\_analysis\\_terms.cfm](http://www.agmrc.org/business_development/getting_prepared/valueadded_agriculture/glossaries_of_terms/farm_analysis_terms.cfm)

zones for each of the years in the table. The Master Plan for the Forestry Sector (1988) classifies Nepal into five physiographic regions. It is sometimes difficult to reconcile these two data sources and their classification systems.

**Table 1.** Land-use change over time (years), area in hectare and annual relative change fraction

Land -use Types (Ha)	Year 1991/1992				Year 2001/2002			
	Himalaya	Hills	Terai	Total	Himalaya	Hills	Terai	Total
Dense Forest	210,012	3,992,228	1,042,961	5,245,200	182,480	2,312,485	919,595	3,414,560
					-0.014	-0.053	-0.013	-0.042
Degraded forest	21,001	21,001	21,001	21,001	39,918	505,856	201,161	746,935
					0.066	0.375	0.254	0.429
Forest (Total)	233,346	4,435,809	1,158,845	5,828,000	228,100	2,890,606	1,149,494	4,268,200
					-0.002	-0.042	-0.001	-0.031
Plantation	2,333	2,333	2,333	2,333	5,703	72,265	28,737	106,705
					0.094	0.410	0.285	0.466
Shrub	137,800	511,608	39,000	688,408	167,800	1,254,178	138,132	1,560,110
					0.020	0.094	0.135	0.085
Grass/pasture land	132,644	1,589,278	35,423	1,757,345	137,644	1,592,093	36,423	1,766,160
					0.004	0.000	0.003	0.001
Cultivated land (Total)	207,761	1,721,450	1,038,806	2,968,017	210,635	1,798,158	1,081,987	3,090,780
					0.001	0.004	0.004	0.004
Irrigated land	78,534	650,708	392,669	1,121,910	79,620	679,704	408,991	1,168,315
					0.001	0.004	0.004	0.004
Non-irrigated land	129,227	1,070,742	646,137	1,846,107	131,015	1,118,454	672,996	1,922,465
					0.001	0.004	0.004	0.004
Non-cultivated land	494,998	436,300	55,600	986,898	517,309	448,491	64,590	1,030,390
					0.004	0.003	0.015	0.004
Other	796,618	1,667,919	24,894	2,489,432	946,212	2,024,775	31,474	3,002,460
					0.017	0.020	0.024	0.019
Grand Total	2,003,168	10,362,364	2,352,568	14,718,100	2,207,700	10,008,300	2,502,100	14,718,100
					0.010	-0.003	0.006	0.000

Source: CBS, 2008, *Environment Statistics of Nepal*

The CBS (2008) information based on the Department of Forest Research and Survey (2001) provides land-use data on forest and shrub lands (29 and 10.6% respectively of the total area of Nepal). The Department of Forest Research and Survey defines forests as 'All land with a forest cover, that is, with trees whose crowns cover more than 10% of the area, and not used primarily for purposes other than forestry. Temporary, clear-cut area that will be planted is also forest area'. The aggregate forest land-use database does not further elaborate the condition of forests in terms of crown cover, density and level of degradation.

However, the Master Plan for the Forestry Sector (MPFS) 1988 provides further details of the type and area of forests in different physiographic regions. Based on the review of the MPFS and CBS data

sources and our own experience, we further segregated the forests of 2001 as dense (more than 40% crown cover), degraded (crown cover between 10 to 40%) and plantations. These three types of forests constitute 80, 17.5 and 2.5% of the total forest area of Nepal. Further classification of forests into these three subtypes is important because each one of them will have different amounts of carbon in its biomass. Shrubs are defined as ‘Same as forest but well-defined stems cannot be found’ (DFRS 1999).

The Forest Act of 1993 defines forests as ‘An area covered partially or fully with trees’. Legally, the forests of Nepal are divided into private and national forests: if a forest stands on private land, it is known as private forest; but if the land belongs to the government and the management rights are assigned to different entities they are known as national forests. National forests are further divided into community, leasehold, religious, government-managed and protected forests based on who manages the forest standing on the government-owned land. Forest areas are also included in the Protected Area system, which is managed under a different legal regime.

### **Land-use and carbon-stock changes over time**

Table 1 shows annualised, relative change rate of land-use changes within the time period 1991–2001. Comparison of land-use patterns within this ten-year period reveals the magnitude of forest depletion: significant areas of forest have been reduced either to degraded areas or shrub land or converted to agriculture.

The last row of the table shows some inconsistency in the grand total area of the three ecological zones of Nepal. This is due to the fact that we had to rely on MPFS for 1991 land-use data. As mentioned previously, the MPFS data are based on five physiographic regions rather than on the three ecological zones of CBS. We estimated that this discrepancy did not make any significant difference in the calculation of carbon stock between these two periods.

### **Carbon contents in forests and soil**

To draw a true picture of the total carbon stock of Nepal, we had to obtain data for the five pools of carbon per unit area of land use. This was the most difficult part of our information-gathering work. We could find only one empirically measured carbon dataset from the three sites (from limited sample areas of three districts: one located in the Mountain and two in the Hill districts). Baskota et al. (2007) provided information on the carbon pools at these three sites. Similarly, the same authors provided empirical data on the carbon contents of two other locations (Dhaili and Toli Van Panchayats) in Uttaranchal of northern India, covering six forest types. The carbon contents of these six forest sites appeared to be significantly different and were higher in amount than the three Nepal sites. The MPFS provided data on the forest biomass stock (stem, branches and leaves) of different forest types located in five different physiographic regions. However, a carbon pool of leaf litter, root and soil is not provided in the MPFS reports. Nelson et al. (2009) provided detailed information on carbon contents in different land-use types in India.

By reviewing these three sources of information and using our own best estimates (which may fluctuate widely because different forests have diverse vegetation and soil types), we used the following carbon data as shown in Table 2 for our calculations.



**Table 2.** Typical carbon stock density (t C/ha) of major land uses, based on expert opinion

Land-use type	Aboveground	Belowground	Total
Dense forest	80	90	170
Degraded forest	65	90	155
Plantation	50	90	140
Shrub land	30	90	120
Non-cultivated inclusion	40	90	130
Pasture/grassland	13	80	93
Irrigated crop land	2	80	82
Non-irrigated crop land	2	80	82
Settlements	0	70	70

Table 2 provides the minimum database for the carbon content of different land uses of Nepal. By using this table for the various land uses in the three ecological zones of Nepal, along with the changes of land use over time period, we calculated the total carbon content of Nepal in 1991 and 2001. Table 3 provides the changes of carbon stock in different land uses over a period of 10 years.

**Table 3.** Carbon-stock differences between 1991 and 2001 (tonne carbon), based on tables 1 and 2

Land-use types	Carbon content 1991 (t C)	Carbon content 2001 (t C)	Difference
Cultivated land	243 377 394	253 443 960	10 066 566
Irrigated land	91 996 655	95 801 817	3 805 162
Non-irrigated land	151 380 739	157 642 143	6 261 404
Non-cultivated land	128 296 740	133 950 700	5 653 960
Forest	902 429 597	711 188 825	-191 240 772
Dense forest	891 684 000	580 475 200	-311 208 800
Degraded forest	9 765 543	115 774 925	106 009 382
Plantation	980 054	14 938 700	13 958 646
Shrub land	82 608 960	187 213 200	104 604 240
Grass/pasture	181 006 535	181 914 480	907 945
Other	174 260 240	210 172 200	35 911 960
<b>Grand total</b>	<b>1 711 979 466</b>	<b>1 677 883 365</b>	<b>-34 096 101</b>

The reduction in carbon stock over this ten-year period is about 34 million tonne of carbon or about 125 million tonne of CO<sub>2</sub> equivalent. This reduction is mainly due to the loss of biomass from the forests. We have not included the flow-on effect due to the growth of the biomass and the loss of soil carbon owing to soil erosion from the land surface.

## Opportunity costs of carbon and the trade-off between carbon and return from various types of land uses

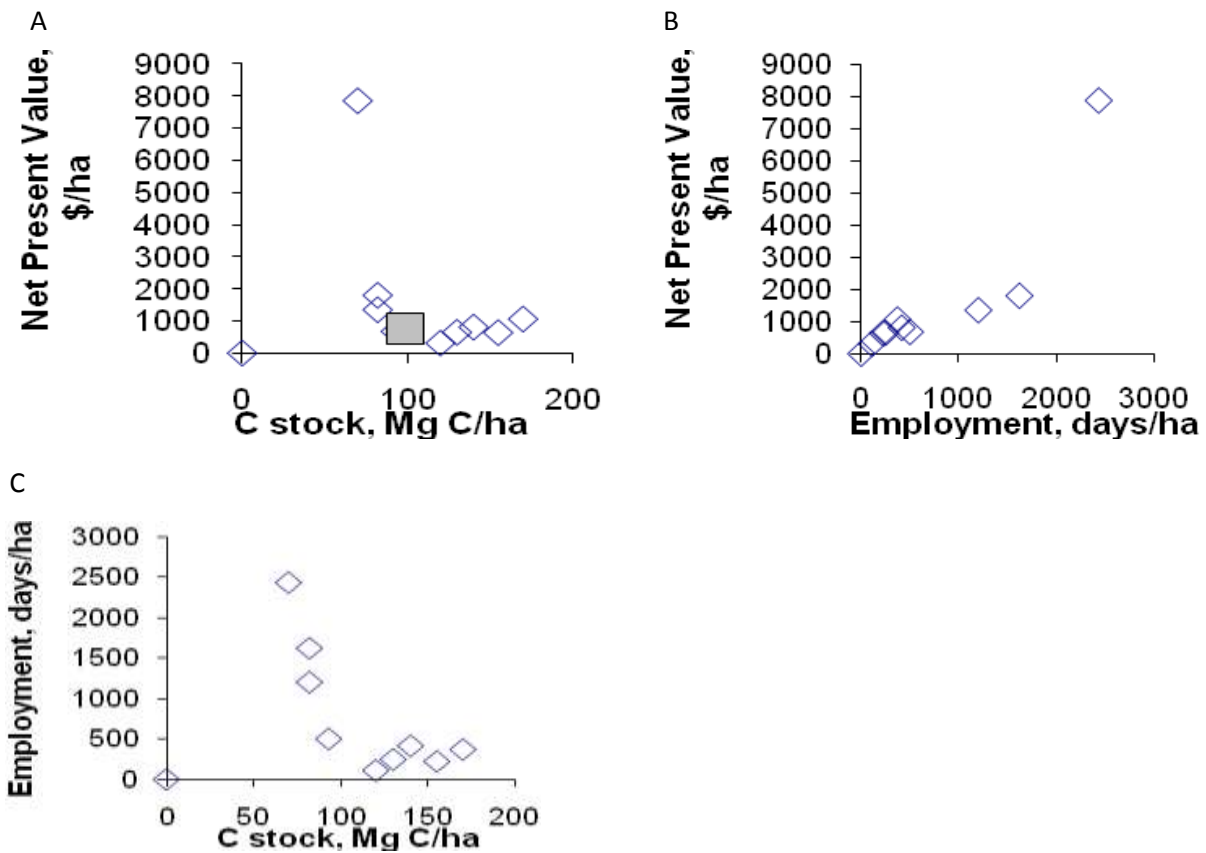
An individual land owner would tend to adopt land use that provides the highest return per unit area. From a national economic perspective, it is likely that high employment as well as higher returns per unit of land were important. Focusing only on profit without considering employment may be likely to not only cause political instability but could also exacerbate problems such as leakage and permanency in greenhouse gas (GHG) emission reduction strategies. Because of global warming, nations also have the responsibility to reduce or sequester as much GHG emission as possible. It is difficult to find a land use that optimises all three parameters (return or net present value, employment and sequestering carbon in soil and biomass).

Table 4 shows the various types of land uses in Nepal and their corresponding figures for carbon content, net present value (NPV) and employment opportunities per hectare.

**Table 4.** Land use, profitability and employment per hectare

Land-Use Type	Total Stock	Profitability	Rural Employment
	Carbon (t/ha)	NPV USD/ha	Person days/ha
Dense forest	170	1063	370
Degraded forest	155	638	222
Plantation	140	808	414
Shrub land	120	311	111
Non-cultivated inclusion	130	646	248
Grassland/pasture	93	676	500
Rice field	82	1802	1620
Other crops	82	1352	1200
Settlements	70	7875	2430
Others	0	0	0

The parameters on profitability (as represented by NPV) and employment (in terms of person days employed) are very crude, mainly based on discussions with forestry officials and publications on market margins from different cropping patterns from the Department of Agriculture. The relationship between carbon stock and profitability, employment and profitability, and carbon stock and employment is shown in Figure 3. There appears to be an inverse relationship between carbon stock and profitability, as in other countries. Since Nepal faces acute employment problems, profitability should also be accompanied by employment generation. Otherwise, it would be socially and politically difficult to maximise profits in land-use decisions.



**Figure 3.** Relationships between typical carbon-stock density, net present value and employment in land-use systems, as used for the calculation of opportunity costs of emission reduction

Figure 3 shows that although different types of forests contain more carbon than farming or settlement, the profitability of these land uses is lower. This suggests that if land is to be allocated for forestry, some financial compensation has to be provided to land owners, forest managers or the government to maintain or expand the forest area in Nepal. This is also the rationale for providing financial and technical assistance to developing countries for ‘avoided deforestation’ (or REDD), ‘avoiding deforestation’ (REDD+) or maximising carbon retention on site (REDD++ or REALU).

### Estimated carbon-stock change and emission from different land uses

Table 6 at the end of this chapter gives the projected level of GHG emissions for different land uses in Nepal. The change in carbon stock between 1991 and 2001 appears to be 125 million tonne of CO<sub>2</sub> equivalent. The carbon emissions from the projected land-use changes owing to the continuing conversion of forest land to degraded forests or deforestation is shown in Table 5 below.

**Table 5.** Carbon emissions from projected land-use changes

Score card for national performance	
Total land-use-based emissions (Gt CO <sub>2</sub> e/yr)	0.03
Total carbon stock in land use (Gt C)	1.45
Total net present value of land use (million USD)	114
Total rural employment (fraction of population)	0.02
Emissions as percentage of carbon stock	0.6

## Drivers of deforestation and degradation

Deforestation and forest degradation are major problems in most developing countries. Some people suggest that deforestation and degradation in developing countries reflects a 'Kuznet's curve', which originally projected that as the economy progresses, income distribution will deteriorate and, once it reaches a plateau, only then will there be more equity among citizens. The metaphor applied to forestry is that as a nation progresses, deforestation will continue until the rate of deforestation reaches a climax, after which the rate starts to decline with the rise in per capita income. Though this logic may appear to be in congruence with the history of forestry and economic development in developed countries, it is not necessarily the case that developing countries should follow this trajectory.

Research on sources or proximate and underlying causes of deforestation is expanding as interest in land-use changes and their effects on climate are investigated through various models. Even so, direct forest policies have less affect than other policies outside the forestry sector. Policies relating to transport, land tenure, finance, food and energy have a greater affect on forest conditions than forest policies such as timber pricing. Migration and remittance policies can also strongly influence land-use patterns in a country. Schlager and Ostrom (1992) identified institutions or governance as the major factors that influence the condition of a forest in a given locality.

Can a growing population increase deforestation and forest degradation? This seems to be the case in the Terai. However, the relationship between population and deforestation is not as straight forward as postulated in some literature because institutions mediate between population growth and forest conditions. Even in Nepal, although forests are receding in the Terai, the condition of forests has significantly improved in the Hills, although the population of the Hills is also increasing (though not as fast as in the Terai).

Some suggest that political uncertainties and conflict lead to more deforestation and forest degradation. This seems plausible because forest management and conservation is a long-term investment and it is unlikely that in periods of social instability people would spend time and effort in protecting forests because they could not be certain that benefits would flow to them. Low levels of trust among citizens owing to conflict or bad governance leads to lower investment in forest conservation. The accelerated deforestation and degradation in the Terai and Siwaliks is probably partly due to the near collapse of law and order in this part of Nepal.

Nepal's forests show initial degradation. As the process of degradation continues and the number of trees on forest land successively declines it becomes easier for encroachers to convert forest land to agriculture. About 80 000 hectare of forest land in the Terai are now officially encroached upon by the people through this process of gradual and successive forest degradation.



**Figure 4.** Deforestation and forest degradation in Nepal (Photos: Resham Dangi)

In this process of degradation and eventual conversion of forest land into agriculture, different people will be involved in different stages. Initially, degradation would be initiated by illegal loggers followed by woodcutters and graziers (mostly cattle and goats). The trees would be gradually removed from the site and so-called landless households would begin cultivating the area. They may ‘ringbark’ residual large trees, by removing a collar of sapwood, so that nutrients could not be transported from the roots to the rest of the tree, leading to the tree’s gradual death.

Land-tenure policies also directly impact the condition and size of forests. In Nepal, although more than two-thirds of people depend on farming and forestry, their contribution to GDP is less than one-third. A significant proportion of productive land is still owned by only a few, who neither cultivate the land themselves nor allow others to cultivate it. They fear that if their land is tenanted the tenants might not pay rent or may be difficult to remove if the land is sold. This uncertainty around tenancy is a disincentive for farmers to optimise the productive potential of the land and reduces employment opportunities. The unemployed then seek residual forest areas and either clear the forests directly or put pressure on political parties or the government either to carry out land reform or provide them with land from the public domain, most of which lies under forestry.

Transportation, for example road construction, increases accessibility and hence the market value of neighbouring land. Although forests contain significant amounts of carbon and provide intangible public goods such as healthy watersheds and high water quality, recreation and biodiversity, financial returns to private entities are lower than returns from alternative land-uses such as farming. So, as soon as a road is constructed through forested areas the opportunity cost of this forest land increases. This provides incentives for people to encroach upon the forest and for government to change the forest land-use zoning. Most of the Terai forests encroachments are along the east–west highway.

Food and energy pricing policies also affect land use. As the price of food products increases, the value of land for agricultural production increases compared to the value of products from forest

land uses. As such, 'farming or forest' has become a contested issue in Nepal. Moreover, since food is a strategic commodity essential for humanity, it takes priority over forest products or services. Similarly, as the price of energy increases, bio-fuels become an economically attractive substitute for fossil fuels. Increasing conversion of corn, soybean, palm oil and sugarcane to the production of bio-fuels leads to an increase in the price of food products and pressure on forests for conversion to agriculture. This has not yet happened in Nepal, but a growing enthusiasm to intensively and extensively cultivate *Jatropha* could likely drive further forest land conversion. Recent spurs in food prices will maintain conversion pressure on forests.

Migration and generation of remittances has an indirect impact on forestry as well. Presently, about 20% of Nepal's GDP is generated by remittances. Many young people migrate to Saudi Arabia and Malaysia to find work and send home about USD 2.5 million annually. This income has reduced pressure on farming and also on forest land-use (for both forest products and land). Family members are also migrating to urban areas or to the Terai once they receive sufficient remittance. However, increased migration to other countries also reduces the number of young people who pursue farming. Reduced land husbandry has led to soil erosion or declines in the productivity of farming areas and indirectly affects forests as well. However, we consider that the positive effects of remittances may outweigh the negative impacts of migration.

Historical comparison of land-use patterns in Nepal shows that most of the hill forests were deforested during the time of unification, about 200 years ago. Because of the terrain, most of the potential farming land has already been converted to agriculture. Therefore, land degradation is a more serious problem than deforestation in the Hills and Mountain areas. The data from MPFS and the study by Karky and Banskota (2008) on biomass carbon at three sites in Nepal show lower biomass stock per unit area in the Hills and Mountain than in the Terai.

The forests of the Terai were originally protected because of infestation with malaria and lack of transport access. Once malaria was eradicated and road access was increased, the Terai became the frontier, an area with forests to be converted to farming. The process of forest land conversion is still higher in the Terai because of its well-established 'pull factor' for Hills and Mountain people.

Even though the forests of the Hills have been degraded for a long time, implementation of community forestry since the enactment of the new Forest Act (1993) and Regulations (1995) has provided an impetus for communities to increase the stock of the forests as well as the sustainable flow of forest products.

**Table 6.** Projected land-use changes in Nepal

	Land-use change (%/year)	-3.6	-14.2	-17.7	-11.7	-14.9	-10.0	-10.6	-9.8	-19.3	-1.9	-20.0
	5	Dense forest	Degraded forest	Plantation	Shrub land	Non-cultivated inclusion	Grassland	Rice field	Other crops	Settlements	Others	0
	Initial fractions\final	0.19068	0.06765	0.026255	0.09638	0.0594879	0.11564	0.108781	0.1179608	0.007685	0.20948	0
Dense forest	0.232	0.18328	0.0232	0	0.0116	0.0009744	0	0.004037	0.0089088	0	0	0
Degraded forest	0.051		0.03315	0.000255	0.0102	0.000357	0.00204	0.001479	0.003264	0.000255	0	0
Plantation	0.007	0.0021	0.0007	0.0028	0.0007	0.0000245	0.00028	0.000102	0.000224	0.00007	0	0
Shrub land	0.106	0.0053	0.0106	0	0.06678	0.000742	0.0106	0.003074	0.006784	0.00106	0.00106	0
Non-cultivated inclusion	0.07	0	0	0.007	0.0035	0.0504	0.0035	0.00105	0.00245	0.0007	0.0014	0
Grassland	0.12	0	0	0.012	0.0036	0.00042	0.0966	0.00174	0.00384	0.0012	0.0006	0
Rice field	0.079	0	0	0.00158	0	0.00395	0	0.0711	0.00079	0.00079	0.00079	0
Other crops	0.131	0	0	0.00262	0	0.00262	0.00262	0.0262	0.0917	0.00262	0.00262	0
Settlements	0.001	0	0	0	0	0	0	0	0	0.00099	0.00001	0
Others	0.203	0	0	0	0	0	0	0	0	0	0.203	0

**Table 7.** Projected GHG emissions (Mt CO<sub>2</sub>e/yr) for different land uses in Nepal

Land use	Dense Forest	Degraded Forest	Plantation	Shrub land	Non-cultivated inclusion	Grassland	Rice field	Other crops	Settlements	Others
Dense forest	0.0	3.8	0.0	6.3	0.4	0.0	3.8	8.5	0.0	0.0
Degraded forest	0.0	0.0	0.0	3.9	0.1	1.4	1.2	2.6	0.2	0.0
Plantation	-0.7	-0.1	0.0	0.2	0.0	0.1	0.1	0.1	0.1	0.0
Shrub land	0.0	-4.0	0.0	0.0	-0.1	3.1	1.3	2.8	0.6	1.4
Non-cultivated inclusion	0.0	0.0	-0.8	0.4	0.0	1.4	0.5	1.3	0.5	2.0
Grassland	0.0	0.0	-6.1	-1.0	-0.2	0.0	0.2	0.5	0.3	0.6
Rice field	0.0	0.0	-1.0	0.0	-2.0	0.0	0.0	0.0	0.1	0.7
Other crops	0.0	0.0	-1.6	0.0	-1.4	-0.3	0.0	0.0	0.3	2.3
Settlements	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Others	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



## Chapter 3

### An assessment of REDD options in NEPAL

#### Changes in land use and carbon content

The major land-use types in Nepal include forest, agriculture and pasture. Nepal lacks an updated and comprehensive assessment of land use and land-use change. The notable surveys and measurements are:

- a) survey by the Forest Resource Survey Office (1963/4);
- b) Land Resource Mapping Project 1986 (LRMP);
- c) National Forestry Inventory 1994; and
- d) Forest Cover Change Analysis of the Terai Districts (2005).

Most of them use canopy-stocking level as the major proxy indicator of timber productivity. Other proxy indicators used were canopy closure, number of mature trees, number of preferred tree density, cut stump, growing stock, regeneration capacity, species composition and grazing intensity and soil erosion (Acharya et al. 2009). Ariel photography, field surveys, satellite imagery analysis and ecosystem service valuations were the major methodologies used. However, these assessments were not comprehensive and used different methodologies, making it difficult to gain a comparative understanding of land-use change.

Conversion of forest lands to either agriculture or shrub lands is the major forms of land-use change in Nepal. Forest and shrub lands together cover nearly 40% of Nepal, agriculture 21% and pasture 12%, non-cultivated inclusions 7% and the remaining 20% is water, rocks, snow and settlements. The forests and shrub lands alone contain just below 900 million tonnes of carbon in 2005 (Oli and Shrestha 2009, Kanel herein). Kanel (herein) calculated the carbon loss between 1991 and 2001 and observed that 34 million tonne of carbon had been lost during this period (from all land-use types).

The dynamics of land-use change vary across the three ecological zones. In the high altitude area, tenure confusion, absence of appropriate institutions, high livestock density and lack of alternative livelihoods are the key drivers of change. A large part of the high altitudes fall under the protected area system, where conservation initiatives often undermine local livelihoods and incur other social costs. From carbon financing point of view, the protected areas may not attract extra funding owing to a lack of additionality, though they have conserved carbon. Also since the protected areas are generally managed by the state, the benefits from carbon financing may go directly to the government.

In the mid-Hills, community forestry was introduced in the 1980s and has become the key factor affecting land-use change. Expansion of community forestry has turned the degraded hills into green landscapes. Despite steep population growth and widespread poverty, communities have been able to protect forests and enhance multiple ecosystem services while meeting everyday forest products needs.

The situation is dramatically different in Terai, which has experienced a large amount of deforestation and degradation. Terai has been the frontier for resettlement and agricultural expansion, primarily for Hills migrants, for over half a century. The area has been a site of competing interests: biodiversity conservation, government revenue, timber and urbanisation. Therefore, there

are complex interactions between the various drivers of deforestation and where the potential for emission reduction.

## Pros and cons with different options of REDD

The narrowest version of carbon financing is based on reducing emission from deforestation (RED). Nepal uses the Food and Agriculture Organization's (FAO) definition of deforestation, according to which, the loss of forest canopy to less than 10% or reduction in height lower than 5 metre is regarded as deforestation. Based on this definition, Nepal reported a deforestation rate of 1.7 to the FAO, although the data presented in the previous chapter lead to different numbers. However, major forms of forest-cover loss are within the definition of 'forests' (>10% canopy and >5m height) and are primarily caused due to forest encroachment, illegal logging, forest fire and over grazing. By definition, this is degradation not deforestation. It implies that RED may have little benefit to Nepal.

### Box 1. The evolution of the REDD agenda in international discussions

Since the UNFCCC Conference of Parties in Montreal in 2005, the scope of REDD has evolved to include several options.

**RED:** Reducing emissions from (gross) deforestation. Only changes from 'forest' to 'non-forest' land-cover types are included and details depend on the operational definition of 'forest'.

**REDD:** RED and (forest) degradation, or the shifts to lower carbon stock densities within the forest. Details depend on the operational definition of 'forest'.

**REDD+:** REDD and restocking within, and towards, 'forest' (as specified in the Bali Action Plan). In some versions REDD+ will also include peat lands, regardless of their forest status. Details still depend on the operational definition of 'forest'.

**REDD++ = REALU:** Includes REDD+ and all transitions in land cover that affect carbon storage, whether peat lands or mineral soil, trees-outside-forest, agroforests, plantations or natural forest. Does not depend on the operational definition of 'forest'.

Source: ASB (2010)

As endorsed by the Bali Action Plan, REDD also includes forest degradation and address many of the critiques of earlier Clean Development Mechanism (CDM) projects under the Kyoto Protocol that excluded forest rehabilitation and improvement. It clearly includes all types of deforestation and forest degradation. However, the REDD scheme offers only little benefit to Nepal. In Nepal, over two-thirds of the forests lie with the state and only one-third is with the community. There is little scope that the government-managed forest will come into REDD. The community-based forest management schemes cover only 23% of forests. Moreover, as these forests are already being protected without any REDD scheme it is hard to demonstrate the additionality. Other aspects like leakage, permanence and substitution are important here.

The core idea behind REDD was rewarding the 'avoided bad' rather than the 'committed good'. However, the limitation of this approach was the creation of perverse incentives because it would reward those who were doing worse. Since rural communities in Nepal have been effectively conserving forest they should be rewarded for 'enhanced positive change' (REDD+). If the system only pays for reducing potential degradation it creates a perverse incentive so that those who have degraded more would be rewarded. Moreover, while the scheme pays for halting deforestation or

degradation, it would not provide incentives to improve forest condition. Consequently, it would have little relevance to Nepal. The Nepalese people would benefit only if their efforts to improve forest conditions are rewarded. Therefore, in order to benefit from international carbon financing, Nepal should choose REDD+.

Nepal should strive for mechanisms that will provide incentives beyond forest management to include sustainable land use. The country has only 39% of forest land of which only 29% is actually forest. Therefore, the huge areas of land that fall outside the 'forest' must also be counted. Carbon financing focusing only on REDD means excluding the major human activities on land: crop farming and horticulture. Exclusion of these activities from rewards schemes would mean the majority of land would continue to degrade. Apart from increased carbon emissions there would also be implications for soil fertility and, ultimately, food availability. Moreover, one of the questions asked of carbon financing is whether payments would benefit the actual land managers. Focusing only on 'forest' implies payments to the government. Alternatively, focusing on sustainable land-use directs payments to farmers.

When we aim for reducing carbon emissions we must take into account all potential land-based sources of emission. Accordingly, an incentive structure should also include reduced emission from sustainable land-use. In this case, Nepal would benefit from reducing emission from all land use (REALU), a concept that is included in REDD++. Therefore, Nepal should be striving for REDD++, which provides a more realistic and accurate accounting for carbon and sustainable development.

Given limited data availability on key land-use changes and associated changes in carbon stock (and flow), timely and systematic studies are needed that become the foundation of negotiations and planning. The methodology gradually becomes more complex as we expand the scope from deforestation (RED) to REDD++ or REALU but there should be greater benefits from carbon financing. To achieve this, we will need to build the capacity of everyone involved through experimentation, analyses, piloting and close interaction between researchers and policy makers.

**Table 8.** Policy assessment matrix for REDD options

REDD Options	RED	REDD	REDD+	REDD++/ REALU
Types of activities included	<p>Rate of deforestation</p> <ul style="list-style-type: none"> <li>• Forest fire measures (range post, district, village development committees)</li> <li>• Encroachment for agriculture, settlements, developments needs to be addressed (Dept. of Forest and district-level data)</li> <li>• Resettlement plan/rehabilitation (Home Ministry)</li> <li>• ICS (alternative energy- Alternative Energy Promotion Centre or AEPC)</li> <li>• Plantation (DFRS)</li> </ul> <p>Data sources</p> <ul style="list-style-type: none"> <li>• LRMP (1987)</li> <li>• FRI (1991): Hills 2.3%; Terai 1.7%</li> <li>• Dept. Forest (1999): Terai 0.6%</li> <li>• FAO (2005) Nepal: 1.7%</li> <li>• JAFTA (2004)</li> </ul>	<p>RED</p> <ul style="list-style-type: none"> <li>• Developing agroforestry activities</li> <li>• Income-generation activities to reduce dependency on forest</li> <li>• Improved livestock (Dept. of Livestock).</li> <li>• ICS (alternative energy-AEPC)</li> </ul> <p>Case studies</p> <ul style="list-style-type: none"> <li>• Mountain Research &amp; Development</li> <li>• Jhiku Khola, Pokhara valley, Churia, IUCN, CARE</li> </ul> <p>Data sources</p> <ul style="list-style-type: none"> <li>• LRMP (1987)</li> <li>• Dept. of Survey and Research, Master Plan 1988</li> <li>• FRI 1991</li> <li>• FAO, 2005, 2007</li> </ul>	<p>Afforestation</p> <ul style="list-style-type: none"> <li>• Improved Forest Management (IFM)</li> <li>• Enrichment plantation</li> <li>• Conservation practices</li> </ul> <p>Data sources (for afforestation)</p> <ul style="list-style-type: none"> <li>• Hamro Ban, Kalpabriksha</li> <li>• Nepal Afforestation Project</li> <li>• LFP, NARMSP, SDC, CF projects of WB, NUKCFP</li> <li>• CBS report</li> <li>• Master plan 1988</li> </ul> <p>Data sources (for IFM)</p> <ul style="list-style-type: none"> <li>• UNDP/PPP – PCP</li> <li>• Dept. of Forest</li> <li>• Dept. of Wildlife Conservation</li> <li>• Sindhupalchowk data (Australia)</li> <li>• ICIMOD – Ambika Gautam</li> <li>• Harini – IFRI (ForestAction)</li> <li>• LFP – Baseline survey comparison</li> <li>• Dhanusha private forest project</li> </ul>	<ul style="list-style-type: none"> <li>• Enrichment plantation</li> <li>• Improved Forest Management</li> <li>• Conservation practices</li> <li>• Agriculture (SAP)</li> <li>• Rangeland (pasture) management</li> <li>• Wetland management (DNPWC)</li> </ul> <p>Data sources</p> <ul style="list-style-type: none"> <li>• Dist. forest office, range post</li> <li>• Dept. of Forest</li> <li>• Dept. of National Park and Wildlife Conservation</li> <li>• Dept. of Livestock</li> <li>• Environmental Statistics (green book) – can be purchased from CBS</li> <li>• Ministry of Environment – stock and thematic (emission)</li> <li>• Climate change 2007</li> <li>• Climate change policy related draft (MoE) – with Mandalji</li> </ul>

REDD Options	RED	REDD	REDD+	REDD++/ REALU
			Data sources ( for enrichment plantation) <ul style="list-style-type: none"> <li>• Dist. forest office</li> <li>Range post</li> </ul> Data sources (conservation practices) <ul style="list-style-type: none"> <li>• Department of National Parks and Wildlife Conservation</li> </ul>	
Payments for environmental services (PES)	Link with PES (carbon, watershed)	Link with PES and biodiversity	Link with PES and other environmental services and certification	Other environmental services and certification
Land included	All forest-land, uses FAO definition  <i>Forest types</i>  National forests  Government-managed forests  Community forests (1.1 million ha or 25% of total forest in Nepal)  Collaborative Forest Mgmt  Leasehold forest  Religious forest  Protected forest  Protected areas: national parks, wildlife reserves, conservation areas, buffer zones, HR	Degradation more severe in Terai and high mountains  Govt-managed forest under more pressure (degradation)  Terai: more serious degradation  Mid-Hills: logging (sporadic cases)  Private farm land with 10–40% crown cover  Settlements  Forest to shrub land (degradation: 4.05% per	Forest land, converted land, degraded land  Afforested/reforested land  Data sources <ul style="list-style-type: none"> <li>• CBS 2001, BISEP-ST, HamroBan</li> </ul>	All forest and rangeland (pasture), wetland and agricultural land, settlement  Data sources <ul style="list-style-type: none"> <li>• CBS, MoAC, Leasehold Forestry Project, Leasehold Forestry, HamroBan</li> </ul>

REDD Options	RED	REDD	REDD+	REDD++/ REALU
	Private forest  Data sources <ul style="list-style-type: none"> <li>Hamro ban, Kalpabriksha, BISEP-ST, CFD, LFS, Forest Action, Department of National Parks and Wildlife Conservation</li> </ul>	year)		
Relevant carbon pool/GHG	Aboveground biomass/belowground biomass/soil organic carbon  Estimate for community forests in the hills: 504.3 tCO <sub>2</sub> /ha (137.4 t C/ha); increment of 7.04 t CO <sub>2</sub> /ha/yr (1.92 t C/ha/yr)  Carbon allometric equation  Data sources:  Temporal spatial data  Phd – Bhaskar,  HamroBan, NARC, DFRC, TISC	Aboveground biomass/belowground biomass/soil organic carbon Fuel wood  Data sources:  Temporal information	Aboveground biomass/belowground biomass/soil organic carbon Fuel wood  Age of vegetation  Data sources:  Temporal information	Aboveground C, N <sub>2</sub> O, CH <sub>4</sub> : mainly from agricultural land, wetland, rangeland – if fire  Crop residue  Erosion, landslides, flood  (All under AFOLU)  Data sources:  Data on GHG emission not available
Institutions/policies/governance	Institutions: - NPC  -Land reform	Institutions: Same as RED and Dept. of Livestock  Policies:	Institutions: Same as REDD and Dept. of Forest and institutions under it and donors and INGOs	Institutions: Same as REDD+ and politicians and civil societies  Policies:

REDD Options	RED	REDD	REDD+	REDD++/ REALU
	<ul style="list-style-type: none"> <li>-Environmental Council</li> <li>-Parliamentary committees</li> <li>-REDD Cell</li> <li>-MoE</li> <li>-MoF</li> <li>-MoFSC (District and national data)</li> <li>-DFRS</li> <li>-Forest-based CBOs and federations including FECOFUN</li> <li>-Local governments</li> </ul> <p>Policies:</p> <ul style="list-style-type: none"> <li>- Forest policies and other relevant local development policies</li> <li>-Equitable benefit sharing at all levels (REDD Cell, civil societies watchdogs)</li> <li>-Research and development and data management</li> <li>-Community Forest Management</li> <li>- There is no provision for de-gazetted forest land</li> </ul>	<p>All in RED and Alternative Energy Policies (AEPC)</p>	<p>Policies: All in REDD and local governments and local self-government and conservation act</p>	<p>All in REDD<sup>+</sup> and agricultural policies and conservation acts</p>

REDD Options	RED	REDD	REDD+	REDD++/ REALU
Role of smallholders/ indigenous peoples, their rights, access	<ul style="list-style-type: none"> <li>Limited to communities living in or near the forest; those currently using the forest</li> <li>Immigrants (including across borders)</li> <li>Deforestation by local people (influence of large economics politics)</li> <li>Community forest users</li> <li>Dilemma in benefit sharing: large number of ethnic groups, political situation</li> <li>Distribution among marginalised groups</li> <li>Non-member exclusions</li> <li>Recognised as custodians or guardians of the forest</li> <li>Governance complexity</li> <li>Inequality in more valuable forests</li> <li>High risk of conflict</li> <li>Poverty reduction activities/measures</li> <li>Access and rights to be spelled out</li> <li>Clear definition of deforestation</li> <li>Local communities' tenure rights</li> </ul>	<ul style="list-style-type: none"> <li>Poverty reduction activities/measures</li> <li>Access and rights to be spelled out</li> <li>Clear definition of deforestation</li> <li>Local communities' tenure rights</li> <li>Clear definition of degradation</li> </ul>	<p>Same as REDD, plus:</p> <p>A. Expand to include any community willing to partake in reforestation or tree farming, as per regulations and agreements</p> <p>B. Responsible (with assistance from implementers) to undertake tree planting and management</p> <p>C. Responsible (with assistance from implementers) to maintain and monitor tree cover, as per agreement</p> <p>D. Awareness, rights</p> <p>E. Types of trees (fodder/fuel/timber)</p> <p>F. Different roles of the communities</p>	<p>Agriculture land – relatively easy – private property</p> <p>Rangeland, wetland – not clear</p> <p>Enlarging the stakeholders</p>
Leakage	<ul style="list-style-type: none"> <li>Some communities rely on forests for firewood, timber and firing:</li> <li>Less likely in hills – mostly community forests – good protection</li> <li>Terai – very likely, particularly inside state forests close to urban areas</li> <li>Leakage in Nepal due to protection in India</li> <li>Forest conversion to agriculture (intensification) for food security</li> </ul>	<p>Identify and monitor leakage and address leakage</p> <p>Data sources: National data at MoE REDD Cell</p>	<p>Identify and monitor leakage and address leakage</p> <p>Data sources: National data at MoE REDD Cell</p>	<p>GHG Inventory</p>



REDD Options	RED	REDD	REDD+	REDD++/ REALU
	<ul style="list-style-type: none"> <li>Identify and monitor leakage and address leakage</li> </ul> Data sources: National Level data at MoE REDD Cell			
Additionality	Marginal benefits of RED project in the hills Terai – much potential Avoiding deforestation	Avoiding degradation	Forest enhancement	Total avoidance plus enhancement
Role of donors	Donors to work with government Be open and transparent (no monopoly) and ODA funding Funding measures for support and storing (mitigation and biodiversity)	Donors to work with government Be open and transparent (no monopoly) and ODA funding Funding measures for support and storing (mitigation and watershed)	Be open and transparent (no monopoly) and ODA funding Funding measures for support and storing (mitigation and watershed and adaptation)	Be open and transparent (no monopoly) and ODA funding Funding measures for support and storing (mitigation and watershed and adaptation)

**Table 9.** Benefits and costs expected to be associated with REDD options

REDD options	RED	REDD	REDD+	REDD++/ REALU
Benefits: environmental services (incl. trade-offs)	Reduced carbon emissions Biodiversity conservation Soil, water conservation	Same as RED, expanded to include a larger area	Improved and expanded environment for biodiversity and conservation	Soil and water conservation, water quality, air quality
Benefits: social	Recognised tenure and forest-use rights Inclusive governance Equitable benefit sharing  Livelihood improvements	Same as RED, expanded to a greater number of communities	Same as REDD, plus: <ul style="list-style-type: none"> <li>• Gain land and tree tenure to areas planted with trees, as per agreement</li> <li>• Increase production of tree products for household use and market sale (private and public benefit)</li> <li>• Increase sustainable production of small-diameter timbers (public benefit)</li> <li>• Access to tree planting inputs and technical support, as per agreement</li> <li>• Access to marketing assistance, as per agreement</li> <li>• Improve livelihoods and income by expanding tree farming systems</li> <li>• Larger carbon payment</li> </ul>	
Benefits: Non-monetary	Moving to non-wood fuel – health (from biogas)  Aesthetic value	Moving to non-wood fuel – health (from biogas)	Moving to non-wood fuel – health (from biogas)	Healthy food Moving to non-wood fuel – health (from biogas)

REDD options	RED	REDD	REDD+	REDD++/ REALU
Social costs	<p>Tenure insecurity threat</p> <p>Further marginalisation</p> <p>Conflict over benefit sharing</p> <p>Eviction – both state and community groups</p>	<p>Tenure insecurity threat</p> <p>Further marginalisation</p> <p>Conflict over benefit sharing</p>	<p>Same as REDD, plus:</p> <p>Loss of land-use rights and options for some components of the community</p>	<p>Farming practice may be affected due to restrictions (e.g. fertiliser use)</p> <p>May affect food production in immediate terms</p>
Other info and gaps	<ul style="list-style-type: none"> <li>• Missing land-use change data and national policies</li> <li>• Land tenure issues</li> <li>• Access to resource (distant users) an issue</li> <li>• Much data (forest, degradation, biomass, carbon) not available</li> <li>• Weak governance</li> <li>• Unstable politics, transmigration, value system of various communities</li> <li>• (Mustang diff. from other regions)</li> </ul>			

## Chapter 4

### Social implications of resource tenure (property rights) for different REDD options

It is still unclear who will benefit from carbon trading under different REDD options (REDD, REDD + and REDD ++). Payment for reducing carbon emissions or for sequestration or enhancement of carbon stocks would presumably be made to the holders of carbon tenure or property rights over the carbon stock sequestered in forest, pasture and land (trees, shrubs, crops; above- and belowground biomass). This raises several sets of questions. First, what are the relationships between property rights and carbon tenure: between whose rights and the trees, pasture and land in which the carbon is sequestered in different legal regimes and how do these relationships differ between the regimes (state, local, international law etc.)? In Nepal, there is a plurality of laws (state, local and customary) pertaining to various kinds of rights over land, pasture and forest—rights which differ according to property regimes, rights holders, and the legal bases—but there are no laws, neither state nor customary, concerning carbon tenure.

Accordingly, our first task was to map property rights and regimes concerning land, pasture and forest in Nepal, not only in national law but also, wherever possible, in other laws. Land, pasture and forest tenure, like property rights in general, are complex and dynamic, based on different laws and are influenced by wider social, economic and political processes (see, for example, Meinzen-Dick and Pradhan 2002, von Benda-Beckmann and von Benda-Beckmann 1999, 2000). The actual bundles of rights and rights holders over a specific plot of land or forest for a particular time period often depends on a web of power and other relations between the different claimants to the land or forest.

The second set of questions pertains to equity. How are property rights of land and forest tenures shared in different property regimes? Who controls and who is excluded from decision-making institutions and processes? Who benefits the most and who benefits comparatively less or not at all under different resource tenures? What is considered fair, just and equitable by different categories of rights holders and claimants for different resources and property regimes and according to which law? Equity issues are closely related not only to distribution of benefits and responsibilities but also with access to, and use of, rights. It is not sufficient to have rights granted by law, however unequal and inequitable. The right holder must be able to use the right held, for example, to actually make or enforce decisions or use a resource. Access is the ability to actually make use of a resource, whether one has a right or not (Ribot and Peluso 2003).

Our second task was to understand how in practice, and in accordance with which law, benefits and responsibilities pertaining to forest and land rights were shared; who was marginalised or excluded and on what grounds; whether all those who have rights were actually able to actualise those rights; which types of rights (use rights, decision-making rights) they were able to access and actualise and under what conditions; what contestations and negotiations occurred in the process of establishing and actualising a particular configuration of rights for specific persons, in specific places and times (von Benda-Beckmann and von Benda-Beckmann 1999, 2000)? A related task was to understand which groups and individuals were able to actually access and benefit from forests, pasture and land even if they did not have the rights to do so; or when such rights were constructed differently by different groups and laws and contested. It is only when we had detailed information and analysis of these matters that we would be able to better understand whether, how and who would benefit from carbon trade.

The third set of issues concerned the implications of different REDD options for property rights holders of varying resources under different property regimes and laws. It is assumed here that understanding property rights, equity and access issues pertaining to land, pasture and forest will contribute towards understanding rights, equity and access concerning carbon tenure and trade.

## Context of resource tenures

Nepal is characterised by immense socio-cultural diversity, a structured hierarchy and inequality with extreme disparities in wealth, which broadly correspond with social and cultural identities. Nepal is populated by over 100 caste and ethnic groups who speak more than 100 languages and dialects and practice a variety of religions, including Hinduism, Buddhism, animism or shamanism and, in some cases, a combination of two or more. These diverse groups and broad divisions are structured in terms of hierarchy and inequality. In general, the Hindus, especially the upper castes, have higher social status and more wealth and political power than the ethnic groups; the *Pahadis* (hill people) more than the *Madhesis* (people of the plains); the upper castes more than the lower castes; and men more than women. The disparities in wealth, power and status are the result of socially exclusive institutions and practices fostered by the dominant social group, the upper caste, hill-based, Nepali-speaking Brahmins and Chhetris, who have been ruling Nepal for over two hundred years. They monopolised political and economic resources, especially land, and attempted to impose their language, religion and culture on the rest of the population. Identity based on religion, caste, ethnicity, region of origin (hills or plains) and gender has determined access to, and control over, economic, political and cultural resources. Thus, social groups such as the caste formerly classified as 'untouchables' (now known as Dalits) and ethnic groups previously known as *matwalis* (liquor-drinkers) (now as *janajatis*) were discriminated against by the Brahmins and Chhetris: they had limited access or no access to resources. However, there are relatively rich and powerful people among the ethnic groups and Madhesis and relatively poor and powerless among the upper castes, especially at the local level. The historically derived social structure and social relationships influence property rights over natural resources and determine to a large extent who is able to benefit most from the resources.

Agriculture, livestock and forest are closely interrelated for most Nepali farmers. Approximately 80% of the Nepali population depends almost exclusively on agriculture and livestock for their livelihoods and rely heavily on forests for fuel wood, fodder, timber and other products<sup>6</sup>. In addition, the people living in the mountain regions, many of whom practice transhumance pastoralism, also depend on pasture lands for grazing their livestock.

The relative significance of agriculture, livestock and forest varies across the ecological regions (livestock being more important than agriculture in the mountain regions), ethnic groups (some ethnic groups are more likely to keep large herds of livestock than others) and class (the wealthier have larger agricultural holdings and often more livestock than the poor). In general, as many researchers (for example, Nielsen 2008, Pokharel and Byrne 2009, Ojha et al. 2009b) have noted, the poorer households, in particular those with little or no land, are more dependent on forest and forest products from common resources (government or community forests and pastures) for their livelihoods than richer households who often grow trees and shrubs on their own land (in the mountains they may have their own pasture or fields to grow hay) and have other means of livelihood (trade, employment).

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<sup>6</sup> Ninety-four percent of rural households depend on fuel wood for their heating and cooking; which they obtain from forests. Three-quarters of Nepali households keep cattle and forests are a critical source of fodder. A family with three animals needs approximately 3.5 hectare of forest to provide fodder for the livestock. (Nielsen 2008).

From the perspective of state law, the state is the owner of all agricultural land, pasture and forest not registered as private property<sup>7</sup>. Individuals ‘own’ most of the agricultural land and some forest and pasture but most of the forests and pastures are state owned. However, communities and individuals claim, or have various kinds of rights over, state forests and pasture lands under different property or tenurial regimes. Moreover, the classification of specific forests or pastures as national, communal or private may be contested by different communities and users. The majority of the population have always used, and continue to use, the forests (and pastures) for their subsistence and livelihood needs, irrespective of tenure or property regimes and their legal basis (state, customary or local law or a combination). Forests and pastures are managed by a variety of institutions, indigenous as well as exogenous, by the state or representatives of the state, by locally appointed or elected officials, by traditional or new institutions such as user groups or an amalgamation of different institutions based on state, customary or local laws.

## Understanding property rights and tenure

Resource tenure (land, forest, pasture, carbon tenure etc) can be understood more broadly as property rights. John Bruce (1998), discussing land tenure, explains that the term ‘tenure’ is derived from a Latin term for ‘holding’ or ‘possessing’. Land tenure means the terms on which something is held: the rights and obligations of the holder, which are recognised by a national or local law or combination of both. Property, like tenure, is ‘a set of rights and responsibilities concerning a thing. Property is better understood as a bundle of rights because it can have multiple rights belonging to several different persons or groups’ (1988). He further explains that a land-tenure system cannot be understood except in relationship to the economic, political, and social systems which produce it and which it influences.

Building on this understanding of property rights and tenure, the FAO defines forest tenure as ‘the combination of legally or customarily defined forest ownership rights and arrangements for the management and use of forest resources. Forest tenure determines who can use what resource, for how long and under what conditions.’ (FAO 2006). The FAO goes on to explain that the components of forest tenure include ‘excludability, duration, assurance and robustness. Excludability allows those with rights to a particular piece of land to exclude those without rights. Duration refers to the period for which the right is granted. An institutional framework capable of enforcing rights provides assurance. Robustness refers to the number and strength of rights that can be possessed.’ (FAO 2006: 23). The FAO’s definition of tenure (and implicitly, property rights) includes bundles of rights (ownership, management and use rights), basis of rights (state or customary law) and security of rights (exclusion, duration, assurance and robustness). The FAO’s framework has been used to discuss forest tenure in Nepal by Singh and Chapagain 2006.

## The three dimensions of property rights

Schlager and Ostrom (1992) offer a more sophisticated understanding in their discussion of property rights regimes. They differentiate and show the relationships between

- a) five bundles of rights (access and withdrawal rights or operational-level rights, and management, exclusion and alienation or collective-level rights);
- b) four categories of rights holders (owners, proprietor, claimant and authorised user); and
- c) two bases of rights (de jure and de facto).

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<sup>7</sup> Land is also owned by religious trusts (*guthi*) but this form of land tenure is not discussed here.

Different categories of rights holders may hold different bundles of rights over a resource such as a forest and these rights may be based on state law (de jure) or locally crafted rules which may not be recognised by the state (de facto) or combination of both. Owners, for example, have all five bundles of rights whereas authorised users have only access and withdrawal rights, and proprietors have all rights except that of alienation. This framework of understanding property rights along the three dimensions of rights, rights holders and basis of rights has been developed further, for example, by Ruth Meinzen-Dick<sup>8</sup> (2006) and applied for discussing forest tenure in Nepal, among others, by Naya Sharma Paudel and others (Paudel et al. n.d., Ojha et al. 2008, Luintel and Chhetri 2008, Acharya et al. 2008, Nielsen 2008).

The four major property regimes (public, private and common regimes and open access) are generally defined in terms of who holds the complete bundle of rights ('owners'): the state holds the rights to public property; individuals (or legal individuals, such as corporations) to private property; and groups or communities to common property. Open access is the absence of established property rights. The bundle of rights, rights holders and property regimes may be based on, and recognised by, either state law or local rules which may not be recognised by the state or both. Thus, what may be classified as common property or open access regime by a community according to local law may be classified as public property by state law.

It is important to note that the four types of property regimes are only ideal types. In practice, different rights holders may have different types of rights over a resource classified as public, common or private property. For example, the state as the owner of a national forest (public property) may be said to hold all the bundles of rights; a delimited area of the national forest would be considered common property when a 'community' or user group is given use rights as well as decision-making and control rights. Individual members of the user group would also have use rights and decision-making and control rights over the forest. People who live at a distance from the community forest or use it only occasionally may be given only limited-use rights, for example, to gather fodder for a few days a year, to graze their livestock during their annual travel through the forest or, as is more often the case, user groups may deny them such use rights. The state often retains the ultimate decision-making right (that is, regulations) over common property and even private property as, for example, when the state makes laws to regulate land use or claims right of eminent domain.

Some scholars have questioned the usefulness of these four categories of property regimes, especially when seen from the perspective of the competing claimants and bases of the claims to the resource that is especially the situation of legal pluralism (von Benda-Beckmann and von Benda-Beckmann 1999, Wiber 2005, see also Meinzen-Dick and Pradhan 2002, Meinzen-Dick 2006).

Different laws such as state, customary, local and international laws often differently construct rights, rights holders and property regimes of a resource such as a forest. It is also often the case that rival claimants construct matters differently, basing their claims to a resource on different, and sometimes a combination of, laws. Multiple and overlapping bases for claims to property rights over a resource often make it difficult and perhaps even unhelpful to determine the category of property regime (or tenure) for a specific resource. For example, the state claims to be the owner of all

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<sup>8</sup> Meinzen-Dick (2006) argues that the major bundles can be grouped into three categories: *Use rights*, such as the right to access the resource (for example, to walk across a field), withdraw material from a resource (gather fodder), or exploit a resource for economic benefit; *Control or decision-making rights*, such as the rights to management (decide which tree to cut, when to open the forest for fodder collection), exclusion (prevent others from accessing the forest) and; *Alienation*, the right to rent out, sell, or transfer the rights to others. 'Ownership' is often thought of as holding the complete bundle of rights over a particular resource, as in the view of Schalger and Ostrom (1992).

pasture land in Nepal, except that land registered as private. However, in areas such as Khumbu, Dolpo and Sindhupalchowk, communities claim some pasture land as their 'common property' or *kipat* land, regulate access to, and use of, the pastures and even levy fees for their use, all based on their 'customary rights', that is, rights based on 'traditional' use and decision making (even though *kipat* tenure was abolished in 1964) (see, for example, Stevens 1996; Brower 1994; Bauer 2004; Acharya 2003). Similarly, indigenous communities would (and have begun to) contest the claims of the state or user groups to forests classified as national forest or community forest, based on international law (ILO convention 169). It is thus more useful to begin mapping property rights over a resource with the three dimensions of property rights mentioned above (bundles of rights, rights holders (or claimants) and bases of rights).

However, missing in the above framework (with perhaps the exception of Bruce) is the relationship of property rights with the wider social, economic and political relationships, and especially power relations, as well as other norms which influence the construction and actualisation of property rights and resource tenure.

### Property rights as legitimate claims and as social relationships<sup>9</sup>

Property rights are mainly about claims over resources and relationships between the claimants, both of which are subject to changes owing to ecological, livelihood, knowledge and social and political uncertainties, as well as to the plurality of, and changes in, laws. Property rights are claims to resources made by an individual or group recognised as legitimate by a larger collectivity and that are protected through law. Individuals or groups (users, community, corporation, state etc) may assert claims of various kinds over resources, such as the right to use the resource, derive income from it, to control use and make rules regarding it, as well as the right to transfer the resource to another through sale, lease, gift or inheritance. It is not sufficient to assert a claim over the resource: unless claims are accepted by a larger collectivity than the claimants they are not considered legitimate. The significance of legitimacy becomes clear when there are conflicting claims. Claimants to resources base their claims on rules or laws that define who has rights, the types of rights they have, and the procedures and conditions by which persons (individual or corporate) establish, maintain, transfer and lose rights. There usually are a plurality of rules or laws that individuals can call upon in their negotiations. Rules and laws themselves are subject to negotiation, reinterpretation and change. Whose claims and which law will be accepted or what kind of property rights arrangements will be dominant depends on negotiation between the rival claimants and their manifold social, political and economic relationships as well as other norms brought into play.

It is important to note that rules or laws concerning property rights do not reflect actual practice or actual configuration of property rights relations. It is often assumed that rules can be derived from practice or that practice is necessarily and directly based on rules but this is not the case because there are important differences between 'the legal construction of rights from the actual social relationships that connect concrete right holding individuals, groups and associations with concrete and demarcated resources. Elsewhere (von Benda-Beckmann and von Benda-Beckmann 2000), these are referred to as categorical and concretised rights, corresponding to general rights in principle, and specific rights that an individual can avail in specific contexts. Both categorical and concretised rights are to be differentiated from actualisation of rights. Though property rights are constructed by legal orders, the actualisation of rights, both categorical and concrete, are effectuated by social processes because property rights are embedded in social, political and economic relationships (von Benda-Beckmann and von Benda-Beckmann 2000). Changes in these relationships affect property rights relationships.

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<sup>9</sup> This section is based to a large extent on Meinzen-Dick and Pradhan 2002.



It is at the level of the actual social relationship concerning property rights that other types of rights and social relationships become very significant, for example, rights to land, to residence in a village, or to membership in a community<sup>10</sup>. Power relationships are also very important because they often determine the distribution and actualisation of rights. Property rights are dynamic, flexible and subject to frequent negotiations and change because they are embedded in social, political and economic relationships and are often closely tied to other rights. Changes in any of these relationships and rights affect property rights to natural resources. The actual rights relationships concerning a resource depend on specific contexts and are a product of locality, history, changes in resource flow, ecology, social relationships, negotiations and disputes. What this means is that a general description of property rights or tenure to a resource based on state law or even customary law will not help us understand the actual practice of, and relationships concerning, property rights, for which detailed fieldwork is required.

## Rights and access

The previous section discussed the legal constructions of property rights in different property regimes and for different resources, based mainly on state law and to some extent on local or customary law. These legal constructions define the more abstract or general principles and rules concerning bundles of rights and rights holders ('categorical rights') and the more specific rules concerning specific resources, rights and rights holders ('concretised rights'). This section will discuss the actualisation of rights in relation to access and equity.

Although in some formulations of property rights access is included as a component of rights (for example, access rights in Schlager and Ostrom 1992), access need not always be based on rights. As Bruce argues, 'Having access means being able to make some use of the resource; it is neutral about whether one has a legal right to use the resource' (Bruce 1998: 3, see also Pradhan and Pradhan 2000, and Meinzen-Dick and Pradhan 2002). Ribot and Peluso (2003) similarly argue that access means the ability to benefit from a thing; access can be gained through rights-based mechanisms (law) or structural and relational mechanisms, which include capital, knowledge, identity and social relations. By focusing on ability rather than rights, access brings attention to a wide range of social relationships that can constrain or enable people to benefit from resources. Ribot and Peluso emphasise the importance of taking into account the dynamic processes and the social relationships that determine access to resources<sup>11</sup>.

It is useful to differentiate between access and rights because it points to situations where people may have the ability to benefit from a resource even though they may not have the 'rights' to do so and situations where people with rights are unable to actualise their rights, that is, they do not have the ability to benefit from a resource. For example, many people living in the vicinity of national forests gather fuel wood, fodder, timber and other products from them even if they do not have rights to do so. Or, conversely, even though all members of a user group have the right to purchase timber harvested from their community forest, the poor members may not be able to actualise this right because they cannot afford to buy the timber.

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<sup>10</sup> Hammoudi (1985), in an important but neglected article on water rights, argued that water rights are relational, that is, they are relationships between people over water, and emphasised the importance of taking social relations and especially power relations into consideration in discussing water rights (see also von Benda-Beckmann and von Benda-Beckmann 2000). Following his lead, others have argued that 'what one holds in one's hand is not water but relations, relations which are often hierarchical, fluid and transitory, subject to change like the availability and distribution of water' (Meinzen-Dick and Pradhan 2002). This argument is valid for all property rights but especially to property rights of natural resources.

<sup>11</sup> Several aspects of Ribot and Peluso's (2003) interesting theory of access, such as access as bundles of power, will not be discussed in this report.

In addition to the ability to use a resource, access also pertains to the ability to make decisions (see, for example, Timisina and Ojha 2004). Access to decision-making institutions and processes is important because decision makers make and enforce the rules that regulate other rights (use rights) and obligations. Rules determine who is included in using a resource, how benefits and obligations are shared, and whether the benefits and obligations are equitable or not. Decision makers control legitimate access to resources and local elites capture decision-making institutions. Though all members of user groups may have the right to be elected to their executive committee, some members of the group may never be elected because of their caste, gender or ethnic identity. Even if the marginalised groups are included in decision-making institutions, the elites are able to impose their decisions, which favour their interests. Thus as Iris Young (2000) warned, ‘participation’ in meetings and decision-making institutions may only be a case of ‘inner exclusion’ if the ‘voices’ of the marginalised and disadvantaged are not heard or taken seriously and their interests are not addressed.

It is also useful to differentiate between access, tolerated access and rights (Pradhan and Pradhan 2000). A group of users may be said to have tolerated access to a resource when the rights holders give them permission to use the resource for a limited time so long as they do not claim this as their right. For example, transhumant herders may be given permission to graze livestock for a few days in a year in a community forest, so long as they do not claim this as their right, that is, they are given ‘tolerated access’ because of special social relations between the rights holders of the community forest and the herders.

It is important to note there may be different interpretations, disputes and negotiations about whether a person has a right, tolerated access or access to a resource or decision-making forum and whether an act of accessing a resource or actualising a right is legitimate or not or tolerated access.

### **Equity issues in resource tenure**

The term ‘equity’ is often used along with, or instead of, ‘justice’, especially in relation to access, control and use of natural resources. Equity is defined by the Oxford Dictionary as ‘the quality of being fair or impartial’ and this is, indeed, how the term is often understood: as a sense of fairness or of being just. However, different societies, laws, communities, groups and individuals often have their own conceptions of equity, of what constitutes fairness. What is equitable for a particular case may be contested and negotiated. One cannot therefore make a universal statement as to the ‘content’ of equity but must submit to local definitions and understandings of the term (see, for example, the chapters in Boelens and Dávila 1988). Nevertheless, equity is understood in the literature on natural resource management generally in terms of unequal distribution of benefits or unequal representation in decision-making bodies, such as local elites capturing decision-making committees and benefitting more than the poor members. Not being able to actualise a right either because of discrimination (e.g. get elected to executive committee) or for financial reasons (the price of timber is unaffordable) would also be inequitable. While in some cases equality seems to be assumed as the main determinant of equity, in other cases the emphasis is on comparative benefits and obligations, with the argument that equality may lead to inequity (for discussions on equity concerning common property resources in Nepal, see for example, Pradhan et al. 2000; Winrock International Nepal 2002; and Timisina and Ojha 2004).

### **Property rights in land, pasture and forest**

The following sections will discuss property rights and resource tenure pertaining to land, agricultural land, pasture and forest. Property rights will be discussed for each natural resource in terms of bundles of rights and rights holders as well as property regimes, based mainly on state law but also on customary law.

## Land tenure

Until 1951 there were many kinds of land tenure in Nepal, each with different kinds of rights and responsibilities (bundles of rights and responsibilities) but, according to the historian Mahesh Chandra Regmi, in the ultimate analysis there were only two kinds of land tenure:

- i) *raikar* or land owned by the state (or the king's 'crown land'), based on the principle of 'state landlordism'; and
- ii) *kipat* or communal ownership of land by some ethnic groups based on the principle of customary rights to land.

The state (or the king) as the lord and ultimate 'owner' of all land and natural resources located within the country bestowed different types of rights over land and natural resources to its citizens (formerly subjects) under different tenurial arrangements, which included *birta*, *jagir*, *rakam*, *guthi* and *rajya* tenures (Regmi 1976, Burghart 1996).<sup>12</sup> In other words, these tenures were derived from *raikar* tenure (Regmi 1976:16, Burghart 1996). *Kipat* tenure was confined to the various ethnic groups such as Limbu, Rai and Sherpa, who traditionally owned land in common and who were allowed to continue with this form of land tenure after their incorporation into the Gorkha Kingdom. Rights to these tenures included not only agricultural land but also to the forests and other natural resources located within the boundary of the tenured land. *Birta* holders, for example, had the right to sell timber and other forest products on their land. Tenure holders had different kinds of rights over the tenants of these tenured lands, such as right to rent, to extract corvée labour and to resolve disputes.

The rights and obligations of the tenure holders attached to these different categories of land tenure changed over time. After the Rang regime was overthrown in 1951, new laws were enacted, partly due to domestic politics and partly to international pressure, which abolished *birta*, *jagir*, *rakam* and *rajya* tenures while retaining *guthi* and *raikar*. The meaning of the term *raikar* has undergone changes: it now means land 'owned' by individuals as opposed to its earlier meaning of state land; holders of *raikar* tenure are now 'landowners' instead of tenants of the state as in the earlier meaning (Regmi 1976, 1978; Burghart 1996; see also Pradhan 2000 for a summary).

*Raikar* (or private land) is now differentiated from government land (*sarkari jagga*) and public land (*sarbajanik jagga*), both of which are state land. The Land Survey and Measurement Act 1963 defines government land as 'lands in the possession of the government for such purposes as roads, railways, and governmental offices, including waste land, forests, and rivers'. Public lands, on the other hand, have been defined as land used by the community for paths, sources of water, pasture and the like, which are not owned by any individual or family and cannot be used for agricultural purposes (Regmi 1976:16, footnote 1). This Act does recognise a category of land tenure—

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<sup>12</sup> *Birta* tenures were grants of land, usually tax free, and most often to members of the royal family, Brahmins and other elites. *Birta* tenures were private property which could be sold, mortgaged, leased or gifted. *Guthi* tenure was land grants made for the establishment and maintenance of socio-religious institutions such as temples, festivals, public rest houses. Such land usually could not be alienated. *Jagir* tenures were land tenures given to government employees in lieu of salary; they were in fact temporary assignments of rights to revenue from land, subject to annual review. *Rajya* tenures were tenures assigned to chiefs or 'kings' of petty kingdoms which were conquered by the Shah dynasty and subject to annual review. *Jagir* and *rajya* tenures could not be transferred. When the ruler gifted or assigned these tenures, he temporarily or permanently transferred most of rights to the holder of these tenures. They thus acquired enormous power and privileges, especially over their tenants who cultivated their land. They had rights not only to a share of the agriculture produce (as rent) but also the right to impose levies and taxes for use of forests, pasture and water, to extract forced, unpaid labour, and to dispense justice to their tenants (Regmi 1976, 1978; Burghart 1996; Pradhan 2000).

*sarbajanik*—to which local communities have use rights even if it is state land. Decision-making rights over these public lands are vested in local bodies such as the District Development Committee and the Village Development Committee according to the Local Self-Governance Act 1998.

From the perspective of state law, all land (whether agricultural or pasture) not registered as private land (or *guthi* land) is state land which could be either government land or public land. Public lands (*sarbajanik jagga*) are usually under the jurisdiction of local bodies (Village Development Committees) and are often treated as ‘commons’ of the village. Similarly, forests are either private (grown on private land) or national (*rastriya*), that is, state. National forests are further categorised by the Forest Act 1993 as government-managed forest, protected forest such as national parks and reserves (managed by the government), community forest, leasehold forest and religious forest. In addition to these categories of national forests, there are also buffer zones and collaborative forest management areas.

A few remarks are in order here. First, there are some significant differences in the changes in property rights or tenures to agriculture land, forest and pasture. Second, there is a difference in the relations between land and resources on the surface and below surface and different for water, minerals and forest. Third, tenure and rights defined by state law may be different from customary law and international law. Fourth, the state has increased its regulatory powers over all forms of tenure and resources, even while it may have devolved other rights to the tenure holders.

Prior to 1951, land tenure included rights to forests, water and other resources on or below the surface but afterwards the state began to differentiate between the land surface and resources below or above the ground, except for trees and other biomass. Thus, for example, the state claims ownership of all water and minerals within its territory, whether located above- or belowground, on public or private land. Trees located on private land belong to the owner of the land (or to the person who leases the land to grow trees); but rights to trees on state land can be separated from the land as in the case of community, leasehold and religious forests.

## Agricultural land

Most agricultural land is private land, registered in the name of the landowner (*jaggadhani*). The owner has all bundles of rights (use, decision-making, alienation) according to both state and customary law of most communities. Yet, the state retains residual and perhaps ultimate decision-making rights at least concerning land use, for example, owners are prohibited from cultivating some plants (cannabis) or selling some plants without permission from state authorities. And, as mentioned above, the state claims ownership of all water and minerals located even on private land (though in most cases landowners claim ownership of water located on or in their land). The state also regulates the relationships, rights and obligations of landowners and registered tenants and also the rights and obligations of family members of the person who holds the title to the land (and forest).

Similarly, the owners of private forests have all the bundles of rights but the state retains the ultimate decision-making right, for example, by the regulation that owners of private forests require permission to sell timber harvested from their forest or the regulation prohibiting sale of some species of trees and plants.

The distribution of agricultural landholdings is highly skewed and unequal. In 2001, about 25% of households were landless or had less than 0.1 ha of arable land. In the same year, 47.7% of households had holdings less than 0.5 ha and accounted for only 14.7% of cultivated land. The average size of holding in for this category was only 0.24 ha. Similarly, 27.2% of households had holdings between 0.5 and 1 ha, accounting for 27.2% of the holdings, with an average size of 0.70 ha. In other words, about 70% of households had holdings below 1 ha and accounted for only

about 37% of the cultivated land. On the other hand, 22.2% of households had holdings between 1 and 3 ha, accounting for 43.8% of cultivated land, with the average size of holding of 1.56 ha. Finally, 2.9% of households had holdings of above 3 ha, accounting for 17.3% of cultivated land. The average size of holdings for this category was 3.69 ha (Yadav 2005). This data does differentiate between irrigated and unirrigated land, which has implications for the crops that can be grown and the number of crops per year.

Many of the landless or those with small holdings work as tenants of bigger landowners, either as registered tenants with firm tenancy rights (12% of farm households) or as sharecroppers or other forms of tenancy which may account for another 12% of farm households.

## Pasture tenure

About 12% of the total land in Nepal is classified as pasture (rangelands), of which approximately 79% is located in the mountain regions and 17% in the mid-hills. Approximately 43% of the pasture lies within the protected areas of the country. The communities living in the mountain areas depend on both pastures as well as forests for grazing and fodder for their livestock. These communities practise transhumance pastoralism, moving their livestock on a rotational basis to different forests and pastures in different seasons, usually moving north to higher altitudes during summer and lower altitudes during winter. Livestock may also be stall-fed in some areas, especially during winter.

Grazing lands, even in protected areas, and especially in the vicinity of villages, face serious degradation owing to high grazing pressure, yet at the same time, grassland and shrub land have increased at the cost of natural forests (Acharya 2003, citing reports)<sup>13</sup>. One of the major reasons for the degradation of high altitude forests is grazing beyond carrying capacity and indiscriminate lopping of fodder trees (Acharya 2003). While some researchers explain the degradation of forests by reference to Hardin's theory of the tragedy of commons (or more commonly now in terms of open access, that is, absence of regulations and enforcement concerning use and users), others argue that forests have not been treated as open access but 'common property' regulated and enforced by indigenous systems of natural resource management<sup>14</sup>. As far as pastures are concerned, it seems that local and indigenous institutions regulated grazing use except in areas which were located in inaccessible areas.

Although the state claims ownership of all pasture lands (except for private pasture registered in the names of individuals), which are 'subject to government-level-decisions, planning, and development... the centre does not necessarily control the local dynamics of rangeland use and tenure' (Bauer 2004:131)<sup>15</sup>. In many areas, pastures, like forests, are to a great extent still managed by local institutions, and treated as 'common property'. Currently, there are three major pasture

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<sup>13</sup> Acharya, citing Rai and Thapa (1993) and Shrestha and Priyar (1998), writes that 'local grazing is pushed beyond carrying capacity... Large tracts of once productive pastureland (for example, in Manang, Sailing) are now dominated by unpalatable shrubs' (Acharya 2003: 41).

<sup>14</sup> Schmidt-Vogt (1988), Metz (1991) and Messerschmidt and Rayamaji (1996) support the open access explanation whereas Jackson (1999), Furer-Haimendorf (1964), Gilmore and Fisher (1991) argue that indigenous or local institutions managed the resources as common property (all references cited in Acharya 2003).

<sup>15</sup> Bishop (1990, cited in Bauer 2004:131) notes, 'Although all non-arable lands are the de jure property of the government of Nepal, each village continues to exercise traditional de facto usufructuary authority over those in its immediate area and limits their exploitation to village residents.' Similarly, Bauer (2004: 131) comments, 'While de jure ownership of range rests with the government... locals continue managing rangeland resources. This continuing de facto tenure over rangelands, in fact, suits people in Dolpo.'

tenures or property regimes (and ‘management systems’) namely, private, state or government and common (Acharya 2003; Gurung 2007)<sup>16</sup>.

Janita Gurung (2007) identifies three management systems (tenures) of pastures (*kharka*) in the Kanchanjunga area:

1. Privately-owned pastures, which are registered in the names of individuals and either used by the owners or leased to other livestock herders.
2. Communal pastures (*kipat* tenure): though the *kipat* tenure was abolished in 1964, former holders of the *kipat* tenure (and their descendants) continue to claim ‘ownership’ of pastures, regulate grazing patterns and livestock numbers and levy grazing fees on herders who are not members of the local communities (*non-kipatiyas*). In the 1960s, some people registered *kipat* land as private land.
3. Government land: any land not registered as privately owned is classified as government land and this includes *kipat* land. Some government land has been handed over to local user groups as community forests.

Upreti (1994, cited in Acharya 2003) reports that in several villages in the Kanchanjunga area pasture users are confused about whether they should pay the grazing levy to the *kipatiyas*, the Village Development Committee or the government because all three institutions claim rights over pastures and demand levy.

In other areas too, irrespective of the fact that pastures are classified as state (government) land, the villagers treat them as though they were common property, in some areas formerly under *kipat* tenure, as *kipat* land<sup>17</sup>. Villages collectively regulate use of pastures both in the vicinity of the villages as well as upland pastures, crafting rules for rotational grazing and who had grazing rights and when and where. Either village heads (as in Dolpo or Mustang) or community officials such as *nawa* elected by village assemblies (as in Khumbu) are responsible for regulating and enforcing the rules (Bauer 2004; Stevens 1996; see also Brower 1994; Acharya 2003; Pokhrel and Chhetri 2006)<sup>18</sup>. In some areas such as Dolpo even several villages of a valley have recognised rights to specific pastures in the vicinity of the villages and in the upland pastures (and forests), probably negotiated by the communities in the past. Village and pasture boundaries are important because the villages attempt to limit access of outsiders to ‘their’ pastures (and forests) during specific times. However, limited grazing privileges or rights (or tolerated access?) for specific times in specific pastures are extended to traders, especially those with whom the villagers have long-standing business relations,

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<sup>16</sup> Although these three property rights regimes have been used in this report, it should be kept in mind that the rights over a plot of forest or pasture often are multiple, overlapping and differentiated. As Acharya (1992) argues for property rights to pasture and forest, ‘In Jiri the complex property rights to wood and fodder cannot be well comprehended by lumping them grossly as “forests” and “pastures” or as “communal”, “private” or “state property”. Not only are additional forms of property such as joint and cooperative, widespread, but in each of these instances rights differ according to particular resource, kinship, residence, purpose, previous use and season.’ (Acharya 1992: 137)

<sup>17</sup> The use of state land, especially pastures and forests in parks and other national forests, as common property by the traditional users often leads to conflict between the villagers and forest or park officials as in Shey Phoksundo National Park in Dolpo and Sagarmatha National Park in Khumbu (Bauer 2004; Stevens 1996).

<sup>18</sup> Stevens states that, ‘Since at least the middle of the nineteenth century Khumbu Sherpas have maintained village- and valley-based agropastoral management systems aimed at protecting crops and pastoral resources through controlling grazing and the cutting of wild grass for hay... the same community *nawa* officials who implement the regulations designed to protect crops from blight also enforce a form of rotational grazing that protects crops from livestock depredation, limits the use of some high-altitude pastures, and protects crucial winter grazing and fodder resources’ (Stevens 1996: 159).

passing through the village and to fictive kin. For example, in Dolpo, during their stay in a village, *netsang* partners (business partner and fictive kin) are granted the right to graze their animals on community pastures (Bauer 2004: 54; see also Stevens 1996 for Khumbu).

Pastures are subject to increasing pressures and competition leading to conflicts over pasture boundaries as between Dolpo's valleys which sometimes require the intervention of local authorities for resolution (Bauer 2004). Further, there has been a decline in the communal regulation of pastures and grazing as in the case of the *nawa* system of local pastoral management in Khumbu, due to dissensions within communities of users, conflicts among communities over boundaries of village lands and the question of who makes regulations for particular areas, as well as attempts by outside herders to circumvent local pasture-use regulations. This has led to grazing pressures on areas where seasonal grazing restrictions were once enforced, end of the practice of wild grass harvesting, decline of winter grazing near the villages and accessible areas and the need to store large quantities of fodder for use in winter and spring, which in turn increases pressure on forests (Stevens 1996: 326).

Moreover, access of transhumant herders to pasture and forests have been restricted in areas handed over to users groups. Community forest users groups assert rights over community forests and pastures and prohibit traditional winter grazing by animals from other communities. This had serious consequences in Humla in the 1990s where most of the traders who transported their goods (grain and salt) on the back of livestock gave up their trade (because they could no longer find areas to graze their animals during their travel). As a consequence foodgrain was not transported to Humla and many people died of famine (Bauer 2004:130).

To sum up, in terms of the three dimensions of property rights, from the perspective of state law, on private pastures the owner has all the bundles of rights and use rights can be transferred to others, for example, to the person who leases the pasture. On state 'owned' pasture, the state claims to be the holder of all the bundles of rights but can and does transfer decision-making and use rights to users groups. At the same time, many villages consider pasture and other rangeland within the territory of their villages as their 'common property' over which they have decision-making and use rights (including rights to exclude non-members and rights to grant limited access or use rights to members of other communities, based on social relationships (long-term business partners, fictive kin) and traditional use by transhumant pastoralists). Such villages may or may not claim 'ownership' rights over the pastures they collectively manage but claim use and decision-making rights based on 'customary use' and law. However, in areas that were formerly under *kipat* tenure, villagers claim communal 'ownership' of common pool resources (forest, pasture etc) including decision-making and use rights, based on historical rights and customary law. They express their ownership of pastures by demanding grazing levy from herders who are not members of the local *kipat* communities. The state does not however recognise ownership rights of local communities over pastures on state land; nor does it officially recognise decision-making and use rights of local communities, except for the users groups to whom these rights have been granted by the state. This may be partly because decision-making and management rights and responsibilities over pastures, forests and other resources, except for protected areas, has for long devolved on local authorities, such as village headmen, village Panchayats and later Village Development Committees.

### **Rights, access and equity**

Most of the pastoralists have been able to access pastures and forests that they have traditionally used to graze their animals and provide fodder, irrespective of the official classification of forest and pasture tenure. In most instances they have relied (and continue to rely) on their local and traditional (indigenous) institutions and laws to gain access to these resources.

Pastoralists with more livestock benefit more from the use of 'common pasture' than those with less. However, some communities divide pastures into areas which are allotted to individual families by the throw of dice or drawing of lots to ensure a fair distribution of resources. This way, each household has the right to graze the plot that it is allotted for that year, irrespective of the amount of livestock (Bauer 2004).

## Forest tenure

As mentioned earlier, prior to 1951, forest was an integral part of land tenure such that, for example, forests on *raikar* tenure belonged to the state, on *birta* tenure to the *birta* tenure holder, and on *kipat* tenure to the *kipat* tenure holders. *Kipat* tenure holders (*kipatiyas*) held all the bundles of rights and regulated forests in accordance with their 'customary' law<sup>19</sup>. The state as the 'owner' of all land and natural resources on *raikar* tenure exercised its property rights of decision-making, use, and alienation or transfer of some rights to other categories of tenure holders, including tenants of *raikar* land. *Birta* tenure holders were 'owners' of the land, forests and other natural resources on their tenured land. They had rights to make decisions concerning land and forest use and to even sell their land or forests. But irrespective of the forms of tenure, local communities managed the forests, or perhaps more accurately, regulated forest use and users, as in the case of pasture discussed above. However, the primary responsibility for 'managing' forests often rested on state-appointed local village officials such as *jimmuwal* or *mukhiya* or traditional village heads or locally appointed officials such as *nawa* in Khumbu, depending on the region and land tenure (see Gilmore and Fisher 1991). These village-based officials, village heads or locally elected officials worked in collaboration with their communities to regulate forest use. In other words, forests in the vicinity of villages were locally managed and the rules for management and use were locally crafted. Local communities had use, and even decision-making, rights over the forests that they managed, irrespective of land and forest tenure, based on traditional use and customary law. However, there were also forests that were treated as open access because local institutions did not, or were unable to, make and enforce rules (See debates concerning open access and common property, discussed earlier).

After 1951, the state attempted to manage and regulate forests more extensively, partly to derive more revenue from lucrative timber sales in the Terai and later in response to international pressure concerning deforestation and environmental disasters in the mid-hills. The first legal step was the promulgation of the Private Forest Nationalisation Act 1957, which turned all forest land over to the state. The Forest Act of 1961, which was promulgated to protect nationalised forests while at the same time meeting the needs of the common people, further nationalised natural resources in Nepal by declaring all lands except agricultural land as forest land. It is generally believed by most scholars that nationalisation of the forests led to rapid deforestation and degradation: households cleared forests both private and public and converted them to agricultural land in order to retain control of the land and communities, anticipating closure of access to forests, no longer had incentives to preserve forests. The deforestation and degradation of the forests was perceived to be so rapid and severe and international pressure due to fears of environmental disaster so strong that the government promulgated the Panchayat Forest and the Panchayat-Protected Forest Regulations in 1978 so as to delegate forest management responsibilities to local bodies (village *panchayats*, the lowest political and administrative units during the Panchayat regime). The village *panchayats*, however, were not very successful in either protecting the forests or meeting the needs of local communities, even though various decentralisation efforts were made over the next decade.<sup>20</sup>

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<sup>19</sup> See Sagant 1996 for a discussion of the rights exercised by *kipatiyas* and especially their heads (*subbas*) over forests and other natural resources.

<sup>20</sup> Nielsen (2008: 11) sums up this period (1978 on) as follows: 'Various decentralisation efforts continued through the next decades, with management plans restricting forest access and focusing on forest protection



The Master Plan for the Forestry Sector (MPFS) approved by the government in 1989 addressed some of the issues concerning both protection of the forest and the needs of the local communities, for example, by giving priority to community participation in community forests. The Forest Act of 1993 and the Forest Regulation of 1995 provided the legal basis for the implementation of the forest policy, including ‘handing over’ management and use of community forests to community forest user groups.

This official history of the development of community forestry, however, ignores the persistence of the many forms of local and indigenous forms of forest management and forest tenure which continued, perhaps with some changes taking into account new developments and laws, including nationalisation of forests and the subsequent limited devolution of management powers to the village *panchayats* (see Gilmore and Fisher 1991; Graner 1997)<sup>21</sup>. The history also ignores the long tradition of growing trees on private lands<sup>22</sup>.

Community forestry in Nepal is considered the leading example of devolution of management and tenure rights to local groups leading to conservation and regeneration of forests as well meeting the forest-based sustenance and livelihood needs of the local communities. (However, questions are being raised about the so-called ‘second and third generation issues’ such as equity and exclusion and more recently rights of indigenous peoples to natural resources, which will be discussed later).

### Forest tenure regimes

The Forest Act 1993 classifies forests into six categories, based on a mixture of ‘ownership’, ‘management’ and purpose and the literature on forestry in Nepal in turn reads these categories in terms of management and tenure while recognising that there may be other forms of tenure or other bases of tenure (that is, customary law or ‘practice’) than state law (see for example, Acharya, Adhikari and Khanal 2008; Luintel and Chhetri 2008; Banjada and Paudel 2008; Nielsen 2006; Singh and Chapagain 2006). Many studies of forest tenure in Nepal, especially over the past two decades, do recognise the complexities and dynamic nature of property rights over forests. They include in their analysis concepts such as bundles of rights, rights holders and basis of rights (based on state

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and regeneration. Community forestry programs, the majority of which were limited to providing sporadic labour opportunities under reforestation projects and forest protection plans, did not provide benefits to the poorest forest-dependent people equivalent to those that they had lost.’

<sup>21</sup> Scholars are not in agreement as to whether the local institutions that manage natural resources are ‘traditional’ or of recent origin and whether they are indigenous or not. While some authors such as Furer-Haimendorf, Messerschmid, Molnar and Schmidt-Vogt use the term ‘traditional’, others such as Gilmore and Fisher (1991) prefer the term ‘indigenous’, arguing that the so-called traditional local institutions are in fact not so old. Stevens (1996) reports that only two of the seven forest management systems in Khumbu were in existence prior to 1990. Campbell and Bhattarai (1982) and Gilmore and Fisher (1991) argue that many of these local systems emerged around 1960 (see Jackson 1999: 44–46 for a review of the literature). This period corresponds to abolition of *birta*, *rajya*, and other tenures and the Private Forest Nationalisation Act of 1957. Fisher (1989) used the term ‘indigenous’ to refer to systems that originate within a local community in contrast to those that had been initiated from outside the community. Traditional implies that the system has been in operation for a long time and is indifferent as to whether it is indigenous or inspired from outside the community. However, whether an institution originated from within the community (indigenous) or outside, it is often the case that such institutions operate in relation to other institutions (of other communities and the state), that is, in situations of social and legal pluralism and that indigenous and other institutions are mutually constitutive (see Guillet 1998). The important point to note is that institutions, like laws, interact with each other, are mutually constitutive, and change due to various reasons. We need to move away from a static view of societies and institutions. Whether an institution is indigenous and traditional or not has implications for claiming rights, especially now that ILO Convention 169 grants rights to indigenous peoples.

<sup>22</sup>On local history of trees planted on private land, see, for example, Smadja 2000 and references cited therein.

law, de jure, or on customary law or practice, de facto) and suggest that rights are shaped by social, economic and political relationships (see, for example, Luintel and Chhetri 2008; Acharya, Adhikari and Khanal 2008; Paudel, Banjade and Dahal 2008, n.d.; Nielsen 2006; for earlier studies, see, for example, Gilmore and Fisher 1991). However, these studies in general tend to leave out in their discussion and especially description the complexities and dynamic nature of forest tenures as property rights, often limiting themselves to ‘categorical rights’ based on state law, ignoring concretised rights as the processes and mechanisms of actualisation or non-actualisation of rights both as conceptualised as well as practised by different actors in different times, locations and ‘property regimes’ are ignored as are the processes of negotiation, contestation and conflicts between different claimants over different bundles of rights and which law or legal order or combination thereof are to be accepted as valid for particular times, places and situations.

It may be useful to begin the discussion of forest tenure as constructed by state law. The Forest Act of 1993 gives a broad and vague definition of ‘forest’ as ‘an area fully or partly covered by trees’ (2, a) and includes land and water bodies within the area delimited as forest. This is a broad definition of forest because it includes not only trees but also all land without tree cover and water bodies within the area defined as forest and it is vague because it does not specify the minimum size of the forest, percentage of tree crown cover and height of trees. The definition of forest is important because eligibility for carbon trade depends on whether a land is defined as a forest or not under different REDD options. It has been suggested that in the absence of valid minimal values of forest, Nepal adopt the FAO definition of forest (de Gryze and Durschinger 2009).<sup>23</sup>

From the perspective of state law, there are two main categories of forest: private forests and national forests. The Forest Act 1993 defines ‘private forest’ as ‘a forest planted, nurtured or conserved in any private land owned by an individual pursuant to prevailing laws’ (2, k). Private forests include both plantations and non-plantation trees (individual trees grown on land owned by individuals)<sup>24</sup>. National forest is defined as ‘all forests excluding private forests... whether marked or unmarked with forest boundary and the term shall also include waste or uncultivated lands or unregistered lands surrounded by the forest or situated near the adjoining forest as well as paths, ponds, lakes, rivers or streams and riverine lands within the forest.’ (2, e)

The Forest Act 1993 classifies national forest into five categories (or management regimes):

*Government-managed forest:* national forests managed by the government. Ownership of all the forest products of government-managed forests vest in the government (state) but the government may grant licenses to the public for use of such products.

*Protected forest:* national forests that the government has declared as protected in consideration of their environmental, scientific and cultural importance. There are sixteen protected forests including nine national parks (which are managed according to the National Parks and Wildlife Conservation Act, 1973).

The government may grant permission or licenses to the public for use of forest products in protected forests.

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<sup>23</sup> The FAO defines forest thus: ‘Forest includes natural forests and forest plantations. It is used to refer to land with a tree canopy of more than 10 percent and area of more than 0.5 ha. Forests are determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 m.’ (cited in de Gryze and Durschinger 2009: 18).

<sup>24</sup> Trees are planted on about 50 000 ha of privately owned land (about one-third of all landholdings), most of which are fodder or multipurpose trees for domestic use. Although the area of private land on which trees were planted increased by about 16 percent between 1991 and 2001, the proportion of households planting trees decreased during the same period from 40 to 30 percent (Singh and Chapagain 2006: 130).

*Community forest*: national forests that have been ‘handed over’ to forest users groups for development, conservation and utilization for collective interest. The state retains ownership of land of the community forests and has the right to resume (tack back) community forests which are not managed according to the management plan agreed upon by the user groups and the Department of forests.

*Leasehold forest*: national forests that have been leased for specified purposes to legally defined institutions, forest- based industries or communities;

*Religious forest*: national forests that have been handed over or entrusted to any religious entity, group or community for their development, conservation and utilisation.

**Table 10.** Area and percentages of different forest tenures

Category	Sub-category	Area in million ha	Percentage
National forest	Government-managed forest	3.9	66.93
	Protected forest	0.71	12.19
	Sub-total govt. forests	4.61	79.12
	Community forest	1.2	20.49
	Leasehold forest	0.014	0.24
	Religious forest	0.000543	0.01
	Sub-total national forests managed by user groups	1.214543	20.84
Private forest	Private forest	0.0023	0.04
<b>Total</b>		<b>5.862</b>	<b>100</b>

Source: Shrestha and Oli 2009:64

In addition, there are also buffer zones<sup>25</sup> adjoining protected forests and collaborative forest management (collaboration between the state and local communities to manage government-managed or protected forests), especially in the Terai.

From the perspective of state law, the state is considered the owner of national forests and individuals (including corporate bodies) the owner of private forests, with rights to all the five bundles mentioned above. National forests and private forests thus correspond to ‘public’ and ‘private’ property regimes mentioned above. However, as discussed below, this way of understanding these tenures may be misleading in understanding the actual constellations of property rights relationships in both ‘public’ and ‘private’ forests.

The state, as the ‘owner’ of all national forests including land, may either manage and utilise, earn income from (as in government-managed or protected forests) or transfer some of the bundle of rights of the forests to local bodies, groups, communities or individuals for specified purposes and

<sup>25</sup> For a review of buffer zones and parks see DNPWC 2006; Shah 2002; New ERA 2004; Bauer 2004; Stevens 1991. On collaborative forest management see, for example, Bampton, Ebregt and Banjade 2007.

specified periods as per the agreements made between the state and the rights holders. The state has the right to prohibit legitimate access to national forests, even to traditional users, including indigenous communities. However, to protect national forests as well as to enable forest-dependent local communities to have legitimate access to forests and forest products for their sustenance and livelihood needs, the government has handed over patches of national forests as community or leasehold forests, mainly in the hills and mountain regions, established collaborative forests mainly in the Terai (as discussed below) and also demarcated buffer zones in the vicinity of these forests.

The state, however, retains the ultimate rights (the bundle of all rights) over the national forests, especially decision-making rights and ownership of forest land. The ownership of the land of community, leasehold and religious forests vests in the government. The user groups of these categories of forests are given limited decision-making and use and alienation rights only to the trees and forest products, not to the land. Users groups may not alter the existing land-use patterns or sell or mortgage forest land. And they have to manage and use the forests, including selling forest products, as specified in the operational plan (and contractual agreement) approved by the Department of Forests. Moreover, at least in the case of community forest, the contractual agreement between the user group and the Department of Forests has to be renewed every five or ten years (and in the case of leasehold forests, every 40 years). Finally, the government retains the right to refuse to renew the 'handover' contract or to resume (take back) these categories of forests at any time if the user groups do not adhere to the terms of the operational plan.

The rights of some traditional users are threatened not only by state agencies but also by community and leasehold forest user groups who have been granted property rights over parts of the national forests. The rights of traditional, distant and occasional users are often not recognised by the state and especially by forest user groups. In the hills and mountain regions, the traditional rights of transhumant pastoralists to graze their animals in forests and pastures located some distance from their villages are often not recognised by the state as well as user groups. In the Terai, residents of forest-dependent villages located some distance from forests are excluded from user groups of community forests which are formed on the basis of residence in the vicinity of forests (Singh and Chapagain 2006). It is not coincidental that the groups whose traditional rights are not recognised often belong to the marginalised, excluded and usually poorer groups or ethnic communities (see, for example, Banjade and Paudel 2008; Acharya 2003; Bhatta 2002a, b).

### **Property rights in government-managed forests and protected forests**

The state is the 'owner' of government-managed forests and protected forests and has rights to all the bundles of rights. The government makes and enforces decisions (policies, plans, rules) concerning management, uses and users of these forests, including afforestation or reforestation, selling of timber products, and preventing access or permitting limited access to authorised users as well as handing over sections of such forests to users groups. The government has the right prohibit legitimate access to these forests, even to traditional users and rights holders, including indigenous communities.

The state's claims to all the bundles of rights over national forests are often contested by traditional and even new users who access the forests and forest products whenever and however they can, more so in government-managed forests and protected forests than in community and leasehold forests. People living in the vicinity of government-managed or protected forests, especially those without access to community forests or buffer zones, for example, enter these forests to gather fuel wood or fodder or to graze their animals<sup>26</sup>. Many of these local communities are traditional users of

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<sup>26</sup> But even those communities which have access to buffer zones or community forests may access government-managed or protected forests, partly to protect their own forests and partly because their needs

the forests and consider it their right to access the forest based on customary use rights while the newer migrants access the forests, in the absence of viable alternatives, based on their sustenance and livelihood needs (what we may term sustenance and livelihood rights). Protected and government-managed forests may be treated as common property when a group regulates and enforces use and users, as is done by some communities in the mountain regions or as open access in the absence of local institutions to regulate use and users. This has led to deforestation and degradation of forests, conflicts between the state and local communities, and partial transfer of use and decision-making rights to local communities under community and leasehold forests and setting up of buffer zones. The state thus has been forced to recognise use and decision-making rights (however restricted) of the traditional users of the forests but only to specific forest areas. In some cases, the state permits (gives tolerated access) to local communities for specific purposes and for limited periods such as allowing villagers to collect grass or fuel wood certain days a year. However, it has not as yet accepted the (international) rights of the indigenous communities over the natural resources (land, forest, water) in their traditional homelands as per ILO Convention 16<sup>27</sup>.

### Access and equity in government managed and protected forests

As mentioned above, the majority of the rural population living in the vicinity of government managed or protected forests have been able to collect fuel wood and fodder to meet at least part of their sustenance and livelihood needs, even though state law prohibits them from accessing these forest products. The villagers are able to access the forests because the government is unable to enforce the prohibitory rules due to lack of sufficient staff and perhaps their venality. But it could be suggested that perhaps even while the forest officials are determined to 'protect' the forests, they are to some extent sympathetic to the needs of the forest-dependent villagers. They overlook the use of the forests by the villagers for their sustenance needs and in some cases may even permit them to collect limited amount of fuel wood and fodder for a few days a year, that is, give them tolerated access, while not accepting their rights to do so. Community and leasehold forests, collaborative forests and buffer zones are some of the efforts made by the state to meet the twin objectives of conservation and meeting the needs of forest-dependent communities legitimately. However, the villagers are still dependent on government-managed and protected forests, the poor more so than the rich who have access to alternative sources of fuel wood and fodder and other sources of livelihood. In other words, the poor are able to reduce to some extent the inequitable distribution of private resources by making use of 'public' resources. We could call this the 'self-help'

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are not met sufficiently from their own forests (see, for example, New ERA 2004; Shah 2002). According to Shah (2002: 190) about 70% of the households in the five park and reserve areas of the Terai (Koshi Tapu Wildlife Reserve, Parsa Wildlife Reserve, Chitwan National Park and Suklaphant Wildlife Reserve) harvest fuel wood from the park/reserve areas, followed by 39% from buffer zones and only 16% from farmland. Park forests provide between 62 and 90% of fuel wood in these areas (despite the existence of buffer zones). The villagers are less dependent on the parks for fodder, providing only 32% of the fodder harvested, whereas farmland provides 57% of the fodder and buffer zones only 11% of the fodder. See also Nepal and Weber (1993) for details concerning Chitwan National Park.

<sup>27</sup> India, for example, has accepted the (limited) rights of 'traditional' forest dwellers to forests that they have traditionally occupied or used by enacting Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006, which came into force on 31 December 2007. While not accepting fully the rights granted by ILO Convention 169, this law based on the 'government's acknowledgement of generations of historical injustice towards the forest dwellers of India... vests specific property rights over forest land in certain classes of forests dwellers. The major rights granted under this Act are the right to cultivate forest land to the extent under occupation (to a maximum of four hectare per individual or community), the right to own, collect, use, and dispose of minor forest produce, and the right to use forest land for traditional, customary uses' (Nielsen 2008: 20–21).

method of resource distribution, based on the norm of equality and the perception that it is the government's obligation to distribute resources to those in need.

One of the notable features of government-managed and protected forests is the exclusion of the local communities and especially the traditional users from institutions that make and enforce decisions (rules) concerning access and rights to the forests. Consequently, the claims and concerns of the traditional users, and especially the interests of the poorer and politically marginalised groups, are not addressed, much less accepted, as legitimate (see, for example, the case of the Bote/Majhi in Chitwan National Park discussed by Ghimire 2004). The claims, or at least the concerns, of the traditional users would more likely be addressed if they were able to participate in, or otherwise influence, the decision-making process, for example, through the political activities or political parties.

### Property rights in community forests

Community forests are specified areas of national forests which have been handed over or entrusted to registered forest user groups for 'development, conservation and utilisation' of the forest for collective benefit. Currently, 1 229 669 ha (25% of total forest area) is managed as community forests by 14 439 user groups, benefitting 32% of the population (1 659 775 households) (Ojha, Persha and Chhatre 2009b). The forests are handed over for five or ten years to be managed in accordance with the operational plan approved by the district forest office. Membership of user groups is based on residence, that is, on territory. In principle, all households (represented by one member, usually the male head) residing within a defined territory are eligible to become members if they fulfill further conditions such as paying membership fees and the rights to the forest handed over are held equally by all the members of the user group. But it is not clear which rights they hold and under what conditions. (The issue of access, exclusion and equity of members of user groups to both decision-making and use of forest products, that is, the actualisation of property rights, will be discussed later in the section on equity.)

In terms of bundles of rights, user groups have access and use rights, management and decision-making rights and partial rights of alienation of forest products, but these rights are limited, especially as compared to rights that the state has over government-managed forests or individuals have over private forests. The forest user group may use the forest (collect fuel wood, fodder, timber and non-timber forest products, graze their livestock etc), plant trees, shrubs and other plants, sell or even mortgage forest products, especially timber, and make decisions concerning use, rights and responsibilities of the members but only in accordance with the approved operational plan. However, the state still retains decision-making rights, and ultimately ownership rights, over the forest and especially forest land, handed over to the forest user groups. The district forest office retains the right to take back the community forest (that is to cancel the agreement) if it is not managed according to the approved operational plan (for example, if more trees are harvested for timber than were approved). The user group may appeal this decision only with the regional forest office and not with the higher office or the courts. Further, the operational plan (and the contract agreement between the district forest office and the user group) has to be renewed after the term of the contract expires every five or ten years and, until this is done, the forest user group, at least according to state law, does not have rights over the community forest that they have been managing (though in practice the user group continues to manage the forest as though they were the rights holders). Finally, 'ownership' of the forest land, even the land covered by the community forest, vests in the government. Forest land thus may not be sold, leased or rented out or used in other manner not approved by the district forest office.

One of the rights transferred to community forest user groups is right of exclusion (and right to grant limited use rights to non-members). As mentioned earlier, user groups, using this right granted to

them by state law, in many instances have refused to recognise the traditional use rights of some users, especially occasional or distant users, much less to accept them as members of user groups. In some cases, some traditional users may be permitted to access community forests for limited periods with or without paying fees, depending on social relationships and negotiation, but their rights to use the forest based on traditional use rights are not accepted. In other words, user groups have created new property relationships between themselves, the state and other (traditional) users.

While community forests are in principle 'common property' of all the members of the user group, regulated and used collectively, some community forest user groups in Saptari district have, in the words of Bhatta and Bhattarai (2002), 'privatised' management of community forests by dividing them into individual plots which are then allotted to individual households for management and use. The households may lease their plots or sell the produce individually. This form of tenure in some ways recall *kipat* tenure wherein the *kipat* land as a whole is communally owned but individual households have rights to specific plots of land for their use, which they can mortgage and so on but not sell.

The question then is what rights do the user groups have over all the trees, shrubs, other plants and the above- and belowground biomass within the territory of the community forest? And do the rights differ according to whether the trees and biomass were present before the handover or were added after? And how are these rights perceived and constructed by the state and local communities and according to which laws? The answer to these questions have implications for claiming carbon tenure or rights and consequently for claiming payments for carbon trade.

### Access and equity in community forests

Nepal's community forests have received praise worldwide as an exemplar of devolution of power and transfer of property rights to local communities, protection and regeneration of forests and increased income and enhanced livelihoods of the user groups. However, community forestry is also criticised for emphasising conservation instead of meeting sustenance and livelihood needs of the user groups, reflecting and reinforcing unequal power relations in the local communities (elite capture, marginalisation or exclusion of Dalits, women and ethnic groups), inequitable sharing of benefits and responsibilities (the elite gaining more benefits in absolute and comparative terms), and for depriving some traditional users of their traditional use rights to the forests handed over to the users groups. (The literature on this issues is vast but for recent reviews see, for example, Winrock International 2002; Timsina and Ojha 2004; Nielsen 2008; Ojha, Persha and Chhatre 2009a, b).

Ojha, Persha and Chhatre (2009b), for example, note that...

... Community forestry is flourishing in Nepal, improving the livelihoods of rural households in thousands of communities, and nurturing democracy at the grassroots despite a prolonged insurgency and political upheavals...Three decades of operational innovations, legislative developments, and evolving practice have clearly demonstrated success in terms of enhancing access to forest products, improving livelihood opportunities for forest-dependent people, strengthening local institutional capacity, and improving ecological conditions of forests... Community forestry appears to have stood the test of time, contributing to the welfare of the masses of rural poor in Nepal (2009 b: 1, see references cited therein).

They go on to discuss what they term the 'controversial or unintended negative consequences' of community forestry.

The poorest households... benefit less from community forestry than wealthier households in a community. Some studies have found that wealthier households not only tend to control forest management decisions, but also may make access to forest products disproportionately more difficult for poorer households by making management decisions that act in their own interests. Examples include focusing management efforts on timber production, restricting the amount of NTFP collection, introducing fee-based collection systems, and reducing access to [community forest user group] funds by other members of the group... Other studies of community forestry situations report a decline in the availability of fuel wood and fodder, no evidence of enhanced employment opportunities, little overall increase in household incomes or livestock resources, or a lack of livelihood improvement for the poorest households in a community (as above: 18, see references cited therein)<sup>28</sup>.

What all these point to is the importance of access to decision-making institutions and processes which greatly determines who benefits or not and how<sup>29</sup>. Those who control decision-making institutions and processes also control other dimensions of property rights, namely use rights and the distribution of benefits and obligations. Inequity in decision-making leads to inequity in use rights and actualisation of rights. For example, the executive committees of many community forest user groups fix the price of timber harvested from the community forest such that the poorer members of the user group cannot afford to buy it and therefore they are not able to actualise their right to buy timber. Similarly, the committees often spend the income from their community forest on physical infrastructure or paying salaries of school teachers, which benefits the wealthier more than the very poor, whose immediate sustenance and livelihood concerns are not met by such expenditure.

Recent changes in the policies of the government as well as donor agencies have addressed some of these so-called 'second and third generation' issues of equity and exclusion, with some degree of success. To address women's forest needs that are often ignored by the male-dominated user groups, forest user groups with only women have been formed, while in other user groups, women have been inducted into executive committees (though there are reports that women-only user groups receive community forests which are smaller and more degraded than groups controlled by men). Similarly, other marginalised groups such as Dalits and ethnic groups have been elected or nominated to the executive committees of user groups so that their interests and needs are addressed. But whether such access to decision-making institutions through inclusion has really enabled the marginalised groups to get their interests addressed requires more research. We need to pay heed to Iris Young's (2000) warning that external exclusion may be replaced by internal exclusion, that is, that the marginalised groups may be included in decision-making institutions but

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<sup>28</sup> Elsewhere they note that community forestry faced challenges relating to the distribution of benefits (forest products and income), social exclusion and marginalisation of traditionally disadvantaged groups, elite capture of benefits and decision-making processes, and transparency in managing community forest user group funds (citing Kanel and Kandel 2004; Chhetri 2006). Taking note of these problems, several groups began to include explicit provisions for greater benefits to poorer people, women, lower castes, and other marginalised groups (Ojha, Persha and Chhatre 2009b: 11).

<sup>29</sup> Along with many researchers, Yadav and Dhakal, too, note that community forests have not benefited the poorest members of local communities because of elite capture of the user groups and 'exclusion' (inner exclusion, see Young 2000) of the poor. To quote them on this: 'Community forestry program has not been able to fulfil the daily needs of the poor and ultra poor, who have needs and priorities different from the better-off. Most community forests are controlled by the elite groups, who do not necessarily consider the needs of the members of the socio-economically deprived sections of community (Sinha et al. 1996). Due to the elite-dominated social system, the poor cannot express their views and needs clearly. Even if they speak out their voices are rarely heard.' (Yadav and Dhakal 2000: 4).



their voices may not be heard or taken seriously<sup>30</sup>. It is also likely that changes may be due to the requirements of project law rather than inclusive rules of the local elites.

Many donor-funded projects such as Livelihoods and Forestry Programme's Pro-Poor and Social Inclusion Strategy (Paudyal, Neil and Allison 2006) have targeted the sustenance and livelihood needs of the very poor and disadvantaged groups<sup>31</sup>. Examples of pro-poor policies and rules include designating loans, land for cultivation or areas for fodder collection from the forests exclusively for the marginalised groups or poorest households; funding rural infrastructure or social development works that address the needs of the poor and disadvantaged; and equitable rather than equal distribution of forest products and benefits (Ojha, Persha and Chhatre 2009 b: 11-12, and references cited therein).

While such innovations contribute to more equitable sharing of resources and benefits, it can be questioned whether in the absence of project law (and externally funded projects) that prescribe such pro-poor activities the local elites would agree to give up benefitting more than the poor because property rights and benefits reflect and reinforce local social structure. State law grants equal property rights over the community forest to all members of the user group but such a construction of rights are only categorical rights which have to be actualised in practice. Local law or norms (usually constructed by the elites) and social relationships between the rights holders, again dominated by the local elites, determine to a great extent the actualisation of rights.

Given such a situation, the question is would the benefits from carbon trade be shared equitably and would the needs of those who need income most be addressed?

## Property rights in leasehold forest

Leasehold forests may be handed over to

- a) poor groups of families;
- b) wood-based industries or organizations; and
- c) for ecotourism,

However, as of 2005, only 216 ha of forests was leased to wood-based industries or for eco-tourism. Singh and Chapagain (2006), based on Department of Forests data, report that as of 2004, 2121 leasehold groups (15 122 households) have leased a total of 8507 ha of forests from the government. According to one report 0.9 million ha of degraded forests and shrub land are available in the hills and mountain areas for 0.9 million households, which if leased would help in forest regeneration as well as contribute to the income of the poorest households (Yadav and Dhakal 2000: 9).

Leasehold forests are leased by the Forest Department to users groups comprising between 5 and 20 households (members) who own less than 0.5 ha of land and earn less than Rs. 2500 a year. Local communities themselves often identify the households eligible to be members of the leasehold forest user groups. The lease period is 40 years, with the possibility of extension and the user groups

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<sup>30</sup> Internal exclusion concerns ways that 'people lack effective opportunity to influence the thinking of others even when they have access to the fora and procedures of decision-making' (Young 2000: 55). This happens when people find that their views in public hearings and discussions are ignored, dismissed or patronised by the powerful. Their claims are not taken seriously and they are not treated equally. Thus, though they have 'access' to the forums for discussions and decision-making, they have little 'voice' or ability to influence discourse or decisions.

<sup>31</sup> See Joshi et al. 2006 and Pokhrel et al. 2006 for Australian and Swiss projects respectively.

have to follow the operational plan agreed upon by the department. Only degraded forests and shrub land not suitable for community forests may be leased. The users have to protect standing trees (which belong to the government) and prevent grazing in the leasehold forests. They may plant fodder, fuel wood and multiple use (including fruit-bearing) trees, grass, medicinal plants and cash crops but not cereals. These would provide fuel wood, fodder and grass for their livestock and cash income from sale of other products that they have grown.

The pro-poor leasehold forestry program was initiated in 1993 in several districts as part of the Hills Leasehold Forestry and Fodder Development Project (HLFFDP), especially to assist those who were not benefitting from community forest. Targeted at the poorest households, leasehold forestry was considered more equitable than community forestry (Yadav and Dhakal 2000; Singh and Chapagain 2005; Nielsen 2008) with potential for substantially increasing the income of households below poverty line (see, for example, Nielsen 2008 for data).

Leasehold forestry also faces problems. There are reports of elite capture of leasehold forestry, of the better-offs later challenging rights of the leasehold forest user groups; of the users groups, because of their weak financial, political and social status, not being able to prevent others from using their forest (Nielsen 2008; Singh and Chapagain 2006; Yadav and Dhakal 2000). Further, the existing use rights of other traditional users to the areas leased are sometimes ignored, leading to conflict (Nielsen 2008). In order for the user groups of leasehold forests to protect the rights granted to them by the state based on state law, they need the consent and cooperation of the whole community, the traditional users of the forest land<sup>32</sup>.

In terms of property rights and tenure, the state transfers some of the bundles of rights to the leasehold forest user group such as decision-making, use and alienation rights but only in accordance with the agreed upon operational plan. They have full rights (to use, sell, mortgage etc) over the trees, plants and grass that they have planted and cultivated but the state is the owner of the forest land as well as all the trees in existence when the forest was handed over. Their obligations include protection of the government trees, prevention of grazing, and growing trees and plants on the degraded forests. Though the users have long-term leases of 40 years, the state can resume the leasehold forests if the terms of the operational plans are not fulfilled. Leasehold forests are still national forests, with the ultimate rights vested in the state. At the same time, local communities and traditional users claim rights to the forest leased to the leasehold user groups, based on traditional use (and perhaps even decision-making) rights, even if the state does not recognise these rights. They will have to agree to renounce their rights to the forest, based perhaps on state law, perhaps on pressure from political parties or NGOs or perhaps on their notions of justice and equity or combination of all three rules and norms.

In other words, leasehold forests create new property relationships between the user group and the state and between them and the community, the traditional users. The basis for the new property rights and relationships is a combination of state law and local law. And the actualisation of the new property rights depends on several factors including the social, political and economic relationships between different claimants to the forest, the ability of the relatively powerless users group to draw upon various resources to enjoy their decision-making and use rights over their leasehold forest.

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<sup>32</sup> This view has been well expressed by Singh and Chapagain (2006: 133) though formulated differently: 'In the hill and mountain zones, the Department of Forests is the de jure authority for administering all degraded and shrub lands, but local communities, as customary users, continue to use these lands for grazing, the extraction of forest products and the holding of social and cultural events. The allocation of community or leasehold forestry is therefore basically determined by the local community or users of forest land'. (Singh and Chapagain 2006: 133)

Leasehold forests are 'common property' in that the user groups collectively craft and enforce rules concerning uses and users of a common resource for the benefit of their members, even if the state claims ultimate ownership rights over the resource. In some cases, even though leasehold forests is supposed to be collectively managed and used, the leasehold forest is divided into plots and allotted to individual households for their management and use, similar to the example of 'individualised' community forestry in Saptari (Bhatta and Bhattarai 2002) mentioned earlier.

### Access and equity leasehold forest

Pro-poor leasehold forest is supposed to be targeted at the poorest of the poor in rural areas. Leasehold forestry has increased access of the members of the user groups to fuel wood and fodder, decreased the time they (especially women) need to spend gathering fuel and fodder, and helped increase their income especially from livestock (Nielsen 2008: 16). However, reports suggest that in many cases members of leasehold forest use groups may be better off than others who are even poorer and further that leasehold forests may deprive existing users from the common resource which they had been using (Baral and Thapa 2004; Nielsen 2008).

### Carbon rights in land, pasture and forests

Carbon tenure (or carbon rights) is a new concept which has not yet received much attention from the Nepalese government, especially concerning making laws pertaining to it. For want of clear law on carbon rights, the literature on this topic is forced to interpret existing laws, especially forestry laws, or make an educated guess. The question is: does the state (government) 'own' all the carbon stock in all national forests and pastures and thus would be the primary beneficiary of carbon trade under different REDD options or does it own carbon stock only in government-managed or protected forests and pastures? And does the carbon right of the state extend to forest or pastures handed over or leased to individuals and groups? Or what types of carbon tenure (rights) do the state and individuals, user groups and local communities (including indigenous communities) have over different categories of forest and pasture tenure?

Carbon tenure in private forests, pasture and agricultural lands is perhaps clearer: the owner of the forest, pasture or agricultural land would be the 'owner' of the carbon stock in these resources and would have the right to trade in carbon. The issue for private land and forest could concern the rights of tenants who cultivate the land or grow trees and the rights of family members who are not official title holders of agricultural land, pasture or forest.

Pokharel and Byrne (2009) argue that carbon pools are directly related to forest tenure regimes and each regime has a different level of ownership of carbon pools (dead wood, litter, soil organic carbon, above- and belowground biomass). They present a table based on an analysis of the current forestry legislation, which 'shows who likely owns which of the carbon pools under the various tenure regimes' (Pokharel and Byrne 2009: 10). They are cautious about making definitive statements and suggest that carbon tenure has to be 'sorted out at the regulatory level' (that is, by the government)<sup>33</sup>.

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<sup>33</sup> Oli and Shrestha (2008) do not even bother to raise the issue of carbon tenure but present data about carbon storage in different forest tenures as well as ecological and development regions as though carbon tenure was self-evident.

**Table 11.** Ownership of carbon pools according to forest tenure

Tenure Arrangement		Dead wood	Litter	Ownership of		
				Soil organic carbon	Above-ground biomass	Below-ground biomass
National forest	Government-managed forest	state	state	state	state	state
	Community forest	group	group	state	group	group
	Leasehold forest	LFUG	LFUG	state	LFUG	state
	Religious forest	group	group	state	group	state
	Protected forest	state	state	state	state	state
	Collaborative forest	joint group and state	joint group and state	state	joint group and state	state
	Buffer zone community forest	joint group and state	joint group and state	state	joint group and state	state
	Conservation areas	joint group and state	group	state	joint group and state	state
Private forest	Private forest	individual	individual	individual	individual	individual

Source: Pokharel and Byrne 2009:10

With reference to community forestry, Pokharel and Byrne (2009:10–11) claim that though provisions relating to carbon rights are not included in the operational plan, according to the current forest sector legislation, community forest users groups probably have carbon ownership rights to all the carbon pool in the forest except for soil organic carbon but that the question of ownership as well as income will have to be negotiated between the state and the users groups. Basnet (2009), on the other hand, argues that the Forest Act 1993 is contradictory regarding rights of the user group: ‘Under Nepal’s community forestry system, standing trees and the forest land are the property of the state. In this construction, the sequestered forest-carbon cannot be considered the property of the [community forest user group] as they do not have the right to trade forest carbon or sell other forest products. This conflict... with Section 25, which entitles [community forest user groups] as to sell and distribute forest products independently by determining the price of forest carbon’ (Basnet 2009:79). She suggests that the user groups should be given usufructs rights over forest carbon, which they then can sell and benefit from; or they should be treated as ‘stewards’ of the forest and be compensated for managing the forest, including sharing the income from forest carbon (ibid: 81).

Karky, Skutsch and Bansokata (n.d.) argue that it is not clear to whom forest carbon belongs. They further argue, citing Belbase and Regmi (2002), that rights over forest products as defined in the Forest Act 1993, overlap with other laws, such as the Local Self-Governance Act 1998, so that ‘with the new prospects of carbon trading, rights and ownership is further ambiguous’. The contradictions in the laws would result in disputed ownership of carbon when carbon trading is introduced. According to them, the issue of carbon rights and ownership is not clear at both the policy level of the government and at the local level of the communities. Whether the government will recognise carbon ownership claims of forest user groups (and other user groups) is an issue that will have to be negotiated between the government and the local communities.

It could be suggested that 'local communities' should include not only registered users groups but also other traditional users of forests and other claimants, such as the indigenous peoples who claim rights to forest and other resources based on traditional rights as well as ILO Convention 169.

Not discussed so far is the issue of carbon stock and carbon rights in pastures and agricultural land. Carbon rights to carbon stock in pastures would probably be similar to the case of forests since the state claims ownership of all pastures, except those privately registered. But the claims of traditional users and especially indigenous peoples would have to be taken into account in making policies and laws concerning rights to pastures and carbon stock in the pastures and alternative land uses.

As Nepal is still in the process of discussing its new constitution, including how the state is to be structured and the rights and responsibilities of the different political and administrative units as well as local communities and indigenous peoples, it is uncertain how carbon tenure will relate to land, forest and pasture tenures in different property regimes and who will hold what kinds of property rights to these resources. The state, the federal provinces, local communities, current rights holders, users whose rights are not recognised and the indigenous communities will have to negotiate sharing of benefits from different forms of property rights over common pool natural resources and the carbon stock stored in them. The changing constellations of social relationships, including power relations, well as the relationships between different laws, rules and norms, both old, emerging and new, at the local, national and even international levels will determine how property rights over carbon is constructed, distributed and actualised and who will benefit more or not at all.

## Implications of different REDD options

This section will discuss the implications of different REDD options from the perspective of tenure, rights and equity. As mentioned earlier, carbon tenure in Nepal has not yet been regulated nor have there been negotiations between different claimants. Moreover, we will have to wait until the new constitution is promulgated (and perhaps even after) to see how state law constructs the sharing of property rights over natural resources, including carbon, between the different political and administrative units (centre, federation, local bodies) and between the state and local communities and indigenous peoples. Various options of REDD clearly attempt to protect the rights of indigenous peoples, but also local communities, over their resources. For example, according to Karky and Banskota (2009: 35), 'The CoP 13 decision on REDD (2/CP13) has already explicitly stated that any policy on REDD must recognise the needs of local and indigenous communities'. The claims and rights of the indigenous peoples will have to be seen in relation to the claims and rights of non-indigenous local communities who are dependent on agriculture land, pasture and forests for their sustenance and livelihoods. The rights of different claimants will have to be negotiated not only at the national level but also perhaps at regional or village levels.

The eligibility criteria for carbon credit under REDD options (and other options such as CDM) depends on definition of forest and the base year for the status of the forest (for example, as degraded or for reforestation etc). Nepal has yet to provide definitions which are in conformity with international norms.

The discussion below is based mainly on legal construction of property rights, referring mostly to state law. Local construction of rights and actual property rights relationships, and who actually has access to a resource, may vary significantly from the state legal construction. We need to go beyond 'ownership' of a resource and look at the actual bundles of rights held by different rights holders and claimants. Ultimately, social relationships and especially power relationships and negotiation between the claimants will determine the construction and actualisation of property rights relationships and distribution of costs and benefits.

## REDD

The general consensus in the literature is that REDD (deforestation and forest degradation) schemes may not be beneficial to Nepal, especially for the community forest user groups precisely because of their successful management of forests (Ojha et al 2008; Pokharel and Byrne 2009; Karky et al. n.d.)<sup>34</sup>. There is some scope for benefitting from the government-managed and protected forests, which have seen steady deforestation and degradation (1.7 % deforestation and 5.57% degradation between 1978/9 and 1994/5), if we put aside the question of definition of forest and non-forest land as well as deforestation and forest degradation. Given the state's lack of capability (and political will?) to prevent deforestation and degradation, handing over these forests to community forest user groups could be an option. However this would raise two issues, first concerning the benefits to new user groups at the cost of the older groups and second the rights of the indigenous peoples and other users whose access to forests may be curtailed and their rights not accepted by the user groups, or if the forests are not handed over by forest officials (But this would still leave open the question of property rights over carbon stock in the forests).

But most the forests in the hills have been handed over, except for protected forests and the option in the mountains is minimal due to distance. Government-managed forests in the Terai could be handed over as community or leasehold forests. From an equity perspective, more forests should be 'handed over' to Terai-based user groups. Only 3% of the forests in the Terai have been handed over as community forests and Terai-based user groups constitute only 7% of all community forest user groups (Pokharel and Byrne 2009). However, the government is reluctant to hand over the Terai forests to user groups because it doubts their capability (and sincerity) in managing the forests, populated with lucrative timber species. Another option is collaborative forest management between local user groups and the government, with the latter retaining some control over management, decision-making and share of the revenue. [It has been sometimes suggested that there may be elements of discrimination against Madhesis by the state, overwhelmingly dominated by the hill people, in its reluctance to hand over forest to them (see Singh and Chapagain 2006).

However, the transfer of property rights over the government forests to the Terai-based community forest user groups or collaborative forest management groups to benefit from carbon trade will have political implications if the older community forest groups, which are largely located in the hills, do not benefit. The Federation of Community Forest Users (FECOFUN) does not frame the issue in such terms (Terai versus hills and, implicitly, Madhesis versus Pahadis) but in terms of equity between old and new user groups in sharing benefits from carbon trade. According to Bhola Bhattarai, the General Secretary of FECOFUN, 'How can we discriminate the communities who have been protecting and managing the forests for so long and the one who will be protecting the forest in the future? So, we will raise our voice to craft a mechanism to benefit both types of community forestry' (Pokharel and Byrne 2009:7).

Moreover, this could have the perverse effect of punishing the older user groups for their success in conserving their forests and rewarding the communities who have helped cause deforestation and degradation. The community forest groups would feel that their past efforts are not being recognised and this could lead to them being less willing to manage their forests as before or to encourage leakages, that is, making use of government forests more intensively.

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<sup>34</sup> According to Karky and Banskota (2009: 35), 'Local communities that manage community forests have economic or livelihood incentives for managing and protecting their forests since they derive fuel wood, timber, fodder and non-timber forest products. It is unlikely that carbon revenue will be able to replace this incentive because the social gains from community forest are far greater than the potential revenues from carbon'.

Commitment to the REDD option could have negative consequences for forest dependent, usually poorer and disadvantaged, households and communities if in the interest of carbon forestry and the contract between the buyers of carbon credit and the sellers (whether the government or community forest user groups), they are prevented from using the forests for their sustenance and livelihood needs. Community, leasehold and collaborative forests, while benefitting many legitimate users, may deprive other traditional or other forest dependent users (such as migrant 'landless' squatters) from using the forests (Karky et al. n.d.; Pokharel and Byrne 2009).

Finally, the international rights of indigenous peoples over the natural resources in their traditional homeland (as granted to them by ILO Convention 169) would certainly be affected, even more by REDD, first, because the state<sup>35</sup> and local communities and user groups (other than indigenous peoples) do not recognise the international rights of indigenous people to their resources and, second, because many of them, heavily dependent on the forests, would be prevented by forest officials or community forest user groups from using the forest products to the extent they require to meet their sustenance and livelihood needs.

In brief, while the government and the newer user groups may benefit from REDD (assuming all the criteria are met), this would be at the cost of the older groups and especially the more forest-dependent, poorer, disadvantaged groups and indigenous peoples whose access to the forest may be severely curtailed or even stopped and whose traditional property rights, especially use rights, would be affected (Karky et al. n.d.)<sup>36</sup>. REDD would be beneficial only if sustainable resource extraction is permitted to meet sustenance needs, otherwise communities may not participate (Karky and Banskota (2009). Ojha et al. (2008: 34) argue even more vigorously for the need to address the livelihood concerns of the people: 'While carbon offsets should be accounted for, for financial rewards, climate change funding should also reflect the concerns for addressing the problems of poverty and forests together. Forests cannot be conserved without addressing basic livelihoods concerns of the local, indigenous, poor and marginalised groups.'

### **REDD+**

REDD+ includes carbon payment or credits not only for reduction of carbon emission by avoided deforestation and forest degradation but also for sustainable forest management (carbon stock remain constant over time) and afforestation and reforestation (A/R) (enhancement of carbon stock). REDD+ activities, besides reducing carbon emission and enhancing carbon stock, also provide valuable environmental services such as improving biodiversity and water stock and improving livelihood opportunities. Although REDD+ is discussed less than REDD in Nepal, the literature available in general is more favourable to REDD+ options for Nepal as a whole and especially for community forests (Pokharel and Byrne 2009; Dahal and Banskota 2009; see also de Gryze and Durschinger 2009). Pokharel and Byrne argue that community forest user groups are in a position to qualify for, and benefit from, carbon trade under REDD+: 'Community forest user groups with secure tenure rights (though carbon tenure are yet to be regulated) puts rural communities in Nepal in a good position to capture carbon payments through the commitment of deforested areas or degraded forests for REDD under the system of community forestry. [Community forest user groups] can credibly claim to meet the criteria of ensuring sustainable forest management and ensuring local and indigenous people rights, as well as livelihood co-benefits' (Pokharel and Byrne 2009: 5–6).

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<sup>35</sup> Nepal has ratified ILO Convention 169 but the relevant laws (acts and regulations) have yet to be enacted to put the international law into effect.

<sup>36</sup> Given the small size and scattered nature of most private forests, it is highly unlikely that they would qualify for carbon trade under REDD and even if they did whether it would be economically viable, given costs for evaluation, monitoring etc. But if private forests were contracted for carbon trade, the forest owners would most likely make more use of community and government forests, leading to 'leakages' and inequitable sharing of resources.

It is debatable whether these groups do, indeed, in all instances ensure rights of all local communities and indigenous peoples or that they are equitable, but certainly most of them have proved that they are capable of ensuring sustainable forest management and in fact may err on the side of 'conservation' at the cost of 'sustainable management'. There is room for harvesting more timber and other forest produce, especially in the older community forests, while maintaining steady carbon stock over time, especially if new plants and trees are planted to replace the harvested forest products.

Nepal could benefit from afforestation and reforestation, given the large coverage of degraded forests and shrub land and other public land. Many of these degraded forests or shrub land could be added to the existing community or leasehold forests or handed over to new user groups for them to plant multi-purpose trees, fruit trees, medicinal plants, and so on. Yadav and Dhakal (2000: 9), for example, suggest that 0.9 million hectare of degraded forests and shrub land are available in the hills, which could be distributed as leasehold forests to the poor households and would raise their income significantly over time. But it is not sure whether all such lands would fulfill the criteria of afforestation or reforestation under REDD+. For CDM, afforestation activities would have to take place on land that was not forested before 1950 and reforestation on land that was not forested before 1990. Equally important, most of these lands are 'public lands' or commons being used for grazing and other purposes. A/R activities would affect the rights of existing users of these lands, and affect their livelihoods unless they are included as members of users groups with rights to afforest or reforest these lands<sup>37</sup>.

There is some possibility of benefitting from A/R activities in the Terai, given the high rate of deforestation and degradation. But the government does not have the capacity to carry out such activities and local communities are not given the opportunity to do so. If given the opportunity and some security of tenure, local communities, especially those who are most dependent on forest, will probably be involved in A/R activities.

Perhaps Nepal, and especially forest user groups, could benefit from the REDD+ option, mainly from sustainable forest management and from payment for environmental services (PES) rather than from afforestation and reforestation. All the activities under the REDD+ option may not necessarily be eligible for carbon trade, if the criteria set are not met, but they would have other benefits such as more forest cover, more availability of forest products, including NTFPs for sustenance and livelihood needs, especially for the poorer households, and better environmental services such as more water.

As in the case of the REDD option, questions can be raised concerning equity and rights of local communities and indigenous peoples as well as rights over carbon in the biomass. Community forest user groups would probably benefit from REDD+ (assuming that carbon rights issue was solved) but the question of whether the benefits and costs would be equitably shared, given unequal power relations and the capture of decision-making institutions by local elites, still remains.

If and when forests earn user groups substantial income, including from carbon trade, users or claimants of the forests who are not members of user groups would probably lose out because they would be denied access or tolerated access and their rights would not be recognised. Transhumant pastoralists, landless migrants and small bands of indigenous peoples living in forests may be

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<sup>37</sup> Kunwar et al. (2008) argue that public land could be used to improve livelihoods of the landless and poor, for example, by planting trees, grasses and non-timber forest products. They discuss experiences of the Livelihoods and Forestry Programme in three western Terai districts, targeted for the landless and land-poor residents of southern Terai who have less access to forests than those living near the foothills. The two major issues that they had to deal with were tenure rights and security over the public land and the danger of elite capture of the public land even when handed over to the poor.



prevented from accessing the forests managed by users groups and even forest officials. Special efforts would be required to ensure that they were not excluded or benefited comparatively less than their wealthier neighbours.

The rights of indigenous peoples would be protected to the extent they are members of user groups and the rules of use in the operational plan. Their rights would be protected as members of user groups, to the extent they can actualise their rights, but not as members of indigenous peoples with rights granted by ILC Convention 169. If they were able to actualise their rights granted by international law, then the existing property rights holders of forests who are not indigenous may lose their property rights, and at most retain use rights or only tolerated access to the forests that they once managed<sup>38</sup>.

There is also the additional question of whether, given the knowledge and skills required for negotiation, monitoring and so on, brokers, service providers, NGOs and others may not benefit more than the people whose investment and services help reduce emission or enhance carbon stock.

### **REDD++ (or REALU)**

The best option for Nepal would be REDD++ (also known as AFOLU or REALU: reducing emission from all land uses). This option would include reducing emission from deforestation, degradation, enhancement of carbon stock, and all other land uses, including agriculture, pasture and wetland. This option could potentially benefit the country as a whole and all sectors of the society, even if the costs and benefits of carrying out the activities required to fulfill the conditions for the carbon trade may not be equitable.

The owners of agricultural land, private forests and pastures could benefit from carbon trade, and the more land they have the more they could benefit, if they carried out activities which reduced emission or enhanced carbon stock such as growing more trees or plants, shifting to organic fertilisers and stall-feeding their livestock. The marginal farmers or the landless could benefit if they have (more) access and especially property rights to government or public (including 'commons') forests and land. They could meet their hunger for land (even if they had only decision-making and use rights but not formal titles to the land) and carried out activities pertaining to reducing carbon emission or enhancing carbon stock to benefit from carbon trade as well as more directly from the natural resources they generated as in the case of community or leasehold forestry. But this would require a deeper understanding and mapping of the intricate relationship between agriculture, livestock and forest as practised by local communities and by different sectors of local communities as well as the multiple, overlapping and contested rights over these resources.

The state could benefit, at least theoretically, from the government-managed forests, protected forests, shrub land, wetlands and pastures that it 'owns' if it carried out activities under the REDD ++ option. Alternatively, given the state's inability to carry out these activities efficiently and the contested property rights over these lands, it could transfer fully or partially decision-making, management and use rights to local communities, indigenous peoples and landless migrants and share the benefits from carbon trade. The government does share revenue from forests with local communities living in the vicinity of some protected forests, especially in the buffer zones and some conservation areas, and user groups of collaborative forest management. Similar mechanisms could be instituted for REDD++ activities and benefits. Where feasible, it could handover forests, shrub land and other public lands to user groups as community or leasehold forest groups with the operational plan specifying the activities they need to carry out under the REDD++ option. The

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<sup>38</sup> There is an undercurrent of dispute between FECOFUN and NEFIN (Nepal Federation of Indigenous Nationalities) over the rights to forest, whether or not they are 'managed' by user groups.

landless and poorest in each village could be given preference for transfer of property rights over these resources. The nation as a whole could benefit from carbon trade, a better environment, and enhanced forest and land-based resources. And the local communities could benefit by acquiring more secure property rights over the eventually increased stock of natural resources, and increasing carbon, which they can use to meet their livelihood needs.

However, questions concerning equity issues and rights of existing users and of indigenous peoples still remain. As the possibility of benefitting from carbon trade increases and the more benefit that is likely to be received, the more likely it would be for the interests and rights of some to be ignored. The poor and landless may prefer to grow crops which will give them returns much quicker than trees that will over time earn the user group more money, which may be preferred by the richer members owning agricultural land. Landless migrants who are not official residents of a village, distant users of the forest or pasture, people from other ethnic groups and so on may find that they have less access to the resources they traditionally used or were allowed to use so that the local residents, members of user groups, can benefit more. User groups who would have more secure property rights over resources, backed by state law, would be in a stronger position to exclude non-members, especially those who are less powerful than the members of user groups. Thus, while the access and rights of some would increase and those of others may decrease. Elite capture, inequitable sharing of costs and benefits, marginalisation or exclusion of some would probably continue. There would probably be more conflicts over resources between different right holders and claimants.

The rights of indigenous peoples would be a big issue, not only between them and the state but also between them and members of local communities who are not members of specific indigenous community. In territories claimed for example by the Limbu indigenous group, what would be the property rights over forest, pasture, or agriculture land of Limbus, other indigenous communities, and people who are not indigenous but have lived in a village for several decades or centuries? To protect the rights of a particular indigenous community, would the rights of others be denied?

## Conclusion

Nepal and different sectors of the Nepalese society will probably benefit from carbon trade, especially from REDD++ option and to some extent from the REDD+. However, several issues will have to be addressed, concerning carbon tenure or rights, the relationships between carbon rights and rights to the biomass that stores carbon in different property regimes, the different constructions of property rights over a resource according to state or local law, equity in property rights and distribution of costs and benefits, as well as the competing and contested claims to property rights over resources, especially between the state and local communities, between indigenous peoples and others and between differently situated individuals and groups.

The first need is a better understanding of property rights or resource tenure, including carbon tenure because property rights or tenure is often understood only as 'ownership', that is, formal title to a resource. However, as we have argued, property rights have many dimensions and are contested and changing. One way of understanding property rights is in terms of the three dimensions of property rights, that is,

- a) bundles of rights (especially decision-making and management rights (governance rights) and use rights, including rights to derive economic benefits from the resource);
- b) rights holders; and
- c) basis of rights.

The bundles of rights may be distributed differently among different holders and constructed differently by different laws. This means that property rights are multiple, overlapping, differentially distributed and constructed and contested. Property rights include rights to participate in decision making. It is vitally important to have rights to decision-making institutions because they determine rules concerning, users, resource use and the sharing of costs and benefits. Second, property rights should be understood not only as rights over resources but perhaps more importantly as social relationships between claimants concerning a valued resource. Property rights are determined by social, political and economic relationships (and especially power relationships). Changes in these relationships often lead to changes in property relationships. Third, legal construction of property rights should be differentiated from the actual property rights relationships and actualisation of rights. Actual property rights relationships could be very different from the legal construction of rights. It is not sufficient to hold rights, as constructed by state or local law, the right holder must be able to actualise rights, that is, to actually participate in meetings and influence decisions or to actually be able to use a resource to which she has a right. Access and the ability to actualise rights depend on many factors especially political, economic and social relationships. Rights holders, especially from marginalised or disadvantaged groups, may not be able to actualise their rights or to actualise their rights but only inequitably. Thus access or the ability to actualise rights is an important aspect of property rights.

There is no agreement as to who has carbon rights stored in different resources in different property regimes. Carbon tenure is may problematic in resources that are 'private property' but is problematic in all other property regimes, especially in those common pool resources (forest, land, pasture) which have been transferred to user groups or over which there are competing claims from traditional users, local communities and indigenous peoples. It is uncertain what types of carbon rights the government (and local bodies) will claim over community, leasehold, and collaborative management forests and public lands that are used and managed by local communities and user groups. Nor it is clear what types of rights indigenous peoples will claim over all natural resources, including carbon, in their traditional homelands.

The question of ownership, that is, formal title, of the resource is important for contracts, especially with international organizations, for example concerning carbon trade, and for establishing property rights in the courts and other state mandated dispute resolution institutions. How the different bundles of rights are shared or distributed among different claimants is not of concern in these contracts with international buyers of carbon credits. But this is of vital concern to the claimants. Contested property rights claims over these land, pasture and forests will have to be resolved along with or even before attempting to resolve contested claims over carbon rights. Therefore the government should begin negotiating with all the claimants to land, forest, and pastures to resolve the question of carbon tenure or rights, not only concerning 'ownership' but also the distribution and sharing of the bundles of rights over natural resources and carbon stock. Until this issue is resolved and regulations are made, and even after they are made, disputes between different claimants over property rights to carbon and other resources will continue.

Rights of local communities and indigenous groups could be ensured during the process of negotiation between themselves and between them and the state. Communities are differently situated, with different needs, interests and livelihood strategies and differences, sometimes great, in their ability to access decision-making institutions at different levels, to access resources and to actualise rights. Some communities, especially those with access to the decision-makers, for example, the Pahadi Brahmins and Chhetris, are better able to ensure that rules are made which favour their interests. This may partly explain why most of the community forests are located in the hills, managed by hill based communities (Pahadis) and not in the mountains or the Terai, populated by the Madhesis and also why the rights of indigenous peoples, especially the smaller groups totally dependent on forests, are usually ignored. However, now that the Madhesis and indigenous peoples

are more organized and active and have more access to decision-making institutions, including the interim parliament, their interests (or the interests of the more powerful among them) may be addressed. But only time and the relative power relationships between the claimants will tell how or whether the competing claims of the state, indigenous peoples and other members of local communities will be resolved to satisfy all claimants to property rights over natural resources.

Similarly communities are heterogeneous, with differently situated groups and individuals, divided along lines of caste, ethnicity, gender, class etc (even ethnic communities are divided at least along lines of gender and class), with different needs, interests, livelihood strategies, and different access to decision-making institutions and resources and ability to actualise rights. Given the hierarchically structured inequalitarian structures of local communities, it is unlikely that the interests of the most marginalised and disadvantaged members of local communities and user groups will be addressed and actually met. Local elites (males, upper castes, Pahadis, rich powerful families etc depending on the context) are usually able to 'capture' decision-making institutions and make decisions which favour their interests, resulting in inequitable sharing of costs and benefits. Thus, it is not sufficient to ensure rights of local communities and indigenous groups, the rights of the differently situated groups and individuals of these communities too should be protected to ensure more equitable sharing of costs and benefits. Nepal has experimented with several mechanisms to ensure that the disadvantaged and poorest members of local communities benefit, such as forming women's only user groups, reservation of seats for women, Dalits and others in executive committees, allotting land in community forests to the poorest members, using income from forestry to directly benefit the poorest, and so on. Similar efforts should be increased.

If and when carbon credits based on biomass are traded, the value of natural resources will increase and carbon rights holders would earn substantial amount. This would lead to more contestations and conflicts to be resolved temporarily and in a manner depending on social, economic and political relationships between claimants and rights holders. It is highly likely that the most disadvantaged and the poorest would benefit little, not so much in absolute but in relative terms (relative to other members) or even lose out, unless their interests are somehow guaranteed by better governance structures at the local and national levels.

Finally, perhaps too much attention has been paid to forests, land, and pasture as 'resources', property regimes and 'commodity', something to be used and benefit financially from. However for many indigenous peoples, these mean more than just resources and property rights; they are part of their history and culture, of ways of defining their identity vis-à-vis other groups, of a different vision of life and ways of dealing with nature. Treating land, pasture and forests only in terms of their environmental uses, carbon stock and trade may threaten their very existence as indigenous peoples with their distinctive cultures. Yet the paradox is that this may be the only way forests and pastures may be conserved for their use and use by other communities in the future.

## Chapter 5

### Discussion and recommendations

#### **Beyond REDD: exploring an inclusive approach to climate change mitigation and adaptation**

The awareness of the problem of climate change in the past two decades has sparked off considerable debate on a global scale. A key response has been an attempt to devise strategies for managing the risks that climate change poses to households, societies, nations and the entire globe. The main strategies are mitigation and adaptation, which however have been aligned with the conventional division between the developed and developing countries (Ayers and Huq 2009). Mitigation actions are seen as the primary responsibility of the developed countries, while the adaptation actions focus on developing countries that will have to face climate-change impacts more severely. Since the adoption of the Bali Action Plan during the thirteenth Conference of Party (COP 13) meeting in 2007, a considerable effort has been directed toward reducing emissions from deforestation and forest degradation. This financing mechanism is designed to compensate or reward projects that reduce the emission of greenhouse gases resulting from deforestation and forest degradation in the global South. In a new version, called REDD+, it also seeks to achieve carbon stock enhancement and to secure biodiversity conservation and livelihoods improvement as co-benefits. While REDD and REDD+ are received with high hopes in Nepal—as has been evident in widespread publicity and intense activities of the government and other agencies—it is important to have an early awareness of the major limitations of REDD. We seek to assess REDD in the particular contexts of Nepal, demonstrate some of its limitations and offer suggestions about how a more broadly conceived and inclusive approach might work.

We aim to explore the extent to which the existing REDD mechanism fits the complex farming system of Nepal and to explore what alternatives can be offered. We also look at whether initiatives on mitigation and adaptation in Nepal provide a satisfactory framework for meeting expectations. We review the way the two agendas are being pushed in Nepal and draw implications for a potential approach to combining both adaptation and emission trading. We use emission trading rather than ‘mitigation’ as Nepal is not required to make any explicit commitment to mitigation, as is implicitly acknowledged in the ‘shared and differentiated responsibility’ in the United Nations Framework Convention on Climate Change (UNFCCC). We look at the way different stakeholders are divided across different agenda and ways of thinking about climate change. The particular positions of stakeholders are then mapped based on the underlying political economy and politics of knowledge. We then analyse the prospect of forging better collaboration to link adaptation and emission trading.

We aim to highlight the limitation of current reductionist approaches in responding to climate-change threats. We show how forest-based mitigation would leave out large amounts of emission from agriculture and other land uses. Highlighting the potential role of integrated farming in simultaneously reducing emission reduction and ecosystem resilience, we make a case for increased forest-farm integration that would contribute both to mitigation and adaptation. We point to the international climate-change discourse for the existing dichotomy, which does not suit resource management practices in Nepal. On the other hand, we also argue that traditional farming in Nepal is a highly carbon-rich production process and therefore plays a significant role in mitigation. The key theme of this chapter is the disciplinary divisions between forest as source of mitigation and agriculture as a means for adaptation.

## REDD in Nepal

Nepal was quick to embark on REDD. There have been unprecedented levels of collaboration between the government, donors and civil society in moving the agenda forward. Emissions from deforestation and degradation have been considered significant in recent studies, thus pushing prioritising the issue. It is often argued that the conservation of forested ecosystems in the tropics will be difficult unless people are compensated for the environmental services of their forests (Pearce 1996).

### Box 3. Government of Nepal's vision for REDD

Our vision for Nepal's REDD strategy is that by 2013 and beyond our greenhouse gas emissions resulting from deforestation and forest degradation will be significantly reduced by forest conservation and enhancement, by addressing the livelihoods concerns of poor and socially marginalised forest-dependent people and by establishing effective policy, regulatory and institutional structures for sustainable development of Nepal's forests under the forthcoming new constitutional framework.

Source: MFSC (2010: ii)

However, the REDD agenda has evolved from RED through REDD, REDD+ and finally to REDD++. The Ministry of Forests and Soil Conservation (MFSC) has recently prepared a readiness preparation proposal for the country under the World Bank's Forest Carbon Partnership Facility (MFSC 2010). Besides, there are a number of international and national agencies who are piloting an assessment of carbon, benefit-sharing mechanisms, institutional mechanisms for carbon trading and other similar areas for preparing the country for REDD. These activities revolve around doing the groundwork for carbon trade, primarily to enable the country to offer carbon in the international market.

On the other hand a National Adaptation Program of Action is also underway with the involvement of the United Nations Development Programme and will be submitted soon. Likewise, the Pilot Program for Climate Resilience funding has also been tapped by Nepal under the leadership of the Ministry of Environment, Science and Technology. Oxfam, Practical Action and other international agencies are also implementing projects on adaptation.

Though some planning exercises are undergoing in regard to adaptation, it is the mitigation action—represented by the REDD activities—that has received considerable attention from the government, donors and civil society. However, it is increasingly clear that REDD alone won't deliver expected benefits to forest-dependent local people. Critics are saying that it is almost impossible to reduce the deforestation of government-managed forests given the extreme poverty, land hunger and political transition in Nepal. Though the forests' condition has improved in community-managed forests, it is hard to show additionality in those forests. Moreover, the total area of forest and particularly its division into small patches reduces its potential to provide the economy of scale in international emission trading. Moreover, since rural communities largely rely on forest for their livelihoods it is unlikely that they would be able to meet the tough technical standards of monitoring, reporting and verification for any credible emission trading. Even if the forests get some reward, the required institutional and political culture is lacking for transparent and equitable benefit sharing to those who are contributing to conservation.

The issue here is not only whether Nepal benefits from REDD. The broader issue is how can we identify, assess and address diverse sources of emission. This implies moving beyond forests to include all land uses such as agriculture and pasture. In Nepal, almost 21% of land is under

cultivation, which is one of the major sources of emissions. Currently, emission from Nepal is 0.51% of the global total from agriculture, which is a huge amount relative to the nation's size. Given growing hunger and food deficits in recent years, the area under cultivation is likely to increase, implying that the net amount of emissions is on the rise. Moreover, current policy priority on increasing productivity through increased use of high-yielding varieties, chemical fertilisers, pesticides and irrigation will obviously lead to increased emissions. Implementation of REDD in isolation from these realities would not be able to curb total emissions.

Focusing narrowly on REDD has other problems, too. The recent declaration of three new protected areas by the government at the Kalapathar meeting at Everest Camp, just a few days before the Copenhagen meeting, was closely linked with REDD discourse. In addition, the government is introducing more centralised and protection-oriented policies, such as keeping 40% of land as forest and declaring more 'protected forests'. Climate mitigation through forest conservation has become so pervasive that there are discussions on making the community forest user groups' operational plans 'carbon friendly'. These policy discourses are likely to reorient forest management towards sequestration and storage of carbon, which often creates a trade-off with biodiversity. This would, in turn, reduce the resilience of the ecosystem and therefore increase the vulnerability of the socio-ecological system. In brief, the narrow focus on mitigation through REDD ultimately weakens adaptation capacity.

The definition of forest and forest products is also part of the problem in adapting a more comprehensive approach to climate-change response. By definition, 'forest' means an area fully or partly covered by trees with a minimum of 10% crown cover with a minimum area of 0.5 ha. Therefore, it leaves out the tree cover on farms, which are rich in fodder and fruit trees. Similarly, 'forest products' are defined as 'products that are contained or found in, or brought from, forests'. These products include parts of biomass, stones, soil and wildlife (GON 1993). 'Forest' and 'forest products' are defined in relation to the territory that come under the jurisdiction of the Department of Forest. As such, the forests so defined may include a territory that, in ecological terms, would not be identified as a forest, whereas trees, shrubs or their associations found on private land or other lands placed outside the department's jurisdiction are not acknowledged as forests.

### **Complex farming system and livelihoods**

Nepal comprises a complex farming system involving agriculture, livestock, forest and pasture that together supply subsistence needs of a typical household in the hills and mountainous areas. While in the Terai there is a tendency to adopt more specialized production of cereals and other crops, the farmers still depend to a large extent upon the nearby forest to enhance agricultural production. The local people collect fuel wood, leaf litter, fodder or wild edibles from the forest. These 'provisioning' services enhance agricultural production and provide means of subsistence. Many farmers maintain trees in the farmland and adopt several types of agroforestry practices.

Complex farming system—forest cannot be isolated from agro-system, and forest has important role. Agriculture and forestry—and productive economy—in terms of food as well as in terms of carbon.



**Figure 5.** Forest, pasture, farmland and settlements are part of a single whole in a typical village in Nepal’s hills. Nangi village in Myagdi district. Photo by Hari Dhungana.

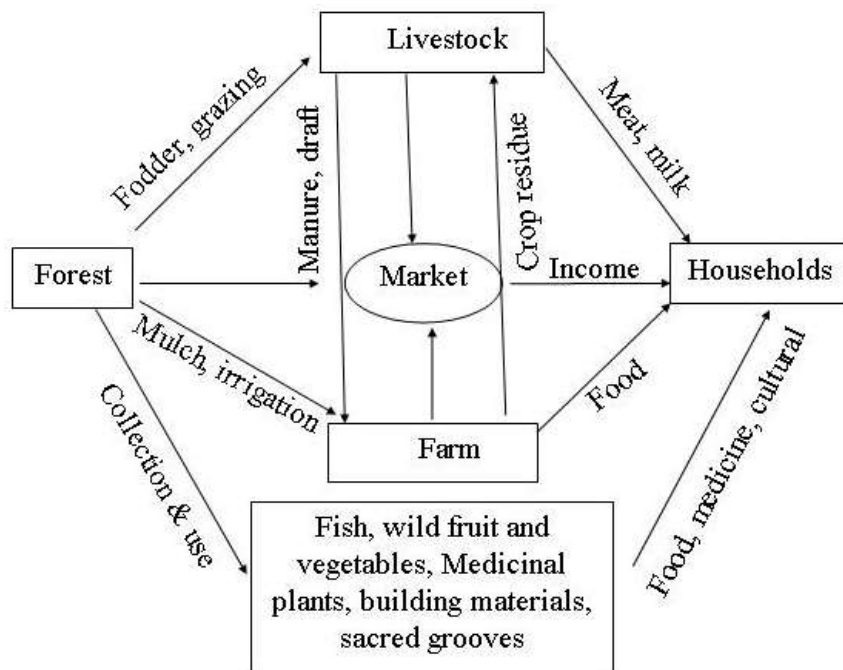
There is huge scope for reducing emissions from agriculture and yet increasing productivity. While agricultural practices—such as paddy cultivation or raising animals—are carbon emitting, Nepal’s farming practice is largely carbon-friendly. There are opportunities for further strengthening and enhancing carbon-rich farming if we support many of the indigenous farming practices.

- First, most of the farms are carbon rich because of agroforestry, mixed cropping, intercropping, use of perennial crops, maintenance of hedgerows and orchards.
- Second, they use little chemical fertiliser and pesticides so as to minimise any damage to the soil, local ecosystems, micro-organisms etc.
- Third, in most of the hills and to some extent in the plains, farmers use minimum tillage, do not use tractors and keep the land covered by one or other crop most of the time so that there is little leakage of soil nutrients.
- Fourth, farmers recycle all the biomass on the farm by using farm produce as mulch and feeding livestock.
- Fifth, farmers usually grow diverse crop species on a piece of land that increases both ecological resilience and reduces risks.

Therefore, traditional farming in Nepal contributes, on one hand, to reducing emissions and, on the other, increases resilience against any climate-induced disaster, including drought and pest attack.

In order to benefit from these multiple functions of farms and forests, the framework to address the climate-related affects and risks should be broad enough to produce potential synergy. Instead of indulging in the trade-off between farms or forests, the REALU framework may help produce synergy by integrating forests and agriculture in addressing both mitigation and adaptation. This is particularly so in the context of integrated farming, as explicated in the following figure.





**Figure 6.** Integrated farming, the predominant form of agriculture in Nepal

Agriculture of this type has no trade-off between productivity of food and storage of carbon. More carbon sequestration may also yield more edible items. If we seek to produce rice only, there might be constraints and trade off. But if we encourage a diversity of crop species and value foods beyond rice, then it is possible to achieve both goals. This is a matter of conscious priority, a deliberate choice to enhance these types of farming, which are even more resilient to extreme weather conditions, pest attack and nutrient recycling.

### Dichotomy of adaptation and mitigation

Under the climate discourse in Nepal and to some extent globally, forests are currently linked with mitigation and agriculture with adaptation. This dichotomy fits with the view that ‘mitigation is concerned with energy’ and ‘adaptation is concerned with water’. A focus on mitigation favours the agenda of the developed North as it allows these countries to continue with high levels of energy use. In doing so, the need of developing countries to be able to adapt to climate change is ignored and sidelined. ‘Water’ problems, such as those resulting from changing rainfall patterns or precipitation amounts, the availability of water for drinking or irrigation, flooding, landslides or forest fire (caused by extended dry weather), pose significant threats to geologically fragile regions, flood plains and marginal agricultural areas. These are important problems in several respects. For instance, they can lead to considerable loss of life and property and to a reduction in agricultural productivity. There are also impacts on the health, vitality and resilience of forest ecosystems and of floral and faunal species. For example, the shortage of water in certain community forests in Dang has been perceived as a ‘limiting factor’ for wildlife populations in recent years and some of the community forest user groups in the Churia foothills are preparing storage tanks inside the forest to make water available for these animals during the dry season. If such problems are to be more pervasive over the medium or long-term, these will inevitably affect the forest trees that sequester carbon.

REDD and other mitigation schemes are heavily linked with forest protection so that biodiversity and livelihoods benefits, which are clearly part of enhancing resilience, are not adequately appreciated

though they are formally classified as co-benefits. Amongst forestry scientists and activists, the role of forests is primarily seen as one of mitigation. However, for forest-dependent people forests play a crucial role in reducing vulnerability and shocks as well as enhancing their capacity to cope with the impacts of climate change.

A workshop was held on 22 April in Kathmandu to discuss the relevance of going beyond REDD and linking forest and agriculture in adaptive management and resilience. Participants found it difficult to internalise. 'REDD people' thought it was almost done and to talk about anything additional would run the risk of making REDD dysfunctional. Of course, if adding other land-use emissions in the trade is feasible then they agree in principle.

### **How are the problems sustained?**

However, the issue is not about agreeing with one or other position instantly, but how to sustain this kind of dialogue. Because climate science, including even data on the current level of emissions, and viable options to reduce emissions is uncertain it would be unwise to reach any conclusion as to which position is appropriate for Nepal. One of the key messages we want to convey is that we should adopt an open and inclusive approach that would integrate forests and farms and produce synergy between mitigation and adaptation.

From the literature and workshop discussion, it became clear that though inclusive approaches may complicate and/or delay carbon trading they offer a productive and carbon-rich resource management system in total. Therefore, integrating forests and farms is a desirable option though it may call for a trade-off with immediate reward through REDD.

The narrowly defined disciplinary divisions and emotional attachment to specific fields of expertise have undermined a productive dialogue between forestry and agriculture. The difference in property regimes between farm and forest and the provision of different government institutions in looking after these two domains has divided them so that the public agencies tend to impose their own territorial authority and make it hard to integrate. In addition, modern scientific knowledge and intensive farming does not allow integrating farm and forests. However, the majority of farmers still practice integrated farming where it is difficult to differentiate farms and forests. Over 70% of South Asia's farm lands contain trees with over 10 % crown cover. Farms are full of fodder trees, fruits and many perennial crops that form a permanent biomass on the farm. Similarly, in forests there are domesticated medicinal and aromatic plants, edible fruits and vegetables, roots and other crops. This is particularly important for smallholders who have limited private farm land and who rely on 'public forests' for meeting their 'private needs'. In this context, there is a huge potential for enhancing the biomass content of both farms and forests by integrating conventional farms and forests. However, the current narrowly conceived legal and technical definitions should be revised so that they can be seen in a continuum from low-carbon content to high-carbon content resource management regimes.

**Table 12.** Divisions within agencies and policy-making

Actors	Mitigation	Adaptation
Government agencies	Ministry of Forests and Soil Conservation (MFSC)	Ministry of Environment, Science and Technology (MoEST) and Ministry of Agriculture and Cooperatives (MoAC)
NGOs, INGOs, bi/multi-lateral organisations	ICIMOD, Winrock, FECOFUN, WWF, ForestAction, NFA, ANSAB	Practical Action, OXFAM, Li-BIRD
Policy documents	REDD-strategy, FCPF, RPP	NAPA

The construction of carbon as the principle benefit and biodiversity and livelihoods as co-benefits is problematic. This appears to be an externally influenced construct which hardly fits with a farmer who heavily relies on, and interacts with, forests. In this context, livelihood is the main benefit, not a co-benefit. People protect, manage and use forests primarily for livelihood benefits, followed by other intrinsic environmental values. Local communities do not manage forest solely for carbon but carbon happens to be sequestered and stored as a by-product. Therefore, carbon can be regarded as a co-benefit. Reconceptualising diverse benefits of forests in this way can guide forest management priorities and ultimately policy and practice.

A number of REDD projects are being implemented with a focus on diverse aspects of emission trading. Many are involved in assessing the biomass, carbon and carbon increment in different types of forests. Others are involved in exploring the social and institutional aspects, particularly benefit-sharing mechanisms. One of the problem with these initiatives and explorations is that they are narrowly focused on assessment of carbon and its trade. They are not adequately contributing to the overall enhancement of carbon-rich and economically productive resource management. There is a dire need to inform these projects to adopt a more comprehensive approach to mitigation and adaptation and promote the forest-farm interface.

The international aid structure is one of the key problems here. Most of the funding under climate change is distinctly divided into ‘mitigation’ and ‘adaptation’. Consequently, these narrowly conceived project-based funding lines restrict the implementing agencies to focusing only within the project mandate. Meanwhile, the training and orientation of project staff also promotes the dichotomy between the two approaches. In many cases, competition for funding and the existing donor-recipient relationship has also sustained this unnecessary division. Consequently, we have become blind to the possibility of integrating these two concepts in climate-change responsive programs and projects. It has become crucial that aid and development agencies are fully informed about the embedded nature of mitigation and adaptation along a farm-forestry interface.

## Key issues associated with REDD

### Carbon financing may not fully compensate the high costs involved in mitigation

Heavy reliance on land-based resources makes it hard to justify protection of any land or forest solely for mitigating emission. As almost 80% of the population heavily relies on land and forests, they have a strong stake in land use. In addition, since most of the Terai forest is in fertile lands suitable for farming, there exist a huge opportunity cost of protecting forest. Moreover, the rural

community-forest interaction is a complex one that goes far beyond the pure economic relation, any compensation based on narrow economic production becomes inadequate. This adds to the challenges of calculating opportunity costs and to any carbon financing instrument based on the estimation of such cost.

Various studies have shown that forests contribute almost a quarter of household economy. However, this is too a narrow estimation and does not consider the multiple benefits such as through livestock farming, fuel wood, construction materials, edible forest products, and watershed protection. The poor, indigenous, dalits and women interact more with forests for fuel wood, fodder, grazing, wild fruit and vegetables and shelter. The forest dependent communities and support agencies working with them raise a serious doubt whether cash paid through REDD adequately compensate against the forgone use in the context of this heavy reliance. Given the extreme poverty and vulnerability particularly among the forest-dependent communities, any reward based on emission reduction or carbon storage is simply not enough unless simultaneous support for sustainable development is designed with REDD or similar payment mechanism.

The situation is even worse in Terai. The Terai has historically been the eco-political battlefield due to its fertile land, dense population, rich biodiversity, valuable forests and bordering with heavily populated Indian state (Shrestha and Conway 1996). Based on information collected by the Department of Forests (DoF 2009) encroachment for agriculture expansion is one of the key drivers of deforestation and degradation. . There have been frequent events of land grab by the landless people primarily for shelter and farming. Organised attempts to settle in forest land and killing of six people by the police in Kailali, in western Nepal is a recent example. The ongoing land conflict and the problem of landlessness across the nation simply indicate to the challenges of keeping forests intact. The growing food scarcity and humanitarian crisis around hunger demand a fundamental restructuring of land tenure and land use planning.

### **Insecure and unclear carbon tenure obscure benefit sharing**

Government owns all the forest lands in Nepal. While about one third of national forests is under community management, there is no transfer of ownership. Only few use rights and management rights are handed over. Normally, only the above ground biomass is transferred. This applies more or less to the non-forest land including privately owned land. All the transfer of rights is subject to periodic renewal and approval from the concerned government agencies. The Forest Act 1993, National Park and Wildlife Conservation Act 1973 and associated rules and regulations are silent on carbon tenure. Lack of clear provision on carbon tenure may create confusion over the forest carbon financing. Besides, as the state holds all residual rights under the current law, communities may find it difficult to articulate their rights that are not already explicitly defined in favour of the communities.

These confusions over carbon tenure have implications to carbon financing. First, while state is involved in different kinds of climate negotiation, it is actually communities who are involved in carbon sequestration. Second, although the communities are handed over certain use and management rights, it is not clear that whether the communities own carbon. The lack of clarity over carbon tenure may undermine the whole process particularly when market adds value to carbon. Third, if communities recognised as the owner of the carbon, what is the appropriate unit of transaction that address both cost efficiency and equitable distribution of payment. While larger units are preferred to reduce transaction costs, smaller units may be preferred for equitable distribution.

Some also suggest that REDD itself can be an opportunity to strengthen community tenure. However, looking at the historical failure of tenure reform in Nepal, there are little prospects for it. In fact, the pressure for land reform and securing community tenure over the commons has always

been there in Nepal. Most of the major political parties preach land reform. It has been one of the major agenda of all successful political movements since 1950s. But little has been achieved either providing individual land titles or devolving forests commons to the local communities especially where the resources are valuable. As the landed elite have largely captured the state apparatus, introducing genuine land reform and transforming land use incur a high socio-political cost for the government. In this situation it is hard to believe that REDD would induce an egalitarian and democratic land tenure that recognises community rights. Instead, since attracting more aid has often dictated the natural resource policies, there are threats of centralising land management by the government. The Government of Nepal's recent declaration of three additional protected areas from a famous Kalapathar cabinet meeting on climate change is a typical example that shows REDD may strengthen centralised forest management.

### **Communities in conservation: carbon financing must cover biodiversity and livelihoods co-benefits**

Community based forest management systems in Nepal provide multiple benefits (Box ). The benefits include: a range of forest products for household needs, part of tradable products such as timber and Non-Timber Forest Products (NTFPs), watershed conservation, landscape beauty, biodiversity conservation and cultural amenities. Apart from supporting local livelihoods and national economy Nepal's forest management has contributed to diversifying livelihoods and increasing socio-ecological resilience against the threats of climate change. Forests, managed primarily for timber may not necessarily generate biodiversity and livelihoods co-benefits. Moreover, a significant part of forests are handed over to the local communities thereby promoting local democracy, institutional capacity and enhancement of local and indigenous knowledge. In fact, forest management in Nepal, particularly those by local communities donot only reduce emission but also help develop a climate resilient sustainable system. It can be argued that Nepal's forest carbon is different from that of carbon from single purpose forests of Brazil or Indonesia and therefore should claim for a premium value.

Any financial rewards or compensation that focus purely on emission reduction distort the incentive system as it results in discrediting the whole range of co-benefits. Undermining these multiple benefits and singling out carbon undermines the principles of sustainable development.

#### **Box 4. Co-benefits from Nepal's community based forest management**

- Critically degraded forests turned into green hills (Branney and Yadav 1998)
- Increased supply of forest products: reduced rural poverty, increased food security, better health
- Strengthen local institutions, social capital and cultural, spiritual values
- Preserve, promote the use and innovations emerging from indigenous knowledge (Ojha et al. 2008)
- Increased flow of ecosystem services: watershed benefits, landscape beauty
- Carbon sequestration and improved air quality (Karky and Banskota2009)

### **Methodological issues: reference scenario, level of monitoring, reporting and verification**

The biophysical diversity, multiple and complex drivers of land-use change, institutional plurality in forest management and weak institutional and technical capacity of the forestry sector all pose methodological challenges to carbon financing.

First, developing a credible and convincing reference scenario is a real challenge, particularly in the Terai. According to forest transition theory (Angelson 2007) the existing high deforestation rate in the Terai won't continue for long as the cost of deforestation gradually increases. The deforestation rate has certainly slowed since the late 1990s because migration slowed and the government gradually took tougher measures against squatters. However, given continued food scarcity and hunger, particularly in the western hill districts, and associated social and political unrest over the access to land, it is expected to rise. Moreover, the CPN (Maoists), the largest political party, has favoured these landless people more than other parties, indicating that conversion of forest land to agriculture is likely in the future. This supports the theory that the 'business as usual' scenario has a high deforestation rate. This scenario increases the prospects of benefitting from REDD. However, given the extended political transition and the government's weak capacity to enforce law, the powerful structural drivers may become influential even in the long run so that deforestation continues.

Second, since deforestation and degradation were reduced mainly after 1980 with the introduction of community forestry, that could be the preferred reference year for Nepal. However, because of the lack of credible evidence, on one hand, and Nepal's low negotiation capacity, on the other, this is less likely to be accepted as a baseline. Even when it is accepted as the reference year it does not reflect other community-based initiatives for forest protection that have had effective outcomes only in the late 1990s.

Third, the scale and level of transactions remain a critical issue. Fixing an appropriate level of reference at national, sub-national or project levels has its challenges and opportunities. The variation in land-use change across the ecological zones implies that it is hard to set a national reference level. The nature and pace of deforestation is distinctively different in the hills and the Terai. For example, the hills that experienced heavy deforestation during the 1970s and 1980s have recovered now. There are no imminent threats of deforestation there. On the other hand, deforestation in Terai continues at an annual rate of 1.6% (FAO 2005:10). Despite a relatively low current deforestation rate, the existing structural and policy drivers may potentially lead to increased deforestation at any time. Similarly, the majority of the hill forests are under community management with operational plans that follow sustainable forest management principles. There is little scope for producing additionality under REDD in such forests. In the Terai forest, which is under government management, there is a good chance of halting deforestation and therefore additionality would be clearly visible.

Fourth, in the hills, small patches of forest are distributed across the countryside and are managed by user groups. Assessing forest-cover change, land-use change and carbon content is complex in these forests owing to small sizes, variations in types, management interventions and drivers of change. The ecological and institutional diversity also add variables requiring sophisticated technology for any credible assessment. At the same time, decentralised management by varieties of local institutions adds complexity to any carbon-assessment and benefit-distribution mechanisms. As the community-based forest management units are small (average size 8 ha in case of community forestry), established at different times, with different management models and spread across the country, it would be difficult to establish effective monitoring, reporting and verification systems that could address all forest-management situations.

Lack of comprehensive, reliable data on deforestation, land use and land-use change, climate variability and its impacts on ecosystem and livelihoods is scant, anecdotal, not systematic and unreliable. The lack of data has posed a major challenge to policy development, planning processes and applied research. As the government cannot allocate adequate funds for the purpose, research in this area has been undermined.

## Opportunities

### **Integrate mitigation and adaptation strategies through climate-resilient development**

Sustainable natural resource management is both a mitigation as well as an adaptation strategy. Though these are considered separate issues in management they are essentially two sides of the same coin. Therefore, while emission reduction strategies include forest conservation and sustainable land-use, adaptation strategies include community-based natural resource management, community-driven development, enhancing natural productivity and sustainable flow of ecosystem services. The policy and governance issues are common to both strategies: strengthen governance, policies and institutions; extend empowerment; build participatory planning processes and community involvement in decision making; improve access to information and; build the capacity of institutions. This means that Nepal should not take up forest-carbon finance instruments without clearly articulating its position on how it will address these matters.

### **Undertake governance and tenure reform**

The government must initiate reform ensuring clear, comprehensive and secure forest and land tenure, property and carbon rights and promote transparent, inclusive and accountable forest governance. The poor and marginalised groups, including indigenous people, must have adequate opportunities to engage in climate-change-related decision making and framing a sustainable pathway, in general. However, policy reform alone would not be adequate to develop inclusive and socially accountable approaches to REDD. Government should increase investment in institutional and organizational capacity to enable forest-dependent communities to actively participate and influence sustainable forest management. The opportunities provided by the current constitution-building process must be realised toward this end.

### **Advocate for REALU beyond REDD**

Forest covers about one-third of the country's area and there is at least another 33% of area under other land-use systems that can be targeted for carbon sequestration. Given the growing demand for food and livelihood benefits from natural resources in Nepal, carbon incentives should be linked with various options for land management, including multiple-use forestry, agroforestry and other sustainable land-use systems, beyond traditional approaches to forest conservation. Nepal should lobby for widening the scope of carbon financing beyond the current REDD model, both in terms of rewards as well as diverse financing modalities. A narrowly conceived REDD would not adequately reward local community-based conservation initiative nor would it help address the complex drivers of deforestation and degradation that often lie outside of the forest sector.

Based on a regional scoping study on CO<sub>2</sub> emissions from different land uses, the International Center for Integrated Mountain Development (ICIMOD) concluded that a holistic approach that incorporates all land uses is likely to benefit all Hindu Kush Himalayan countries, including Nepal, as CO<sub>2</sub> emissions from other land uses is significant.

### **Advocate for biodiversity and livelihoods co-benefits**

Nepal should be working for expanding the scope of payment mechanisms to include biodiversity and livelihoods co-benefits. Since the sustainable management of non-forest land has the potential to be a significant carbon sink, Nepal must include agriculture and other land-use change beyond pure forestry in its negotiation strategy. In terms of financing modalities, Nepal can benefit if a) carbon financing is linked with poverty-reduction assistance; and b) carbon financing strategies include upfront institutional capacity-building investments.

## **Undertake piloting, experimentation and data management**

Nepal should also intensify efforts to pilot, experiment and innovate carbon-assessment methodologies and institutions that help assess and market carbon. These initiatives should be aimed at generating lessons to inform REDD readiness, international REDD negotiations and implementation of a post-2012 climate regime. There must be better collaboration among the actors and institutions involved in experimenting, documenting and synthesising lessons.

The current state of political transition provides huge opportunity for a fundamental restructuring of the governance system, particularly to transform the existing state-society relations. This implies some specific concerns regarding carbon financing. Firstly, current political and administrative units that may become the basis of sub-national carbon credit transactions may be changed. Secondly, socio-ecological units that are suitable from the point of carbon financing may inform the discussion on designing sub-national and local political units and vice versa. Thirdly, the issue of land tenure is at the top of the discussion's agenda. While land tenure is seen only from an economic perspective, such as property rights, better tenure arrangements can be put into place any considering sustainable land use. Two opposing schools of thought prevail: that too much land fragmentation has reduced both productivity and sustainability; on the other hand, equitable distribution of land is seen as the single most important intervention for addressing poverty in general and food scarcity in particular.

## **Conclusion**

Nepal's stake is high in REDD owing to its vulnerability to both climate variability and any mitigation strategies aimed at reducing emission through forest conservation. Owing to its natural resource-based economy, REDD and similar mechanisms will have a huge impact in Nepal (potential benefits and risks). Since the large population relies on the natural resource-based economy, where strategies for mitigation and adaptation overlap, REDD and similar mechanisms must fall within a broader framework of adaptation. Existing frameworks must be broadened in order to benefit the Nepalese people. Rather than focussing narrowly on additionality for carbon financing, overall enhancement of forests must be taken into account. The criteria of permanence and no leakage are also difficult to meet, looking at the dynamic economic and livelihoods contexts that affect the values and choices of local people dependent on forests. Considering all of this, it is likely that Nepal would not benefit from REDD alone and therefore should be lobbying for REDD+ and even REDD ++ or REALU. A critical issue is that since millions of small farmers and other rural inhabitants interact with land in a variety of ways for multiple objectives, the simple distinction of forest or non-forest has little relevance. We must strive for payment for sustainable land-use with productive conservation where net biological productivity will be enhanced, while also allowing flexibility to local forest owners to adapt to changing conditions affecting needs, preferences and values.

Nepal's socio-ecological diversity has its pros and cons as far as the agenda of adapting to climate change is concerned. While the rich ecological diversity can enhance resilience to climate change, the social diversity poses a challenges to developing institutions for equitable distribution of any REDD payments. Meanwhile, unclear and weak tenure arrangements may hinder positive incentives for conservation and sustainable land-use. Therefore, governance and tenure reform must be at the core of any REDD+ process. The current political transition and state restructuring have provided a good opportunity for addressing many of the tenure and governance issues, as well as challenges to institutionalisation. It is expected that the policies on climate change mitigation and adaptation, on one hand, and the constitution-building process, on the other, are mutually supportive.

We have demonstrated the limitations of a sole focus on forest-based mitigation approaches such as REDD and have advocated a broader concept of REALU. The narrow focus on forest-based REDD leaves out agriculture and therefore misses huge opportunities. Similarly, such a focus would fail to



address many technical issues such as leakage and permanence and therefore would be unable to effectively curb emissions in the long run. We also demonstrated that taking a more comprehensive approach of including all land use will minimise any technical errors and more effectively reduce emissions.

We also attempted to resolve the dichotomy between adaptation and mitigation by highlighting how sustainable resources management simultaneously reduces emissions, enhances food security and increases ecosystem resilience. The mosaic of farm and forests and the traditional integrated farming provides a unique context where mitigation and adaptation go together.

We conclude that the global discourse on climate change, which is departmentalised, compartmentalised and narrowly conceived both in science and policy hardly fits the reality of Nepalese resource-management practice. The agenda and constructs in the international arena have created a division among the actors. Since the language of climate—both scientific and policy—emerged in the global domain, local stakeholders have had few choices. But given the complexity and embedded nature of land use in Nepal, there is a dislocation between the international discourse and local reality. There is also a realisation that articulating the unique reality to the wider community may help inform climate science and policy to effectively address both mitigation and adaptation.

The discourse and deliberative processes around REDD, adaptation and climate change in Kathmandu and within the circles of national government, international organizations and donors, are still unclear about how the agendas are accessed by the poor and disadvantaged groups and their voices included in national policy processes. The processes are highly structured and mediated by the underlying political economy of funding and an independent position is often undermined. Yet, constant engagement of the stakeholders in the debate may help gradually influence the science and policy towards taking a more inclusive and comprehensive approach to responding to the threats of climate change. Since REDD has gradually evolved from RED through REDD+ one can expect that the REALU framework may eventually be recognised and used as the better option in climate science and policy.

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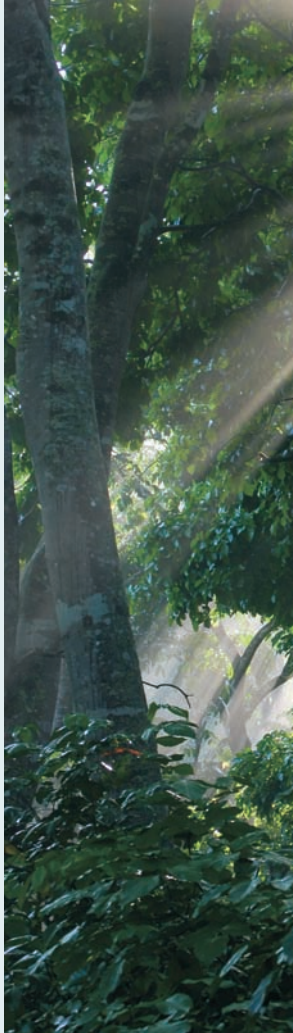
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Nepal's stake in reducing emissions from deforestation and forest degradation (REDD) is high owing to its vulnerability to both climate variability and any mitigation strategies aimed at reducing emission through forest conservation. Because of its natural resource-based economy, REDD and similar mechanisms will have huge implications in Nepal (potential benefits and risks). Since the large population relies heavily on natural resources, where strategies for mitigation and adaptation overlap, REDD and similar mechanisms must fall within the broader framework of adaptation. Existing frameworks must be broadened in order to benefit the Nepalese people: rather than focussing narrowly on additionality for carbon financing, overall enhancement of forest must be taken into account. The criteria of permanence and no leakage are also difficult to meet, looking at the dynamic economic and livelihoods contexts that affect the values and choices of local people dependent on forest.

Considering these conditions, Nepal would not benefit from REDD alone and therefore should be lobbying for REDD+, which includes enhancing carbon stocks, and even REDD++ which looks at carbon in all land uses. A critical issue is that since millions of small farmers and other rural inhabitants interact with land in a variety of ways for multiple objectives, a simple distinction of 'forest' or 'non-forest' has little relevance. The attempt is for payments for sustainable land use with productive conservation where net biological productivity will be enhanced, while also allowing flexibility for local forest owners to adapt to changing conditions affecting needs, preferences and values.

There are limitations to a sole focus on forest-based mitigation approaches such as REDD and hence the proposition of a broader concept of reducing emissions from all land uses (REALU). The narrow focus on forest-based REDD omits agriculture and therefore misses huge opportunities. Similarly, it fails to address many technical issues, such as leakage and permanence, and so would be unable to effectively curb emissions in the long term. A more comprehensive approach including all land uses will minimise technical errors and effectively reduce emissions. This report attempts to resolve the apparent dichotomy between adaptation and mitigation by highlighting how sustainable resources management simultaneously reduces emissions, enhances food security and increases ecosystem resilience. The mosaic of farm and forests and traditional integrated farming provides a unique context where mitigation and adaptation go together.