Chapter 4

Reduced Emissions from Deforestation and Forest Degradation in Developing Countries: Risks and Opportunities for Rural Communities in the Asia-Pacific Region

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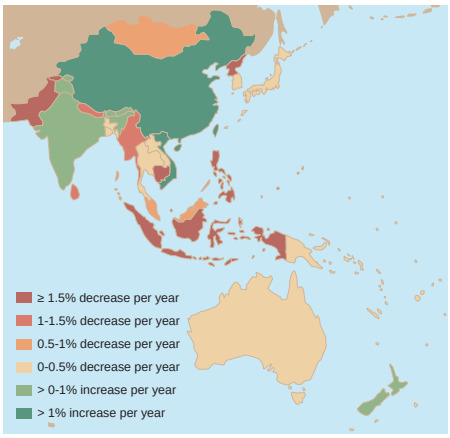
1. Introduction

Forests fulfil economic, social and environmental functions from local to global levels that are critical to human survival and wellbeing. Amongst these, international attention to the role of forests and their soils as sinks and reservoirs of greenhouse gases (GHG) is increasing due to growing concern over climate change. Global forest loss has continued into this decade at slowing but still alarming rates. The Food and Agriculture Organisation of the United Nations (FAO) estimated that the annual rate of global deforestation from 2000–2005 was 13 million hectares (ha) (FAO 2006a). Despite some uncertainty about this figure (Ramankutty et al. 2007; Grainger 2008), high rates of deforestation in tropical countries continue to be recorded. The National Institute for Space Research of Brazil recently reported that deforestation in the Amazon has accelerated; 6,000 square kilometres (km^2) of rainforest were lost in the last four months of 2007, and the rate is expected to increase in 2008 (NZ Herald 2008). Asia-Pacific countries continue to experience rates of forest loss that are amongst the world's highest, in some instances exceeding 1.5%/year (fig. 4.1).

Figure 4.1. Rates of forest change (2000-2005)



Source: FAO (2007).

Forest degradation is expected to accelerate as the effects of climate change are felt. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report warns that the negative effects on forests may be larger than projected and that the positive impacts have been overestimated (IPCC 2007). Tropical forests in eastern Amazonia are projected to be succeeded by savanna and boreal forests are likely to be especially affected by climate change. Increased risk of wildfire, pest outbreaks and accelerated deforestation driven by reduced land productivity under altered climate conditions are projected for some regions.

Emissions from deforestation during the 1990s are estimated at 5.8 gigatonnes of carbon dioxide equivalent per year ($GtCO_2eq/yr$) (IPCC 2007). In 2004, emissions from deforestation were responsible for about 7–16% of total GHG emissions (not including ozone-depleting substances) (Rogner et al. 2007), making deforestation the second largest anthropogenic source of CO_2 after fossil fuel combustion.[1] Forests store more carbon in their biomass, dead wood, litter and soil than the carbon that exists in the atmosphere (FAO 2006a) and tropical deforestation alone could release between 87 and 130 billion t of carbon by the end of the century, which is equivalent to the emissions from a decade of fossil fuel consumption at current rates (Gullison et al. 2007).

The current enthusiasm for biofuels as a more climate friendly alternative to fossil fuels could have the perverse effect of further increasing GHG emissions from deforestation in the rush to establish biofuel plantations and crops (see chapter 5). In Indonesia, demand for biodiesel by 2025 will require 1.4 million ha of oil palm plantations (DFID/World Bank 2007). More than a quarter of Indonesia's oil palm concessions are on peat land, where it is estimated that the production of one t of palm oil causes an average emission of 20 t of carbon from peat decomposition alone (Wetlands International 2006).

The concept of providing a financial incentive for forest conservation through international financial transfers connected with carbon, or reduced emissions from deforestation and forest degradation in developing countries (REDD), is now high on the international climate agenda. REDD would bring a new set of actors with fresh resources and present risks as well as opportunities for forest management. The risks are to governance, rural livelihoods and the integrity of the Kyoto Protocol. Much of the debate within the United Nations Framework Convention on Climate Change (UNFCCC) on REDD and the content of a growing number of REDD proposals from governments and others has focused on technical and methodological issues, and financial transfers. Less attention has been paid to deforestation as a manifestation of governance failure. This failure of governance largely explains why past international transfers of funds and a variety of initiatives and processes from the local to international level to conserve forests have had little discernable impact on rates of deforestation (Robledo and Masera 2007).

The objective of this chapter is to clarify the risks and opportunities for rural communities of national REDD systems and project-level REDD. The basic hypothesis is that if REDD is designed with a narrow focus on climate change, it could harm the welfare of forest-dependent communities, reward continued poor governance and elites that control forest resources, and do little to alleviate rural poverty.

The chapter begins by exploring the logic behind REDD, and then discusses its implications for forest governance, tenure and livelihood concerns. The discussion then turns to the treatment of forests under the UNFCCC and touches upon the main issues confronting climate change negotiators. The capacity of communities to participate in REDD is assessed along with the benefits their participation might offer. Finally the role of independent standards in ensuring positive development outcomes of REDD is discussed and the chapter concludes by extracting several broad policy messages and identifying areas requiring further research.

2. REDD logic

Forests play an important role in mitigating climate change. Forestry offers REDD, afforestation, increasing sequestration in existing forests, biomass for bio-energy and wood as a substitute for more energy intensive products such as concrete, aluminium, steel and plastics, as potential climate mitigation options.

As one of these potential mitigation options, REDD could include both deforestation and forest degradation. The UNFCCC defines deforestation as “the direct human-induced conversion of forested land to non-forested land” (UNFCCC 2002) and provides quantitative criteria, including tree height, minimum area and percentage of crown cover, for national forest definitions. In contrast, forest degradation does not result in land-use change and has not been defined by the UNFCCC. The IPCC has proposed some options for definitions and methodologies, specifically to inventory emissions from direct human-induced degradation of forests (see Penman et al. 2003). The proposed definitions include (i) a reduction in the overall potential of forests to provide benefits, (ii) a reduction in forest-carbon stocks and (iii) a long-term reduction in biomass density (Penman et al. 2003; Robledo and Masera 2007, 29).

REDD rests on the logic of an “avoided bad”, whereas climate mitigation activities currently recognised under the clean development mechanism (CDM) of the Kyoto Protocol rest on the logic of a “committed good” (box 4.1.). A fundamental weakness of this basic logic is that the same claim of an avoided bad could be made for many other activities. For example, poor countries could claim that their lower consumption (compared to developed countries) has resulted in lowered GHG emissions and even population control programmes could be claimed as leading to avoided emissions through fewer births.

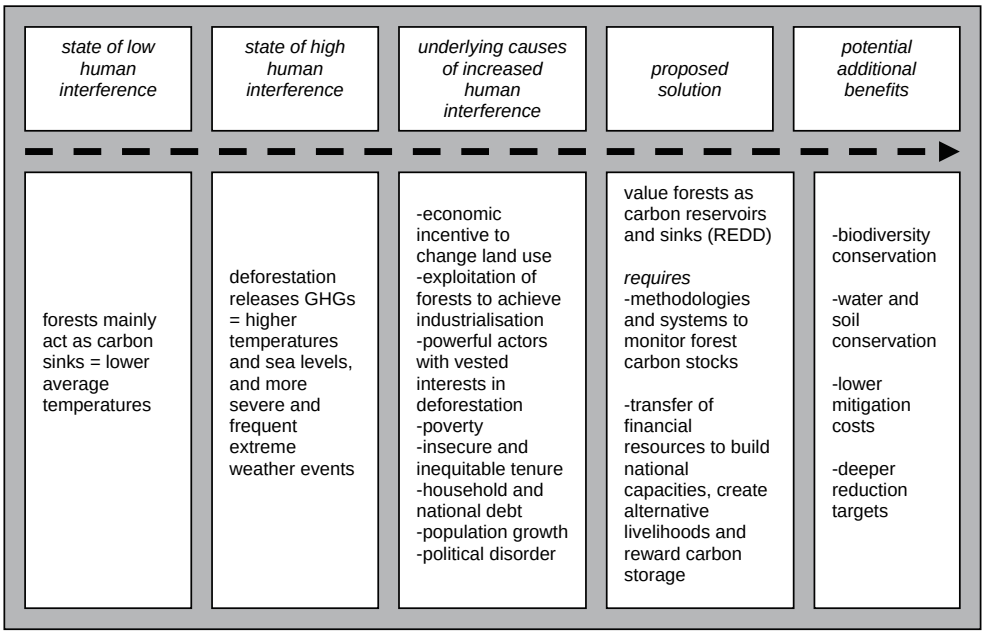
Despite the weakness of the logic of emissions avoidance, the reality that deforestation is a major source of GHG emissions cannot be ignored. Moreover, despite the risks that REDD poses and the significant technical, methodological and policy challenges that must be met, REDD has strong support and appears likely to become a reality in one form or another.

Putting to one side the basic logic, the observations and assertions for supporting REDD include:

(i) Deforestation is the second largest source of anthropogenic CO_2 emissions after fossil fuel combustion (Rogner et al. 2007);

(ii) Reducing deforestation rates by half by 2050 and maintaining them thereafter would contribute up to 12% of the total emission reductions required to stabilise atmospheric CO_2 levels at 450 parts per million (ppm) through 2100 (Gullison et al. 2007);
(iii) REDD is a relatively low cost mitigation option that would lower the economic costs of achieving global emissions reductions and is thus a "highly cost-effective way to reduce emissions" (Stern 2006);
(iv) The carbon mitigation benefits of REDD over the short term exceed the benefits from afforestation and reforestation (A/R) (IPCC 2007); and
(v) REDD could encourage deeper emissions targets to achieve the UNFCCC's objective of "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UNFCCC 1992).

Box 4.1. REDD logic



3. Understanding deforestation: Governance, tenure and livelihoods

Although the logic underlying REDD is attractive for its simplicity, it does not pay enough attention to the political roots of deforestation, which could lead to undesirable outcomes. The underlying causes of deforestation, as described in the previous IGES white paper (IGES 2005), include (i) the failure of markets to reflect the full value of forest functions; (ii) national policies to exploit forests to promote rural development and industrialisation without adequate environmental safeguards; (iii) the actions of business, military and other elites to extract forest resources above sustainable levels and to convert land to other uses; (iv) poverty and population growth; (v) political disorder associated with conflict and sudden transitions in national administration; and (vi) insecure and inequitable tenure.

Deforestation is mostly a social and governance failure, rather than an environmental failure (i.e. a lack of knowledge on how to manage the environment). Unless REDD tackles the causes, as has been experienced with many other forest management initiatives and policy instruments, it will produce few tangible results. Treating REDD as a simple and cheap form of GHG emission reduction illustrates the danger of climate change being divorced from sustainable development. The basic premise of this chapter is that to achieve combined climate change mitigation and sustainable development objectives, REDD must promote:

- Accountable and transparent forest governance;
- Secure and equitable forest tenure; and
- Sustainable livelihoods.

The difficulty of this task should not be underestimated, as Boxes 4.2. and 4.3. illustrate, and the history of failure must be understood and addressed.

Box 4.2. Potential opportunities and risks of REDD in Papua New Guinea (PNG)

Forest resource
- World's third largest cover of tropical rainforest; about 73% of total land area covered by forest or other wooded land (FAO 2006a).
- "Enormous" ecological value: flora comprises more than 11,000 species and lowland forests contain about 2,000 timber species (FAO 2000).
- Forestry industry accounted for 3 - 5% of GDP since 1999 (DFAT 2004).
- Important economic and cultural significance for communities that have constructed their livelihood systems, social institutions and rituals around forests.

Forest allocation
- About 25% of forests have production as their primary function (FAO 2006a).
- Only 0.5 million ha under protection; its delineation, management authority, monitoring and enforcement are ambiguous and uncertain (ITTO 2007).
- Only 92,000 ha of forest plantations have been established (FAO 2006a).

Governance, tenure and livelihoods
- 97% of the land is held under systems of customary tenure, involving clans or kinship groups; these systems are acknowledged by the Constitution.
- Government must negotiate with resource owners before it can undertake a forest development project.
- Legally, resource owners are in a very powerful position, but in reality their position is often weak because of a "lack of pre-informed consent and failure to follow formal procedures" (ITTO 2007) when the PNG Forestry Authority acquires timber rights from them.
- PNG has "the necessary policies, laws, regulations and guidelines required to ensure that sustainable timber production can be achieved" (2003/2004 Review Team) but implementation of the Forest Law is weak.
- Major problems in the logging industry are (i) non-compliance with laws in all aspects of forest acquisition, forest allocation, and forest operations, and (ii) non-compliance with timber permit conditions (Bun and Scheyvens 2007).
- Government has strongly defended industrial-scale logging of natural forests under concessions and has sought to accelerate the granting of timber permits.

Deforestation and forest degradation

- Annual deforestation between 1990 and 2005 was estimated at about 0.4% (FA0 2006), though higher rates are estimated by some nongovernmental organisations (NGO) (ITTO 2007).
- Deforestation is due largely to conversion for agriculture. Forests are felled and burnt by the traditional resource owners to establish gardens for subsistence and are under increasing pressure from a population that swells by 2.7% each year (AusAID 2007).
- Developers disturb forests through mining, oil and gas exploration, and land conversion, particularly to plant oil palm.
- Most international concern has been directed towards the management of natural production forests by concessionaires.

Opportunities (✓) and risks (✗) of REDD for sustainable forest management

✓ REDD could provide much needed resources to the PNG Forestry Authority to fulfil its responsibilities in the acquisition of timber rights, to ensure compliance from loggers with regulations governing forest harvesting, and to ensure that timber permit holders uphold their contractual obligations. Additional resources could enable the Forestry Authority to avoid undue interference of logging companies and politicians in the conduct of its operations.

✓ REDD could provide an additional financial incentive for resource owners to manage their forests, as an alternative to handing over timber rights, through the government, to logging companies. The certification of community-based forest management in PNG against tough international standards is evidence that the traditional resource owners can implement "modern" systems of forest management involving inventories, land use planning, and monitoring (Bun and Scheyvens 2007).

✗ Additional resources provided under REDD could further entrench industrial-scale logging concessions as the dominant regime for natural production forest management.

✗ The process by which the state acquires rights for forests to be conserved as carbon stocks under REDD could marginalise resource owners from the management of their forests.

✗ The state could use the additional resources provided by REDD to equip itself to respond to any resistance to REDD projects with undue force.

Improved governance is particularly relevant for forests as they are often highly contested resources because of their economic value, their potential to influence political fortunes, their private and public benefits and because of contending stakeholder views of how they should be managed and who has the right to participate in decision-making. A feature of forest governance in the Asia-Pacific region is that governments claim ownership of most forests and have centralised forest administration under specialised authorities, with a few exceptions. A FAO study of forest tenure in 17 countries in Southeast Asia found that over 90% of forests are publicly owned (FAO 2006b), which, particularly in forest-rich countries, places the state in a powerful position as the assigner of exclusive forest rights.

Governments have retained exclusive rights over some forests and have allocated rights for other forests to private companies, collectives, communities, and individual households. The fate of state-owned natural forests lies in how forest rights are assigned, who they are assigned to, the content of these rights, their attendant obligations, and their limits. These issues are captured by the broad concept of forest

tenure, which includes ownership, tenancy and other arrangement for the use of forests, and determines rights to use resources, their recipients, their duration and the conditions under which they exist.

Forest management in the Asia-Pacific region has been troubled by weak systems of governance, which have created insecure and inequitable forest tenure arrangements. In turn, these arrangements have, *inter alia*, criminalised and undermined traditional livelihood activities of forest-dependent people[2], without providing alternatives, thereby increasing their vulnerability and contributing to poverty. The consequences of inadequate attention of forest policy to equitable and secure tenure and livelihoods are particularly apparent for forests allocated as industrial concessions or set aside as protected areas.

3.1. Industrial concession forests

Amongst the ten International Tropical Timber Organisation (ITTO) Asia-Pacific producer member countries, 71% of forests are allocated to concessions or are under some form of licence (ITTO 2006, 50). Nearly all concessions in the region are at least nominally managed using selective silvicultural systems with the intention of keeping the land under permanent forest cover. Selective cutting is meant to remove biomass equivalent to the mean annual increment, but the ITTO estimates that only 15% of production forest is managed in a sustainable manner (ITTO 2006).

Although the discourse of REDD has largely concentrated on protection forests, the largest sustained mitigation benefit from forestry would be generated by maintaining or increasing carbon stocks in forests that are managed to provide a sustainable supply of timber, fibre or energy (Nabuurs et al. 2007). In principle, REDD could be applied to natural production forests to provide forestry authorities with much needed resources to evaluate and monitor forestry operations. Reduced impact logging techniques and silvicultural prescriptions such as strip planting could also be used to maintain carbon stocks.

However, a prior and more fundamental transformation in forest governance and tenure is needed in countries where the forest policy is heavily geared towards industrial-scale timber extraction. Law enforcement is often weak in industrial concession forests, resulting in degradation of the forest resource through illegal practices by the concessionaires, such as cutting above quotas, cutting outside concession boundaries, felling undersized trees, and failing to comply with forestry codes (box 4.2). One major failure in forest governance is ensuring that the right's holder operates within the established limits. Weak compliance is only partly due to the inadequacy of resources allocated to forestry authorities to manage the vast expanses of state-owned forest. The allocation of industrial timber concessions was used as a means of "mobilising wealth to reward allies and engender patronage" and in the worst cases forest departments have become "clients of concession-holding industrial interests of the ruling elite, exercising their power as a form of private property rather than a public service" (Brack and Hayman 2001). A second failure of forest governance in some countries is the inequity associated with granting large-scale industrial concessions in forests that effectively deny access to local people who have depended heavily on forest resources, often for many generations.

3.2. Protection forests

ITTO Asia-Pacific producer countries report that 35% of their closed natural tropical forests are under protection (ITTO 2006). The purposes of protection include biodiversity, soil and water conservation. As with industrial concessions, protection forests are mostly poorly managed. Amongst these countries, only 11.6% of their area of protection forest has management plans and only 7.2% is considered sustainably managed (ITTO 2006, 51). Deforestation and timber felling in protection forests is organised by companies, local elites, the military and public officials, and often involves and affects local communities.

Large-scale organised illegal logging in protection forests is common in some Asia-Pacific forest-rich countries. For example, the Indonesian Ministry of Forestry found that illegal logging is occurring in 37 of the 41 national parks and that in the worst cases as much as half of the park area has been heavily logged (Nellemann et al. 2007). Illegal clearance by developers poses another serious threat to protection forests. Developers generally prefer to clear natural forest as the timber can provide an income while waiting for the trees to bear their first fruit or can be used to supply the company mills. Illegal oil palm plantation development, in particular, has impacted heavily on protected areas and is the primary cause of permanent rainforest loss in Indonesia and Malaysia (ibid.). When protection forests are illegally logged or cleared to establish plantations, park rangers find themselves in a difficult position in which they have insufficient numbers, arms, equipment and training to deal with the use of bribery or armed force (ibid.).

REDD could provide much needed resources to police the forest estate, provided illegal loggers are not operating under state protection. However, the design of national REDD systems must acknowledge that many poor indigenous and migrant communities also illegally harvest and clear protection forests for their survival. If REDD leads to a stricter enforcement of forest laws, it could push these communities into further poverty and ignite conflict.

Box 4.3. Potential opportunities and risks of REDD for protected area management in Indonesia

Forest resource

- The area of state forests is 133.1 million ha (Ministry of Forestry 2003), with an additional 8 million ha of forests excluded from state forests (Contreras-Hermosilla and Fay 2004).
- Indonesia is recognised as a mega-diversity country, with the most species-rich forests in Asia (World Bank 2006a).
- Forestry has contributed 3-4% of GDP or 20-24% of the industrial sector over the past ten years (ibid.).
- About 120 million people have been defined as forest-dependent (Ginting 2000 in Down to Earth 2002).
- 80% of the carbon stock in soils and vegetation is stored in standing forests (DFID/World Bank 2007).

Forest allocation

- Forests are divided into state forests (*Kawasan Hutan Negara*) and private forests (*Hutan Hak*).

- State forests include 61 million ha of production forests, 22.7 million ha of conversion forests, 30 million ha of protection forests and 19.5 million ha of conservation forests (Ministry of Forestry 2003).
- The legal classification of forests is based on official definitions of forest types and does not reflect ecological reality; 33 million ha of designated state forests are not covered by forest and significant areas are community planted agroforests, agricultural lands or grasslands (Contreras-Hermosilla and Fay 2005).

Deforestation and forest degradation

- The rate of deforestation is estimated at 1.6 to 2.5 million ha/year; 54.6 million ha of state forests and 41.7 million ha of non-state forests have been deforested (Baplan in Nawir et al. 2007).
- Significant direct causes of deforestation are illegal logging (about two-thirds of timber is from suspect or undocumented sources) (World Bank 2006a), establishment of oil palm plantations, conversion of forests to agricultural lands by smallholders, and mining and oil extraction. Market failure, policy failure or changes, and weak governance are amongst the underlying causes of deforestation (ibid.; Nawir et al. 2007).
- Indonesia is believed to be the third largest emitter of GHGs, primarily because of deforestation, peat land degradation and forest fires (DFID/World Bank 2007).

Governance, tenure and livelihoods

- Ownership of almost all of Indonesia's forests is claimed by the state.
- About 50-60 million people, who are mostly poor, live in state claimed forestlands and their rights to forest resources are uncertain and insecure (World Bank 2006a).
- The Government has granted exclusive forest rights to companies through licenses for natural production forests, thereby denying communities access to forestland and resources that they previously managed under *adat* (customary institutions).
- Forest laws and regulations (such as the Forestry Law of 1999) acknowledge the customary law (*Hak Ulayat*) of indigenous or local people. However, customary forests are not separately categorized within the Forest Zone but absorbed into state forests.
- Concessions were awarded in a non-transparent manner to a few well-connected actors and forest rights were allocated as political patronage, thereby concentrating economic and political power (Contreras-Hermosilla and Fay 2005).
- Conflict between local people who claim forest resource rights and industry and forestry officials has increased (ibid.).

Opportunities (✓) and risks (✗) of REDD for protected area management

- ✓ The Ministry of Forestry has designated protected areas for REDD piloting and placed national strategic priorities on protection forests in the Forestry Strategic Plan, 2005-2009.
- ✓ Protection forests in Indonesia may be well suited to REDD as protection (and conservation) forests are generally much healthier than conversion or production forests (World Bank 2006b).
- ✓ Protection forests are threatened by illegal logging and encroachment (EIA and Telapak 1999, 2000, 2001; Forest Watch Indonesia 2002) and would thus meet the requirement of additionality.
- ✓ REDD piloting in protected areas can build upon lessons learned from more progressive integrated conservation and development projects in Indonesia that engage local communities.
- ✓ REDD could provide the Government with additional resources and a financial incentive to more effectively manage protected areas, which would contribute to biodiversity conservation as well as climate mitigation.

- ✓ Conserving peat lands in Indonesia as conservation areas could be a particularly significant and low cost climate mitigation option. The annual CO_2 emissions from peat lands in Indonesia are estimated to be almost three times greater than the total emissions of Germany (Wetlands International 2006). Wetlands International estimates that carbon emissions reductions in peat lands in its project area in Central Kalimantan could be achieved for as little as Euros 0.50/t (ibid).
- × Less progressive protected area management models driven by donors primarily concerned with conserving biodiversity have denied local people their rights to a livelihood and led to localised conflict. REDD could provide resources for more rigidly policing protected areas, thereby driving local people further into poverty and exacerbating conflict.
- × REDD funds and credits could be captured by elite groups and thus weaken rather than strengthen forest governance.

3.3. Need for nuanced responses

Clearly, REDD needs to be elaborated to deal effectively with the different drivers of deforestation and forest degradation under different tenure arrangements in a manner that will satisfy both climate and sustainable development objectives. More fundamentally, however, REDD cannot overlook the fact that forest tenure arrangements have often not provided a foundation for sustainable forest management because of improper processes by which resource rights were acquired, the "fragility of granted rights" (FAO 2006b), inadequate monitoring of rights holders, and inadequate enforcement of forest regulations to ensure that rights holders do not exceed the limits of their rights. If REDD places narrow climate objectives ahead of sustainable development objectives, it could lead to a repeat of errors found in early protected area management models. Early protected area approaches, described by some critics as "fortress" conservation (Fisher et al. 2005, 20), sought to exclude rural people from forests, led to conflict and appeared to do little to stem the alarming rates of deforestation (Scheyvens et al. 2007). Griffiths (2007) rightly warns of the danger of "overzealous government support for anti-people and exclusionary models of forest conservation (evictions, expropriation) to protect lucrative forest carbon "reservoirs."

4. Treatment of forests under the UNFCCC

The UNFCCC recognises the importance of forests in mitigating climate change and commits parties to promote sustainable management of sinks and reservoirs of all GHGs, including biomass, forests and oceans. The Kyoto Protocol, which complements the UNFCCC as an enforceable agreement for achieving GHG emissions targets, states that Annex I countries can promote sustainable forest management and establish new forests (through A/R) to contribute to achieving their targets. The Kyoto Protocol established a CDM that allows Annex 1 countries to invest in cost-effective emissions reductions in non-Annex I countries to meet their emissions targets. The CDM has the dual objectives of reducing the costs of emissions reduction and promoting sustainable development. Since the Kyoto Protocol entered into force in February 2005, the CDM has had little impact on the forest sector as methodologies are difficult to develop and investor interest beyond the first commitment period (2008-2012) is low (Hoota 2007). Current CDM rules allow only A/R and neither forest

management nor reduction of deforestation are eligible. By the end of February 2008, only one CDM project for A/R had been registered, compared with 701 energy projects. Projects to reduce emissions from deforestation and forest degradation were excluded from the CDM, but the negotiated outcome of the CDM provides some insight into how a future REDD scheme could evolve regarding its treatment of the rights and livelihoods of forest-dependent people.

The CDM sustainable development objective was elaborated for A/R projects through the modalities and procedures for addressing social and environmental impacts. Decision 19/CP9 specifies policy elements needed for forestry projects and requires that project documents include, if applicable, "information on local communities, indigenous peoples, land tenure, local employment, food production, cultural and religious sites, and access to fuelwood and other forest products." The assessment of this information, however, is left to the designated national authority (DNA). Forner (2005) notes that most of the guidance provided by the modalities and procedures for A/R projects focuses on climate change issues (at the international level) and, because of concerns for national sovereignty, decisions on sustainable development are left to the national level. While the modalities and procedures for A/R CDM pay some attention to the livelihood needs of forest-dependent people, there is no independent scrutiny of the documentation provided on social impacts. The DNAs are responsible for certifying emission reductions or enhancement of removals, but not for certifying that the social impacts of the project are acceptable. The DNA decides whether projects are in accordance with national regulations and contribute to sustainable development, but there is no independent accreditation of DNAs to certify that they have the requisite expertise and are sufficiently neutral.

Decision 19/CP9 provides for simplified modalities and procedures for small-scale A/R projects to assist community projects that could promote sustainable development. Reflecting the emphasis on sustainable development, small-scale projects must be developed by communities or individuals defined by the host party as low-income. This is another example of the CDM dichotomy leaving indexes of development to be decided by the host party, while climate parameters are set at the international level (Forner 2005).

This analysis suggests that climate-related parameters for REDD are likely to be set at the international level while sustainable development parameters relating to governance, tenure and livelihoods are likely to be decided and monitored at the national level. This would be a very undesirable outcome. In managing the forest estate, governments have often acted against the interests of forest-dependent communities in the pursuit of financial gains. If REDD follows the CDM in not requiring third party review of project documentation on sustainable development issues or independent monitoring of social impacts, governments attracted by the financial rewards for storing carbon in forests could return to the old socially unacceptable "fortress conservation" model of forest management.

4.1. Reasons for the exclusion of REDD from the CDM

The Kyoto Protocol required of the CDM (i) "real, measurable and long-term benefits related to the mitigation of climate change;" and (ii) "reductions in emissions that are additional to any that would occur in the absence of the certified project activity." The

Marrakech Accords reached at COP7 that specified the rules of meeting the Kyoto Protocol emission targets for the first commitment period restricted forestry activities to A/R on land that was not forested in 1990. The reasons for excluding REDD from the CDM included concerns over:

(i) Leakage – REDD in one locality, without reducing demand for forest products, could prompt or accelerate deforestation elsewhere;
(ii) Non-permanence – due to natural or anthropogenic disturbance, REDD might only be a temporary phenomenon;
(iii) Monitoring and measurement uncertainties in estimating the carbon balance of a forest system;
(iv) Additionality – determining how much deforestation and forest degradation was reduced and translating this into emissions reductions involves a high degree of uncertainty; and
(v) Scale of reductions – the large scale of possible emission reductions by REDD could act as a disincentive for developed countries to reduce their industrial emissions.

4.2. Progress towards REDD

Irrespective of the low investor interest in A/R CDM, momentum for REDD is building and there is a growing consensus that the issues that kept REDD out of the Kyoto Protocol are no longer insurmountable. The movement to elevate REDD in UNFCCC deliberations began in December 2005 at the 11th Conference of the Parties and the first Meeting of the Parties to the Kyoto Protocol (COP11/MOP1) when the Coalition of Rainforest Nations led by Costa Rica and PNG presented a formal proposal for reducing GHG emissions from deforestation. COP11 subsequently requested the UNFCCC Subsidiary Body for Scientific and Technological Advice (SBSTA) to examine the issue and to report its findings at COP13/MOP3 in Bali in December 2007. The UNFCCC organised two international workshops on reducing emissions from deforestation and requested COP13 to decide on treatment of REDD after the end of the first Kyoto Protocol commitment period.

REDD was high on the agenda of COP13 and was the focus of a number of side events, including the Forest Day organised by the Centre for International Forestry Research and the Indonesian Forestry Parallel Event. Three important outputs were the Summary of Forest Day presented by the Collaborative Partnership of Forests to the UNFCCC, the Bali Action Plan and the COP13 decision on “reducing emissions from deforestation in developing countries: approaches to stimulate action.” The Summary of Forest Day stressed that “governance-related challenges pose the greatest risks,” but that REDD could also provide an opportunity for achieving governance reforms, and that for REDD to distribute benefits equitably, it is essential to clarify land and carbon rights (Collaborative Partnership on Forests 2007). The Bali Action Plan stated that consideration should be given to “policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries” to enhance action on climate change mitigation (UNFCCC 2007). The COP13 decision on REDD paved the way for further work on REDD by encouraging Parties to build capacities for data collection, emissions estimates and monitoring and to undertake demonstration activities to enhance forest carbon stocks. It also requested the SBSTA to begin a programme of work on methodological issues, policy approaches and incentives.

Also, there is a growing sense of urgency that action should not be delayed until the end of the first Kyoto commitment period (2012). At COP13, the World Bank launched its Forest Carbon Partnership Facility (FCPF) to contribute to the development of a future, large-scale system of positive incentives for reducing emissions from deforestation by developing national capacities and supporting piloting at the project level. The FCPF aims to demonstrate and pilot mechanisms that generate lasting GHG emission reductions from forests that can be scaled up for REDD. The proposed FCPF consists of (i) a "readiness mechanism" ($100 million) to assist about 20 developing tropical and sub-tropical countries to measure their carbon forest stocks, identify forest-related carbon emissions and prepare strategies; and (ii) a "carbon finance mechanism" ($200 million) to facilitate payments to a smaller number of countries that achieve measurable and verifiable emission reductions by catalysing public and private purchases of credits. The facility's resources reached $165 million in December 2007.

Progress towards REDD is also evident at the national level. For example, in Indonesia the Ministry of Forestry initiated an Indonesia Forest Climate Alliance (IFCA) prior to COP13. IFCA has formulated a REDD methodology and strategies in collaboration with the UK, Austria and Germany.

4.3. Outstanding issues

Technical, methodological and market issues are far from resolved and require considerable progress before emissions reductions under REDD can be considered additional, measurable, verifiable and long-term. Parties have proposed a variety of solutions to the UNFCCC that reveal a wide divergence of views on the basic elements of REDD. At SBSTA-26 there were 22 distinct submissions on REDD and another 13 at SBSTA-27. The design of REDD must not only be credible; it must also be acceptable to all Parties. Difficult negotiations lie ahead. Three points of particular contention are REDD funding, level of implementation and scope.

4.3.1. To trade or not to trade?

How REDD should be funded is perhaps the issue over which the opinions of UNFCCC Parties are most clearly divided. The disagreement is over whether reductions generated from REDD should be tradable, and, if so, whether they should be traded in a separate market.

REDD proposals that argue for a non-market based approach have suggested various sources of funding including (i) official development assistance and voluntary contributions from governments and NGOs; (ii) private sector sponsorship/donations; (iii) potential new and additional financial resources under the UNFCCC; (iv) funds created under the Kyoto Protocol (e.g. the Special Climate Change Fund and the Adaptation Fund) and the Trust Fund of the Global Environment Facility; and (iv) taxes on carbon-intensive commodities and services (SBSTA 2007). These funds could be tapped for the building of national REDD capacities or for implementing REDD pilot projects, but they cannot be expected to provide the large volume of funding required because of the opportunity costs of competing land-use alternatives. For eight countries that are collectively responsible for 70% of land use emissions, the Stern Review estimated that the opportunity costs of avoided deforestation would be about $5 billion annually (Stern 2006, 217). While Robledo and Masera (2007) suggest that

inappropriate assumptions and a failure to value all forest functions makes this estimate too high, it is difficult to envision how a non-market based approach could provide the funds required. Official development assistance flows for the conservation of forests and biodiversity have decreased significantly (Khare et al. 2005) and other funds suggested for REDD are already being targeted by other climate change interests, such as adaptation.

Market-based approaches could theoretically provide greater resources for REDD than fund-based approaches. A variety of mechanisms have been suggested, including (i) trading of carbon credits; (ii) project-based, programmatic and/or sectoral CDM; (iii) barter transactions; (iv) payment for ecosystem services; and (v) levies on emission reduction units traded on the carbon market (SBSTA April 2007).

However, there are good reasons for questioning market-based approaches. First, as with A/R CDM, investors may steer clear of REDD because of the high methodological uncertainties, technical complexity and risks involved. Second, REDD could be a disincentive for Annex I countries to reduce their own emissions. Third, the integrity of carbon trading could be threatened if REDD credits are traded in the same market as other credits, due to the uncertainty of forest carbon balance estimations and permanence. Caps, discounts and a dual markets approach that separates REDD credits from others generated under the Kyoto Protocol have been proposed as possible solutions. Options to deal with non-permanence include banking a proportion of credits as insurance and temporary crediting, as applied to A/R CDM projects.

It is beyond the scope of this paper to review all the proposed funding mechanisms. Overall, a mixed basket of non-market and market-based financial resources could be the most realistic option for building capacities and providing positive incentives for REDD. Non-market funds are required to build the capacities of participating countries to establish national REDD systems (administration and enforcement costs) and further upfront financing is necessary to manage the transition (Stern 2006). An innovative market-based financing mechanism will be required to cover the opportunity costs of implementing REDD. To promote the wellbeing of forest-dependent people, a market-based mechanism should incorporate sustainable development concerns and not solely rest on price. Independent standards could play an important role.

4.3.2. National or project approach?

The PNG and Costa Rica proposal at COP11 indirectly referred to “compensated reductions,” a concept that is receiving growing support. A feature of compensated reductions is that, unlike CDM, implementation would take place at the national level, rather than at the project level, thus rewarding a government rather than a project proponent. Through its FCPF, the World Bank is seeking to build capacities for a national approach to establish a national accounting framework and a national reference scenario for deforestation and forest degradation emissions. A national approach would reduce, but not eliminate, leakage as the country or its entire national forest system is used as the unit of account. International leakage could be reduced by increasing the number of countries participating in REDD. A national approach would reduce the costs of baseline development (i.e., a baseline would only have to be developed at the national level, rather than for each project), monitoring and verification costs.

Nevertheless, a project-based approach remains attractive because countries with the highest rates of deforestation often have poor data sets for establishing baselines and suffer from weak governance. Of the ten countries with the highest rates of deforestation, only three have data sets for two years, which is the minimum required to estimate emissions trends (Karousakis and Corfee-Morlot 2007). Project approaches would avoid the costs of preparing national GHG inventories in accordance with IPCC guidelines. Although the potential for leakage in tropical countries is high, with most estimates exceeding 50% (ibid.), testing for whether leakage could be effectively monitored and dealt with on a project basis may still be fruitful. Project-level REDD is already being piloted by the World Bank in Colombia, Madagascar and Honduras using its BioCarbon Fund (World Bank 2007) and these and other REDD projects may offer important lessons. Whether rural communities could be mobilised to monitor leakage also deserves attention.

4.3.3. Deforestation only, deforestation plus forest degradation, or compensated conservation?

Some Parties to the UNFCCC advocate deforestation, others deforestation and forest degradation, and still others a system that rewards countries that have low rates of deforestation for their conservation strategies. Forest degradation is a particularly critical issue in the Asia-Pacific region where many natural forests set aside for sustainable harvesting are highly degraded because of inadequate compliance with forestry regulations by logging operators. Including forest degradation in a global climate framework would allow for broader participation by Parties and would enable a more complete valuing of the contribution of forest conservation to climate mitigation. A problem of current Kyoto Protocol definitions is that replacement of natural forests with planted forests is not considered deforestation. Recognition of forest degradation could capture this change in land cover and would remove the perverse incentive of REDD for countries to degrade their forests to just under the deforestation threshold. Despite the advantages of incorporating forest degradation in a post-2012 climate framework, major challenges regarding definitions, methodologies, monitoring and baselines have yet to be confronted (SBSTA 2007).

India presented a proposal to the UNFCCC employing the concept of compensated conservation, which argues for “providing compensation to countries for maintaining and increasing their forests” as a result of their existing forest conservation policies and measures (Government of India 2007). This would not meet the condition of additionality, though there is still disagreement among Parties over whether REDD should require it. Compensated conservation would enable participation from a greater number of developing countries in a forest climate mechanism, but might make this mechanism overly complex. For countries with low deforestation rates, efforts might be better directed at enhancing the technical and financial support provided for forest management through regional and international organisations such as the ITTO and FAO.

5. Capacity for, and benefits of, community participation in REDD

A review of REDD proposals reveals not only that there is still considerable disagreement over the basic elements of REDD, but also that little attention has been

given by UNFCCC Parties to the concerns raised in this chapter. Only a few proposals assert that communities will have an important role to play in REDD.

The discourse on REDD has been necessarily influenced by a concern for methodological rigour but this appears to have generated a search for technology intensive solutions, such as remote sensing, over potentially less costly and more socially desirable strategies that mobilise rural populations to monitor and control access to and use of forests. While technology intensive solutions may be appropriate for mitigation measures in other sectors such as energy, they may not be the most effective option for natural forest management, which must deal with the claims of competing interest groups including local and migrant communities, forest authorities, NGOs and national and international firms. Communities provided with the necessary training could participate in ground/field surveys and forest inventories. Payment for their involvement could provide significant development benefits and contribute to poverty alleviation. Productive engagement with communities in these tasks could increase their sense of project ownership and reduce the likelihood of conflict over forest resource allocation, while guaranteeing continued community access to non-timber forest products.

To achieve climate mitigation and sustainable development, REDD projects should require systems to be put in place to (i) ensure that the livelihoods of poor households are not diminished; (ii) control the exploitation of forests; and (iii) measure and report on carbon stocks. For REDD to be financially attractive, carbon prices will have to be sufficient to cover the opportunity cost of alternative land uses and the upfront and ongoing costs of establishing and operating the management, monitoring and reporting systems. For tropical forests, the opportunity costs may be relatively low. Research by the ASB-Partnership for the Tropical Forest Margins found that private users have a strong economic rationale for deforestation, but that the economic gains when expressed as tCO_2eq were small (Swallow et al. 2007). In three provinces of Indonesia the economic returns were less than $\$1/tCO_2eq$ for 6-20% of the area and less than $\$5/tCO_2eq$ for 64-94% of the area. The economic return was as low as \$0.10-0.20/tCO_2eq on peat-rich soils where shifting agriculture is practiced (ibid.). The IPCC estimates that half of the forestry mitigation options could be implemented for less than $\$20/tCO_2eq$ (Nabuurs et al. 2007). Even if opportunity costs are low, however, transaction costs could be high, as experienced with A/R CDM. Involving communities in forest management and monitoring and reporting on carbon stocks could reduce transaction costs and optimise development benefits.

5.1. Communities managing and controlling access to and use of forests

For many years, communities were viewed by forest departments as agents of deforestation whose access to, and use of, forests needed to be controlled. This view has gradually, although with resistance, shifted towards an understanding that engaging communities in forest management, with appropriate incentives and controls, is more likely to achieve forest conservation than exclusionary models. Community-based forest management is now a central component of many national forest policies. Approximately 25% of forests in developing countries are owned or managed by local communities under long-term contractual agreements. Community management has doubled in the last 20 years and could reach 40% by 2050 (Kaimowitz 2005). In Nepal, 35% of the population are members of community forest user groups. The Government has handed over five million ha of forestlands to communities in the Philippines under

long-term lease agreements, and over 17 million people participate in Joint Forest Management in India (Scheyvens et al. 2007).

Commonly, community forestry programmes are characterised by co-management arrangements involving the forest department and local communities, renewable long-term lease agreements that define management and user rights, and some form of benefit sharing between the state and communities. Villagers benefit by having the legal rights to access and extract products from the forest, but are required to self-regulate to ensure the sustainable management of the resource. The experience of formal community forestry is that communities can (i) manage forests sustainably when tenure arrangements provide them with sufficient incentives; and (ii) contribute to the policing of access to and exploitation of forests (ibid.).

This experience suggests that less technology-intensive solutions could suit developing countries in the Asia-Pacific region, with resources directed towards engaging communities in controlling access to and exploitation of forests. For community forest management models, the returns from carbon forestry do not need to be too high as communities can derive a range of other benefits from forest management. Under "Kyoto: Think Global, Act Local", a research and capacity building programme financed by the Netherlands Development Cooperation programme, five pilot projects trained forest-dependent communities to undertake assessments of the temporal changes in carbon stocks in their forests. The five projects found that prices as low as $2-4/ tCO_2eq could generate sufficient incentive for communities to participate (Murdiyarso and Skutsch 2006).

These additional returns for carbon sequestration may allow for community forestry on highly degraded forestland that previously has not been sufficiently attractive for community management. Communities may have a role to play in controlling access to protected areas that could be explored through REDD piloting. The financial rewards would have to be sufficient to pay communities for their services and to establish alternative livelihoods.

Community forest management models have their shortcomings and these need to be recognised. There are many examples in which communities are given responsibilities for protecting forest resources, but insufficient user rights or incentives to encourage their participation (Scheyvens et al. 2007). Moreover, community institutions are not always equitable, homogenous, or capable of deflecting external pressures. Built on trust and peer pressure, community institutions can be undermined by a single rule-breaker. Thus, the design of national level REDD schemes should be informed by a critical review of formal and informal community-based forest management models, with a view to identifying options for engaging communities in the implementation of REDD projects.

5.2. Communities monitoring and reporting on carbon stocks

The five "Kyoto: Think Global, Act Local" pilot projects found that even when local people have low levels of formal education, their capacity can be built quickly and cheaply to undertake measuring and monitoring of growth of biomass and carbon stocks. All case studies showed that local communities could do this reliably and accurately after a few days training using hand-held computers equipped with Geographical Information Systems (GIS) and Global Positioning Systems (GPS) to

map the forest areas and store data that are gathered by standard forest inventory methods (Murdiyarso and Skutsch 2006). The data collected provided the basis for the projection of carbon stock growth rates.

Communities could have a particularly important role in implementing REDD in degraded forests. Remote sensing can detect significant loss of forest canopy, but not degradation in the form of lost biomass below the canopy. Communities could provide accurate ground-level measurements for the development of baselines and carbon stock monitoring in degraded forests. An additional benefit of community participation in REDD is that, once trained, community members may be able to monitor forest growth rates accurately at a lower cost than professionals (ibid., 122).

The experiences of community-based forest management and community carbon forestry indicate that (i) communities with a low level of formal education can be trained in a short period to measure and monitor carbon stocks; and (ii) even at low market prices, the economic valuation of carbon could provide communities with an important additional income source.

6. Employing multi-stakeholder processes and independent standards

In addition to engaging rural communities in implementing REDD, instruments that ensure that REDD does not have negative socio-economic impacts should also be explored during piloting. The World Bank states that national REDD strategies under the FCPF should “avoid any harm to local people and the environment and, where feasible (...) improve livelihoods” (World Bank 2007), but the design of these strategies should not be left solely in the hands of governments. Multi-stakeholder processes and the use of independent standards by accredited third party organisations to assess forest management could be a particularly strong mechanisms to ensure positive social, environmental and economic outcomes.

6.1. Multi-stakeholder processes

A trend towards employing multi-stakeholder processes to manage forests has emerged in recent years. This reflects a growing appreciation that governments have largely failed to manage forests sustainably through centralised and exclusive administrative structures and that involving other actors in forest management (i) allows for a fairer representation of interests in the allocation of forest rights; (ii) provides checks and balances; and (iii) introduces additional skills and knowledge to management. Various examples of multi-stakeholder forest processes can be found in the Asia-Pacific region that could provide important lessons for REDD.

For example, development of a national legality standard in Indonesia began in 2002 when the United Kingdom and Indonesia signed a memorandum of understanding that specified actions to adopt a working definition of illegal logging based on a multi-stakeholder process. The definition, or standard, is intended to make it easier for buyers to distinguish between legal and illegal timber products. The multi-stakeholder process engaged NGOs to undertake regional and national consultations and to field test the standards. The process has been drawn out and difficult but the strengths of

this approach can be seen in the breadth of issues covered by the standard, which includes provisions on land tenure and use rights, social and environmental impacts, as well as community relations and workers' rights. This experience suggests that a multi-stakeholder processes to design national REDD schemes and to select and manage forests set aside for REDD is likely to garner greater stakeholder buy-in and encompass a broader range of sustainable development concerns than if left entirely under government control.

6.2. Independent standards to guide forest management

The use of independent standards is already well advanced in the forestry sector in the form of forest certification, which combines a forest management standard with traceability and product labelling systems to distinguish products from well-managed forests. Although its early proponents were primarily concerned with the high rates of deforestation in tropical countries, forest certification standards have evolved to include social criteria such as the rights of indigenous peoples and forest-dependent communities and have the potential to contribute to sustainable poverty reduction through employment generation and the securing of subsistence livelihoods and environmental services. Independent standards have also been developed specifically for land management climate projects. Their application would be one way to ensure that REDD projects pay due consideration to the rights and livelihoods of forest-dependent communities (box 4.4).

Box 4.4. Independent standards for carbon forestry projects

Climate, Community and Biodiversity (CCB) Project Design Standards
An independent standard for land-based carbon mitigation projects, the CCB Standards are designed to: (i) "identify projects that simultaneously address climate change, support local communities and conserve biodiversity"; (ii) "promote excellence and innovation in project design"; and (iii) "mitigate risks for investors and increase funding opportunities for project developers". The CCB Standards include 15 key criteria designed to ensure that a project will "help mitigate climate change, conserve biodiversity, and improve socio-economic conditions for local communities". Independent third party auditors are used to certify projects that comply with the standards.

CarbonFix Standard
The CarbonFix Standard is an independent standard recently made available for public review by CarbonFix, a German NGO. The CarbonFix Standard only applies to afforestation and proposes granting "carbon futures" to provide an earlier financial reward for project managers. The Standard is intended to (i) enable project developers to finance their afforestation projects through the sale of CO_2-rights; and (ii) ensure these rights are generated from projects that have positive socioeconomic and ecological impacts.

Forest management will be assessed by certifiers from the Forest Stewardship Council (FSC) or UNFCCC designated operational entities. For projects greater than 2,000 ha, the standard stipulates that the socioeconomic prerequisites of the FSC forest management standard will be used. For project areas less than 2,000 ha, the socioeconomic prerequisite is a signed statement by a local authority and a registered national NGO active in the social sector that the project follows all national social laws and brings socioeconomic benefits to the local communities. Moreover, the project manager has to announce in a manner that best reaches local communities that any comments on the project can be sent directly to CarbonFix.

Source: http://www.climate-standards.org; http://www.carbonfix.info

The independent standards discussed here have an advantage over the modalities and procedures for addressing social impacts for CDM A/R projects as they provide for greater neutrality in assessing project documentation on social issues. The CCB Project Design Standards and the CarbonFix Standard's treatment of projects greater than 2,000 ha, which require use of FSC socio-economic principles in the forest management standard, also provide criteria to guide socio-economic impact assessment.

Despite their potential to promote sustainable development through REDD, the application of these standards is constrained by their voluntary nature and thus their dependence upon market demand. The short history of forest certification, which is also a market-based, voluntary instrument, may offer some important lessons. Forest certification emerged in the early 1990s and, by 2006, 270 million ha of forest area had been certified, accounting for 7% of global forest cover (UNECE/FAO 2006). However, only 8% of the total certified area of forests lies in developing countries (Fischer et al.

2005, 13). The challenges to certify sustainable forest management are greatest in developing tropical countries and include (i) the ecological complexity of natural moist tropical forests; (ii) unclear or disputed tenure; (iii) a wide gap between existing management practices and certification standards; (iv) low capacity; (v) lack of policy support; (vi) uncertainty of price premiums; and (vii) inflexibility of standards (Fischer et al. 2005, 14,15; Durst et al. 2005, 4-6).

Forest certification is also limited on the demand side by low consumer awareness. Markets for certified timber and wood products are expanding, though market signals differ between countries and between products (Oliver 2005). Overall, the assumption that price premiums sufficient to cover the costs of certification would develop has not been met. Emergence of numerous competing forest certification schemes, each applying their own standards, is a further obstacle to market development.

The experience of forest certification suggests that a global REDD system should ideally include a comprehensive generic standard for management of REDD projects that could be tailored to the individual circumstances of each participating country, similar to the FSC's certification model. A market that favours such standards through a premium carbon price would be developed. However, this option is unlikely to win favour amongst UNFCCC Parties because it is difficult to implement and could be viewed as impinging on national sovereignty. If standards must remain voluntary and market-driven, a second best option would be for governments acquiring carbon credits through REDD to limit their purchases to projects that apply credible standards for sustainable forest management.

7. Conclusions and recommendations

7.1. Main messages

In forest-rich countries that stand to gain the most carbon credits from REDD, forest governance is often weak. Bluntly, this means that powerful business, government, military or other elites have undue influence over the allocation of forest resources and the distribution of benefits from forest exploitation. Millions of people dwelling in or near forests, marginalised from decision-making processes, suffer the consequences of this exploitation, whether formalised or illegal, in the form of diminished livelihoods and poverty. To maintain their existence they may resort to illegal forest activities such as clearance for agriculture.

The risks of REDD include (i) denying local people access to forests without providing alternative livelihoods, which would further exacerbate rural poverty, increase forest crime and lead to widespread conflict, thereby threatening the viability of REDD projects; (ii) channelling additional resources to elite groups who already enjoy disproportionate rewards from forest exploitation; and (iii) undermining the integrity of emissions trading through the uncertainties associated with estimating forest carbon balances, leakage, permanence and additionality. Irrespective of these risks, because of the lure of large international financial transfers envisioned, forest-rich developing countries experiencing high rates of deforestation are moving quickly to establish national REDD systems and to begin piloting at the project level. Although forest

conservation in the tropics needs to be approached with a sense of urgency, it also needs to be approached cautiously. Large international financial transfers have already been directed towards forest conservation but with little success in reducing rates of deforestation. Forest conservation requires more than financial resources. It requires strong and motivated government institutions and public support (Nabuurs et al. 2007). A well-designed REDD mechanism would thus not only contribute to reduced GHG emissions, it would also provide opportunities to reform forest governance and alleviate rural poverty.

Based on the proposition that REDD should combine climate mitigation and sustainable development objectives, the following conclusions can be drawn:

(i) REDD should be positioned within a broader agenda of sustainable forest management that, as described in the Rio Forest Principles, is designed to meet the social, economic, ecological, cultural and spiritual needs of present and future generations;
(ii) As part of the development of national capacities for REDD, the security and equity of existing forest tenure arrangements should be reviewed and reformed where necessary;
(iii) REDD pilot project demonstrations should explore strategies to build the capacities of rural communities to involve them in measuring and monitoring carbon stocks as well as to control access to, and use of, forests allocated for REDD projects;
(iv) REDD pilot project demonstrations should introduce carbon forestry into community-based forest management models, paying attention to the equitable distribution of benefits between government and the community and within communities;
(v) National multi-stakeholder processes, rather than governments acting alone, should collectively design national REDD schemes and decide upon which forests will be allocated for REDD projects; and
(vi) REDD piloting should employ and promote development of independent standards and their use to audit the economic, social and environmental impacts of forest management.

7.2. Future research agenda

This chapter suggests a number of areas for future research. Further research is required to estimate the transaction costs of engaging communities in protecting forests for REDD and monitoring carbon stocks. This research should elaborate on optimal arrangements for assigning responsibilities to communities and employing technologies such as remote sensing. Nepstad et al. (2007) estimated that $180 million year would be required to compensate “forest steward families” - indigenous groups, rubber tappers and other forest dwellers – and that $13 million would be required for them to conduct perimeter patrols to protect forests in the Brazilian Amazon under REDD. More detailed research is now required to cost the engagement of communities in REDD for specific forests in the Asia-Pacific region and to compare the costs and benefits of this engagement with those of alternative approaches. Further action research is also required to test approaches to developing the capacity of communities to participate in REDD through forest monitoring and management as well as the measurement and monitoring of carbon stocks.

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Endnotes – Chapter 4

[1] Carbon dioxide is the most significant GHG emitted by deforestation, followed by much lesser amounts of methane and carbon monoxide.

[2] Forest-dependent people are defined in this chapter as people residing close to or within forests whose subsistence or cash-based livelihoods depend to a significant degree on the utilisation of forest resources.